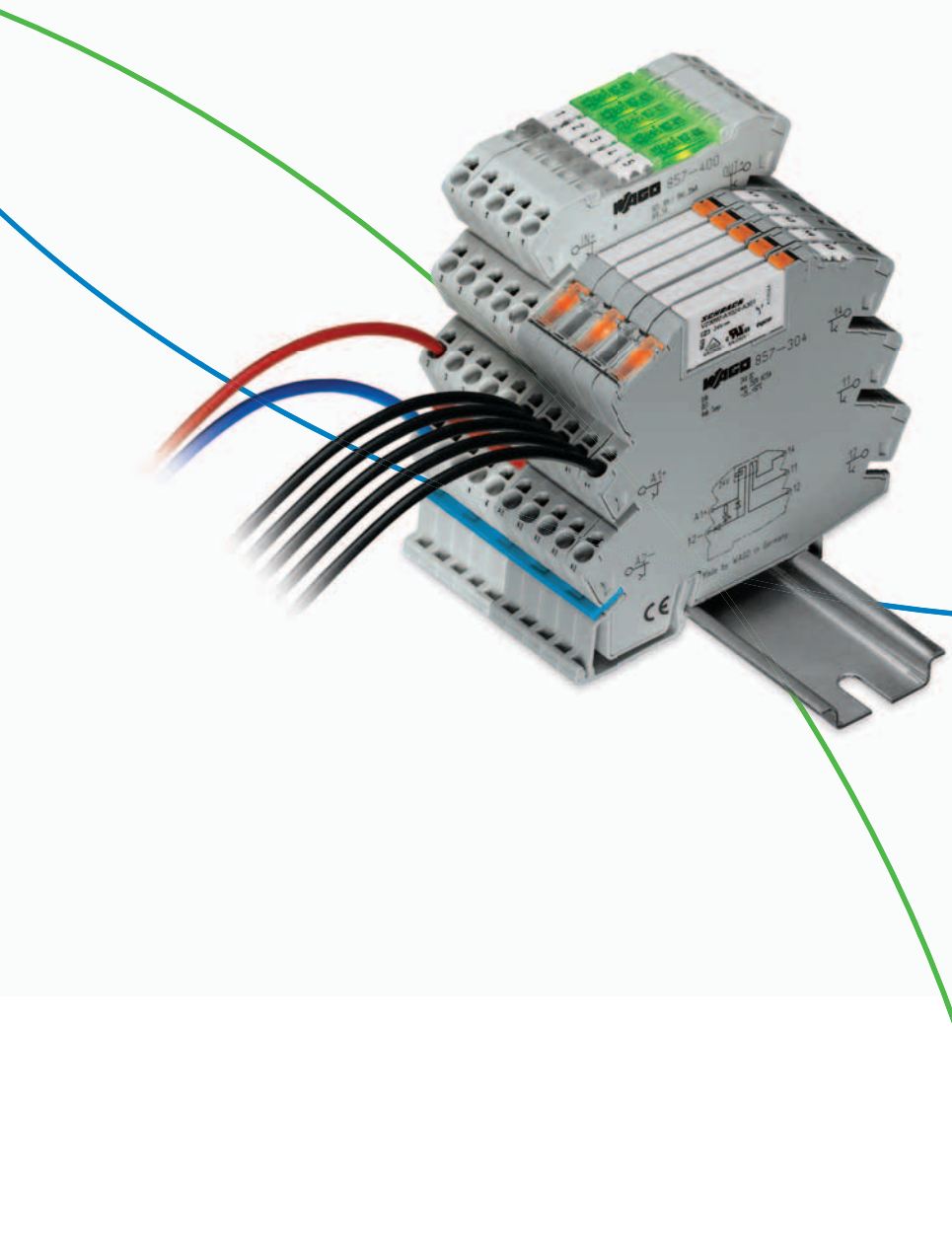
AUTOMATION

INTERFACE ELECTRONIC



Full Line Catalog, Volume 4
Edition: 2012/2013

4

WAGO®

WAGO Registered Trademarks

CAGE CLAMP®

CAGE CLAMP®S

POWER CAGE CLAMP

FIT CLAMP®

PUSH WIRE®

TOPJOB®

TOPJOB®S

WINSTA®

WAGO®

X-COM®

X-COM®S

JUMPFLEX®

TO-PASS®

ProServe®

EPSITRON®

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WAGO Full Line Catalogs

Volume 1, Rail-Mounted Terminal Block Systems

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



Volume 2, Connectors and PCB Terminal Blocks

- PCB Terminal Blocks
- Feedthrough Terminal Blocks
- *MULTI CONNECTION SYSTEM*
- Pluggable PCB Connectors
- Specialty Connectors



Volume 3, AUTOMATION

- IP20 Modular I/O-SYSTEM
- Wireless Technology, *TO-PASS*® Telecontrol Technology
- Industrial Switches, *PERSPECTO*®
- IP67 Modular I/O-SYSTEM, IP67 Block I/O-SYSTEM
- IP67 Sensor/Actuator Boxes, IP67 Cables and Connectors
- Power Supplies



Volume 4, INTERFACE ELECTRONIC

- Relays – Optocouplers – Special Functions
- Interface Modules
- Transducers
- Power Supplies
- Overvoltage Protection
- Wireless Technology
- Empty Housings and Mounting Carriers



Volume 5, *WINSTA*® – The Connection System

- *WINSTA*® MINI – Connectors
- *WINSTA*® MINI special – Connectors
- *WINSTA*® MIDI – Connectors
- *WINSTA*® MIDI special – Connectors
- *WINSTA*® MAXI – Connectors
- *WINSTA*® RD – Cable Assemblies
- *WINSTA*® KNX – Connectors
- *WINSTA*® IDC – Flat Cables



Handling of WAGO Connection Technologies*

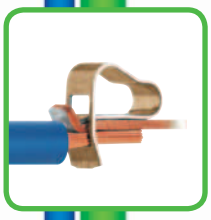
CAGE CLAMP®S



Universal connection with "SPECIAL"

Handling:
- Open the clamp
- Insert wire
- Release the clamp – done!
- Solid conductors and fine-stranded conductors with ferrules are connected by simply pushing them in – no operating tool needed.

CAGE CLAMP®



Universal connection of solid, stranded and fine-stranded conductors

Handling:
- Open the clamp
- Insert wire
- Release the clamp – done!

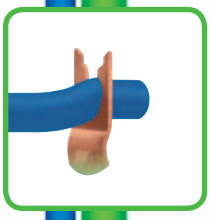
POWER CAGE CLAMP®



Universal connection of conductors larger than 6 AWG (16 mm²)

Handling:
- To open the clamp with a standard hex wrench or operating tool, and turn approximately twice counter-clockwise.
- Latch holds clamp open.
- Insert conductor.
- A small counter-clockwise rotation releases the latch.

FIT CLAMP®



Insulation displacement connection (IDC)

Handling:
Push unstripped conductor into the IDC contact using an operating tool.

PUSH WIRE®



PUSH WIRE® connection for solid wires and stranded wires (depending on product used)

Handling:
Solid and stranded conductors that are rigid enough are connected by simply pushing them in – no operating tool needed.

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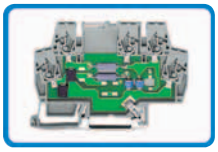
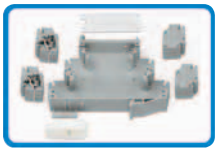
5  Overvoltage Protection

6  Wireless Technology

7  Empty Housings and Mounting Carriers

8  Accessories

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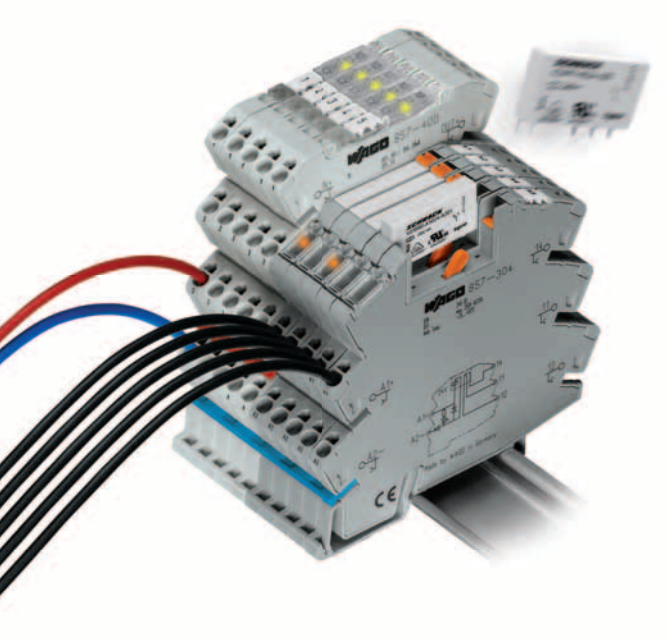
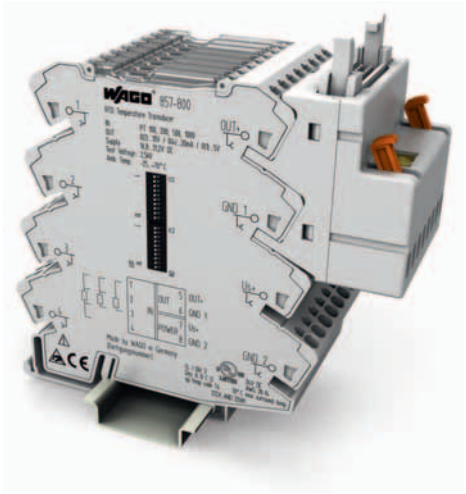
An Interface Solution for

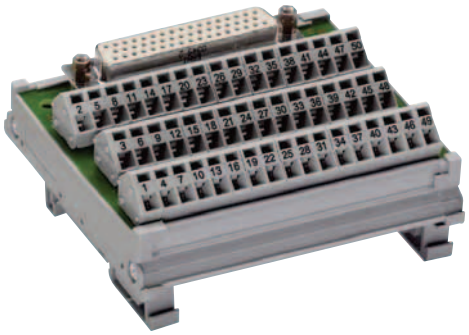
JUMPFLEX®– Transducers / Relay and Optocoupler Modules
857 Series

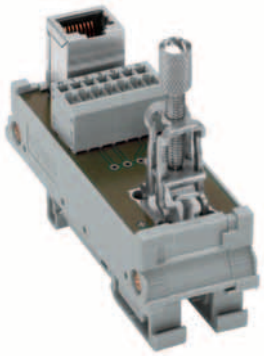


JUMPFLEX®– 8-Channel Adapter
857 Series



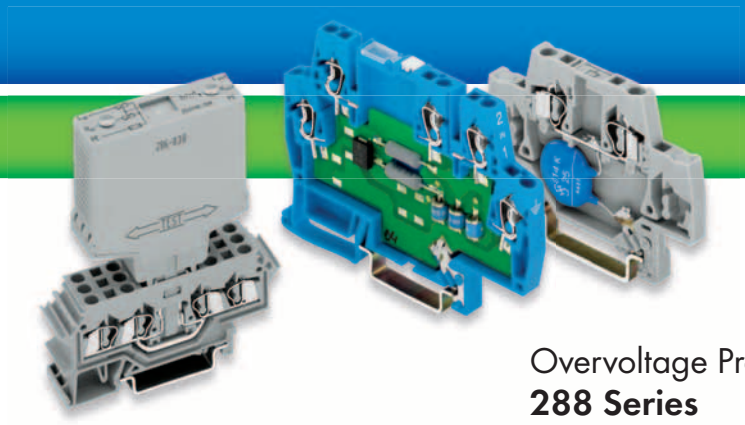
Interface Modules
289 Series





EPSITRON -
Power Supplies
787 Series

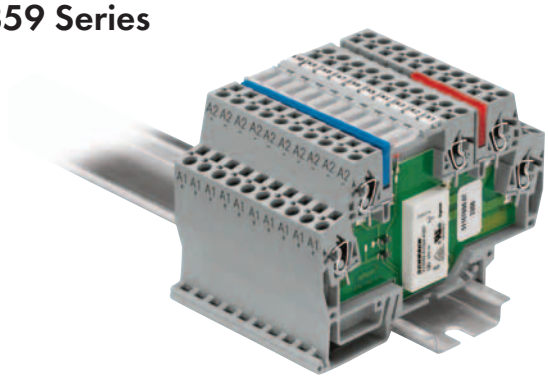




Overvoltage Protection
288 Series

All Applications

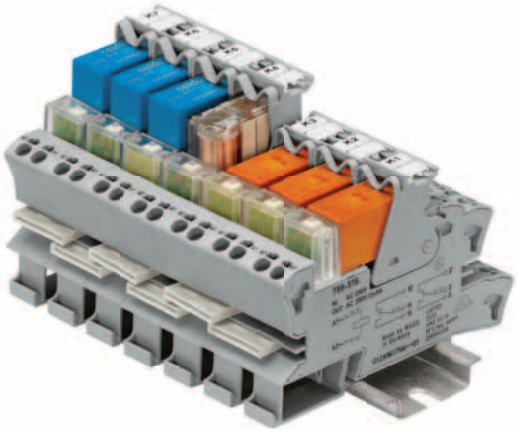
Relay Modules and
Optocoupler Modules
859 Series





Pluggable Function Modules
286 and 289 Series

Sockets for Miniature Switching Relay /
Optocoupler
788 Series

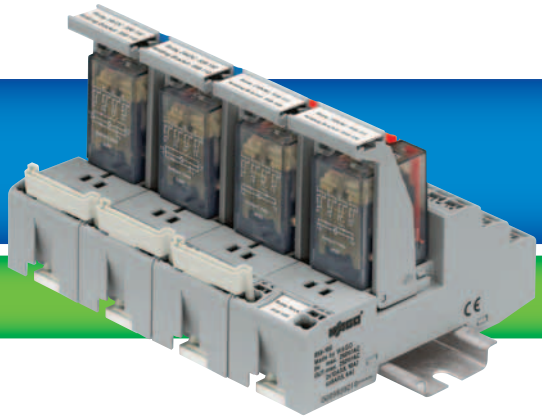






Relay Modules in
DIN-Rail Mounted Enclosure
789 Series





Sockets with Industrial Relay
858 Series

WAGO Interface Modules

Housings and Shapes

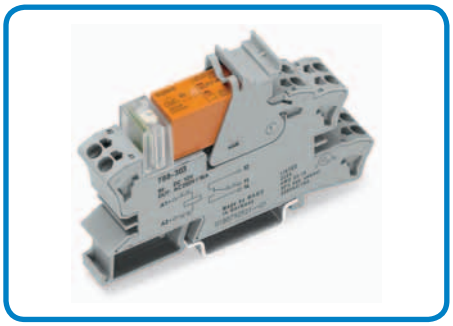
Nowadays when equipment is designed many scenarios need to be considered. Some of which are user and maintenance friendly, limited budgets, safety, availability, space requirements and simplicity in design and usage.

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.



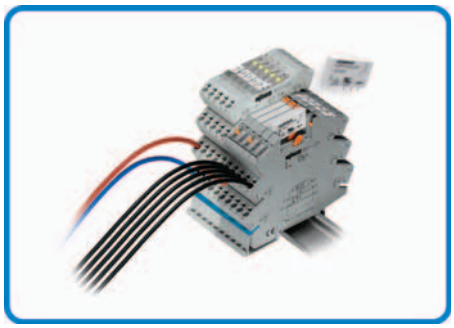
Relay socket with pluggable miniature switching relay

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.

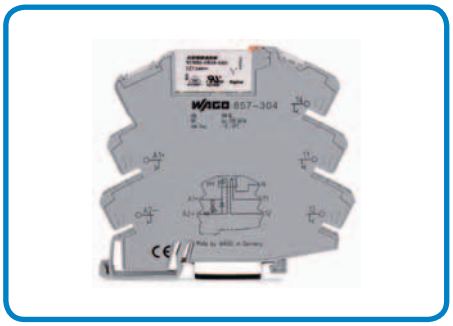
The sockets can be ordered as complete components including relay and status indication or as a single component.

857 Series Transducers and Relay Modules



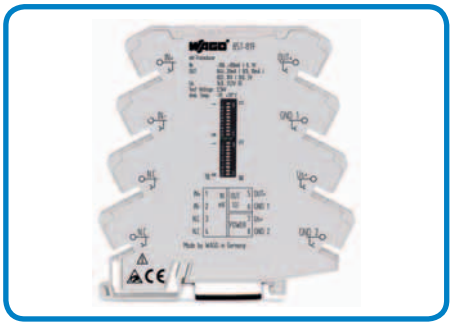
Transducers / Relay modules and Optocoupler module

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.



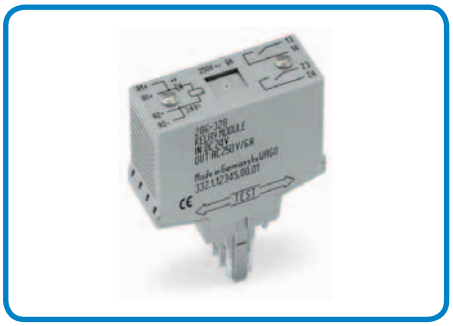
Transducer

286 / 786 Series Pluggable Function Modules



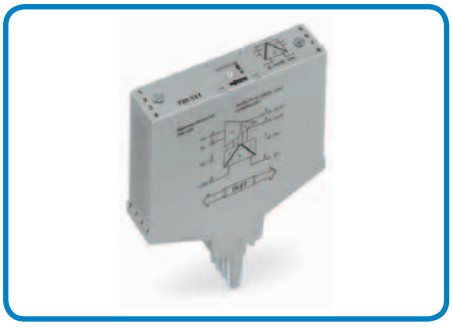
Pluggable function modules

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

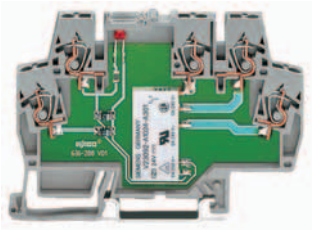
The optocoupler and relay modules are ideal additions to a comprehensive function module program, allowing any required functions to be implemented in a control cabinet by means of a pluggable module system. Large enclosures of the Series 786 are available for more complex functions, such as transducers.



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.



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.

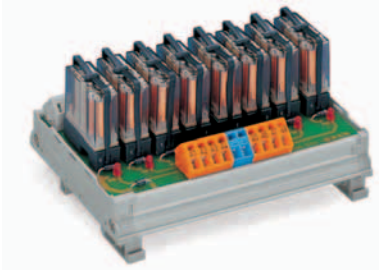


Optocoupler module

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

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.



DIN-rail-mountable modules - relay modules

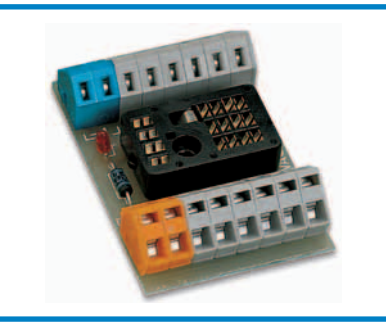
The requisite free-wheeling and reverse voltage protection diodes are also integrated to ensure a long service life of the products.

Other interface modules available as:

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



DIN-rail-mountable modules - relay modules



Relay socket

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 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).

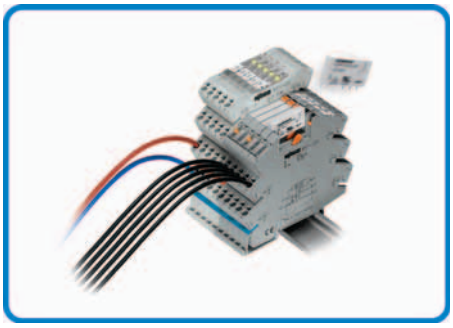


EnOcean radio receiver in DIN-rail-mountable enclosure

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.

WAGO Transducers and Relay Modules

***JUMPLFEX®* , 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

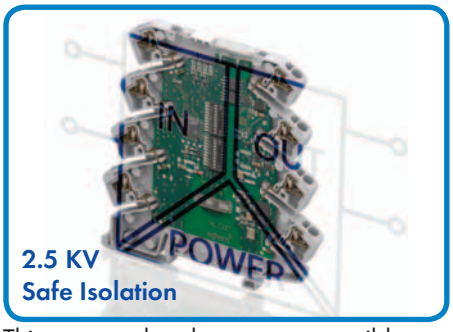
Problems can arise in signal processing in industrial systems of analog standard signals (such as 0-10V or 0-20mA) which can have an adverse effect on overall fault-free signal processing. Problems such as potential differentials arising from interlinked measuring circuits can be efficiently prevented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

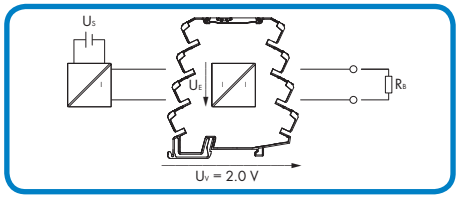
Passive isolation

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:

US ≥ UE = UV + 20 mA x RB



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

US ≥ UE = 2.0 V + 20 mA x 600 Ω

US ≥ UE = 14 V

Temperature measuring techniques

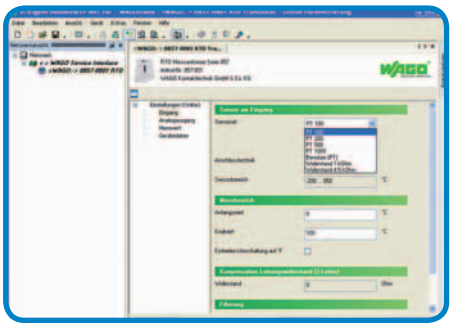
Resistance thermometers, such as Pt100 sensors, alter their resistance level as a function of temperature. For example, a rise in temperature will result in an increase in the resistance level. This reistance level is registered by the *JUMPFLEX®* devices (for example 857-800) and transformed into an 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

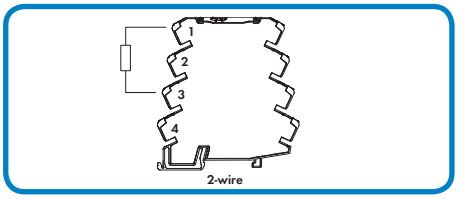
A portion of the *JUMPFLEX®* transducer can be configured for parameterization, commissioning and diagnostics of field devices using WAGOframe, a software based on the FDT/DTM standard.

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.

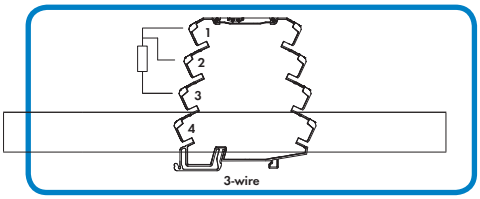


Compensation for line resistance (2-wire)

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 Ω .

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.

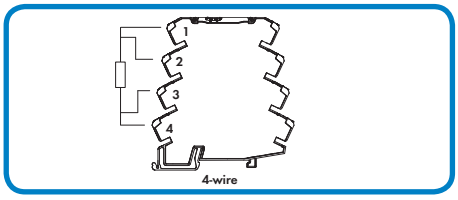
3-wire connecting technique



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



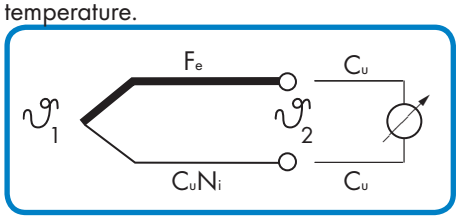
The most accurate measuring method employs the 4-wire connecting technique. This involves feeding in a low supply current via two fully isolated measuring circuits via two lines and measuring the voltage drop across the resistance thermometer via the other two lines. This method offers the advantage 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 ϑ1 is the same as the temperature at reference point ϑ2, no current will flow, as the two component voltages cancel one another out.

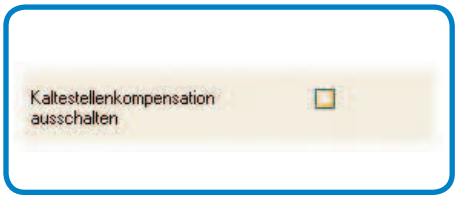
However, if the temperatures at the measuring point and at the reference point are different, differing voltage levels are produced which do not completely cancel one another out, resulting in a flow of current.

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.

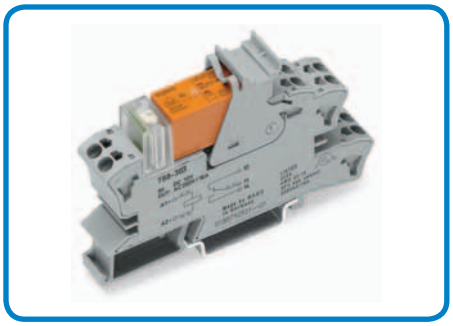
A logical enclosure concept with options for linking all levels offers a variety of synergy and cost-savings potential. This allows for efficient optimization of installation efforts.

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

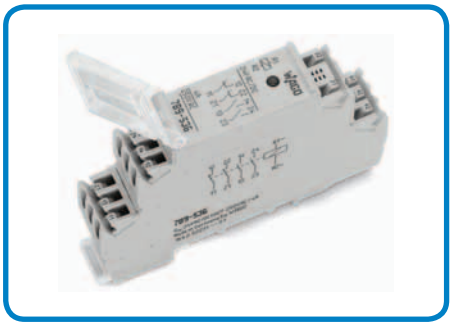


For further information about the relays go to pages 10 - 12.

WAGO Relay Modules







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.

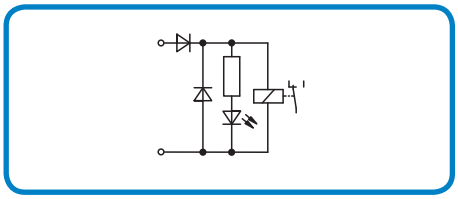
The following relay types are also available: bistable switching relays, time-delay relays, current pulse switching and safety relays with force-guided contacts.

Definitions of several important technical terms

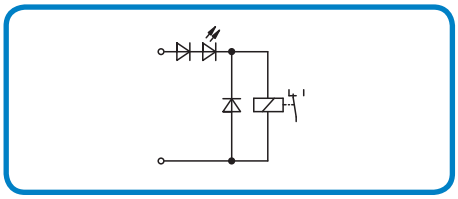
Coil-side information

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

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



For a nominal voltage of ≤12VDC, the LED is connected in parallel to the coil.



For a nominal voltage ≥24VDC, the LED isconnected 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 ≤5% of the nominal voltage;
for AC relays it is 15% of the nominal voltage (acc. to VDE 0435).

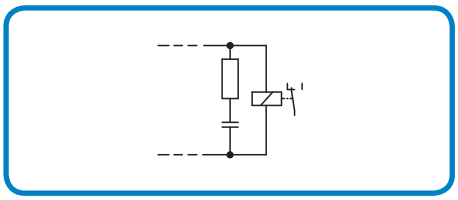
If a high residual voltage exists, it is possible that the relay will not reset.

Addition of a parallel connection of an RC element of:

R = 100-220Ω

C = 220-470nF

could remedy this situation.



Alternatively, the 286-904 relay module is available.
This specially developed module features a defined release point at 110VAC ± 10% at an operating voltage (coil volt age) of 230 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 mate rials, 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 0_2	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^{-3} W

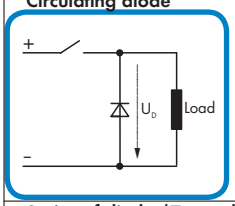
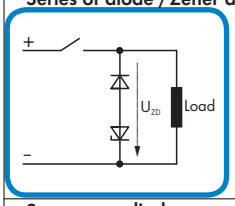
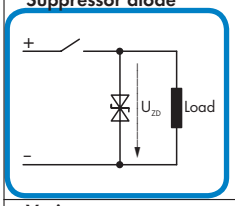
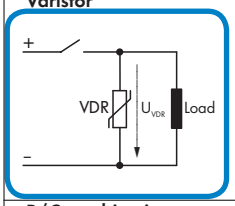
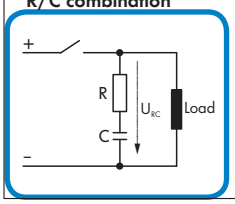
Contact switching protection

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:

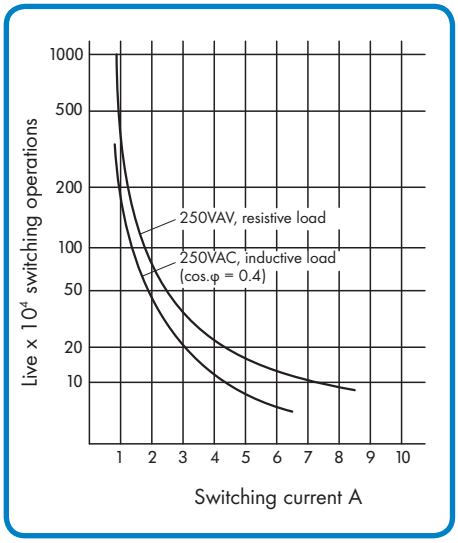
Switching of load	Additional off-delay	Defined limitation of inductive voltage	Attenuation when used with bipolar circuits	Advantages / disadvantages
Circulating diode 	large	yes (V_D)	no	**Advantages:** • simple device • cost-effective, reliable • sizing not critical • small inductive voltages **Disadvantages:** • limit only via load resistance • longer turn-off time
Series of diode / Zener diode 	medium to small	yes (V_{ZD})	no	**Advantages:** • sizing not critical **Disadvantages:** • limits only above V_{ZD}
Suppressor diode 	medium to small	yes (V_{ZD})	yes	**Advantages:** • cost-effective • sizing not critical • limitation of positive peaks • suitable for alternating voltages **Disadvantages:** • attenuation only above V_{ZD}
Varistor 	medium to small	yes (V_{VDR})	yes	**Advantages:** • high energy absorption • sizing not critical • suitable for AC voltages **Disadvantages:** • attenuation only above V_{VDR}
R/C combination 	medium to small	no	yes	**Advantages:** • limiting by energy storage • suitable for alternating voltages • limiting independent of level **Disadvantages:** • exact component values • high turn-on current pulse

WAGO Relay Modules

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.

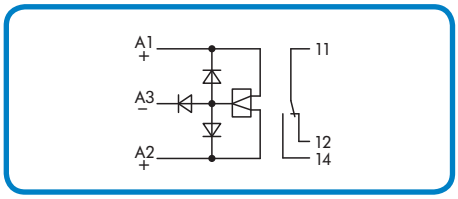


More details upon request.

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.

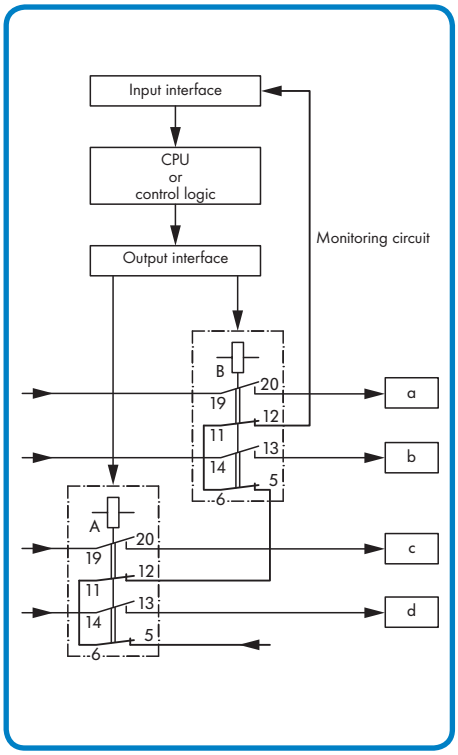
During the triggering process, one of two status indicators displays the actual contact position. The current pulse switching relay is available for direct and alternating voltage.

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: 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:

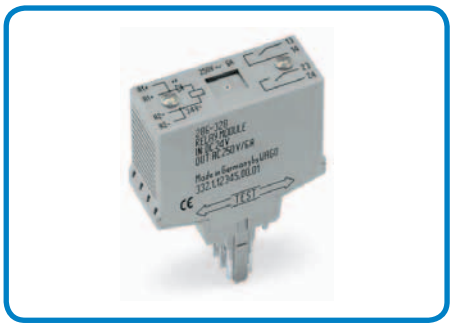
- long service life, because there is no mechanical wear
- high switching frequency because of fast switching times
- unaffected by vibrationn
- no contacts
- "noiseless" switching
- low driving capacity.

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.

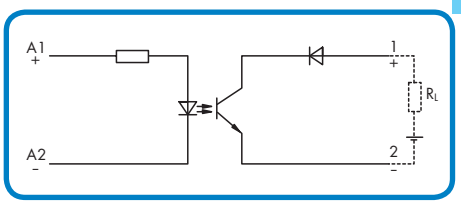
The optocoupler modules are available in WAGO's component plug technology that is designed to plug directly into rail-mounted carrier terminal blocks.
The terminal blocks are fitted to the carrier rail and offer all advantages of CAGE CLAMP® technology, which provides safe and maintenance-free connection of the signal wires for cross sections ranging from 0.08 mm² to 2.5 mm²/ 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.

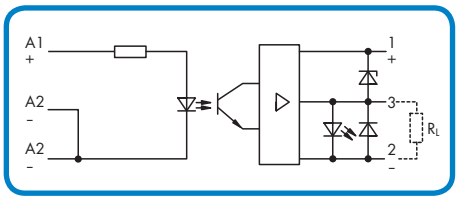


Input circuit

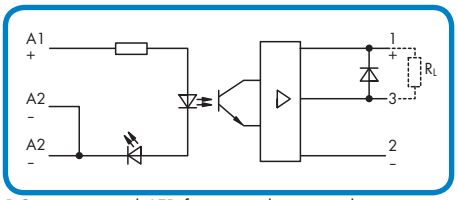
According to the type, triggering the optocoupler modules is performed via direct voltage (residual ripple RR <6%) or AC voltage (50–60 Hz).
In the DC type, a reverse voltage protection diode is always provided; in the AC type optocoupler element, a rectifier is included.
The optocoupler modules are equipped with a LED function indication at either the input side or at the load side, as shown in the wiring diagram.



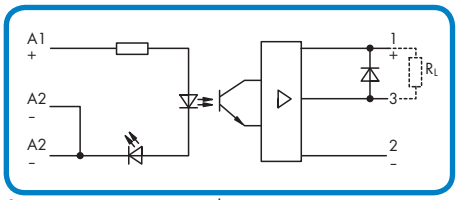
2-wire output



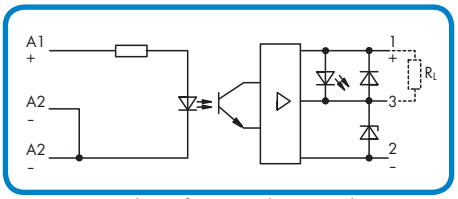
3-wire output positive switching



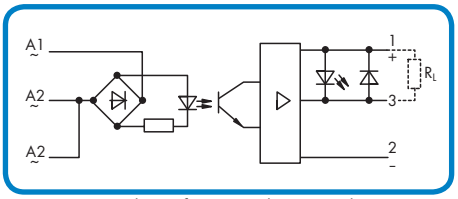
DC triggering with LED function indication in the triggering circuit



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

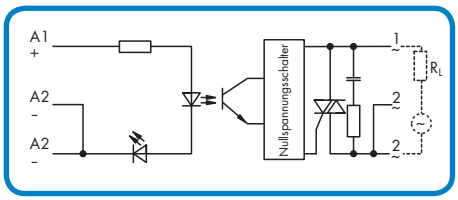
In addition to these different functional outputs, the output voltage range an the maximum switching current must be observed. Also note the correct polarity. In order to protect the output transis tors, inductive loads must always be equipped with a protective circuit, e.g., a recovery diode. For other 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.



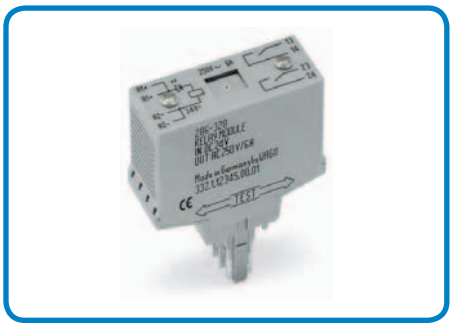
In order to avoid high turn-on currents, the AC output is equipped with a zero-voltage switch which turns on the load at the zero-voltage point. In the current zero-crossing, the Triac will cut off the load, in case inductive loads do not exceed the maximum switching voltage and the maximum switching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

WAGO Analog Signal Conditioning Modules

Transducers 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.

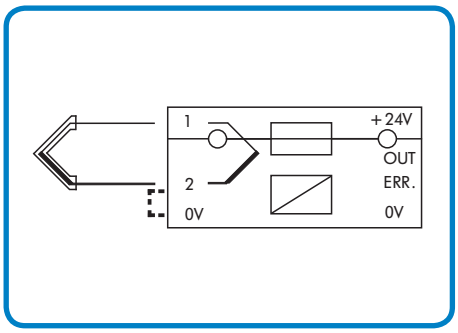
The transducer/transmitter may also linea rize non-linear signals internally, before transmission. In order to prevent these relatively low power signals from dis tortion, WAGO *AUTOMATION* offers a complete range of modules for measurement and transmission of these signals, both with and without isolation 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 protectect 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 mm² to 2.5 mm²/AWG 28-12.

Temperature transducers

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 alread 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 compen sation. 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 assemble 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

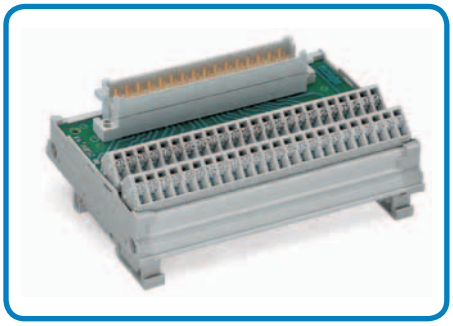
The interface modules are standard in a universal mounting carrier for DIN 35 carrier rails with the following connectors:

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.

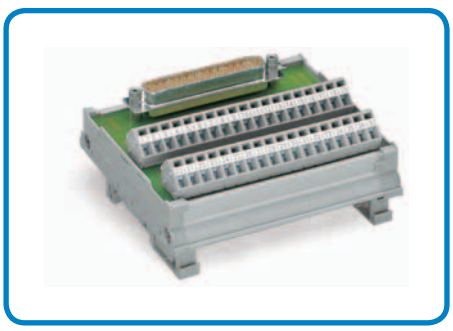
Connectors acc. to IEC 60603/DIN 41 612, types C, E and F

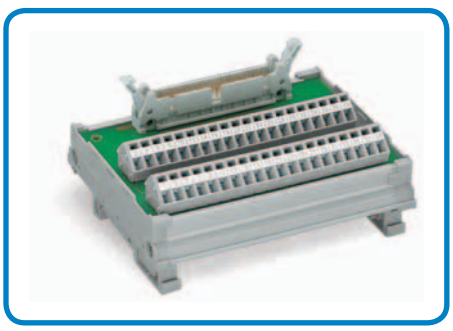
These connectors are frequently used for compact input and output component groups and are available for 32-, 48- and 64-pole pin and socket connectors, as well as for mating connectors with solder and IDC contacts.



Ribbon cable 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 PowerBoost (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

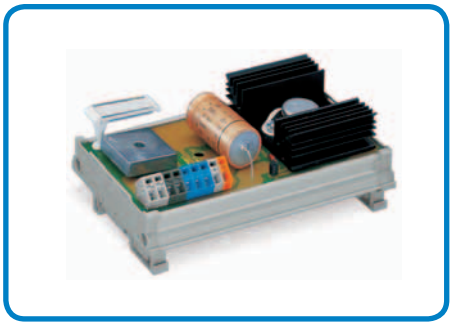
Single-phase, primary switch mode, industrial power supplies provide a with wide input voltage range and robust metal housings. The CLASSIC Power Supplies have a stabilized, adjustable output voltage and provide short-circuit and overload protection. The devices achieve high efficiency and the integrated 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, ± 12 VDC and ± 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 prevent 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

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

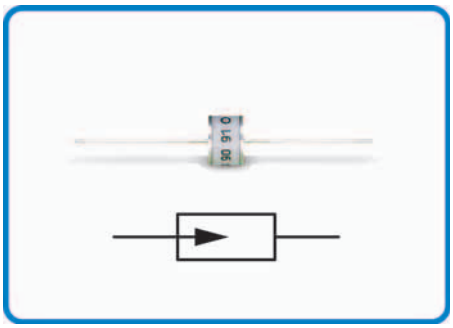
On-the-line overvoltages cause most operating failures for measuring, control, data and power lines. Failure of electronic and semiconductor components due to surges can cause operating interruptions. The overvoltage (also called transients) can be generated by switching electrical equipment on or off or by lighting 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.

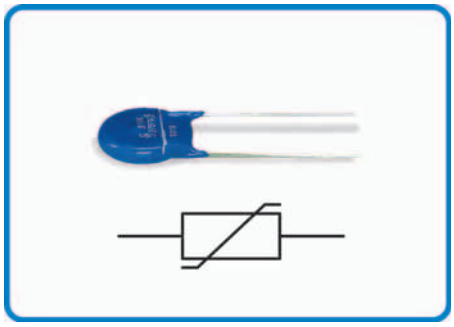


Once the ignition voltage is reached, resistance drops due to ionization and current begins to flow. The resistance of the device drops from high to low as it conducts. The voltage across the device after the arc is struck is typically 10 V ... 30 V. Therefore, the current will continue to flow until 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

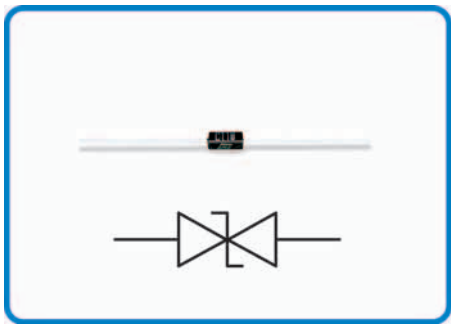
A varistor is a voltage-dependent resistor. A common type of varistor is referred to as an MOV (Metal Oxide Varistor) due to its method of construction.

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)

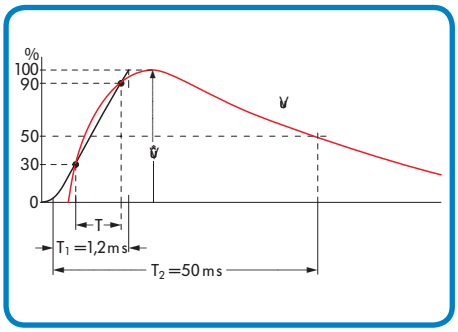


These devices have electrical characteristics similar to Zener diodes, but are rated for surge currents.

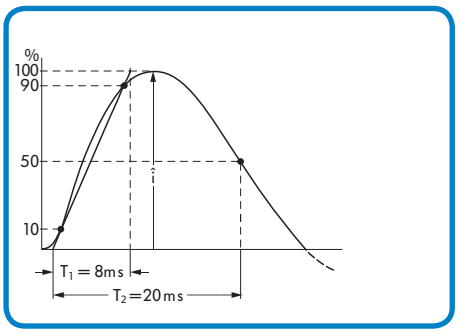
Once the rated breakdown voltage is exceeded (in the non-conductive direction), the diode becomes a conductor. The suppressor diode differs from a Zener in its higher current carrying capability and faster response time (in the picosecond range).

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.



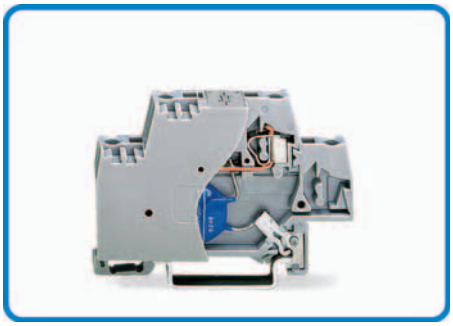
Voltage pulses 1.2 /50
per IEC 60060-1 /DIN VDE 0432 P. 2



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 0.08mm²/AWG 28 to 2.5mm²/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_{BN})

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_{Bmax})

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_N)

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

Nominal discharge current (I_{SN})

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_{Smax})

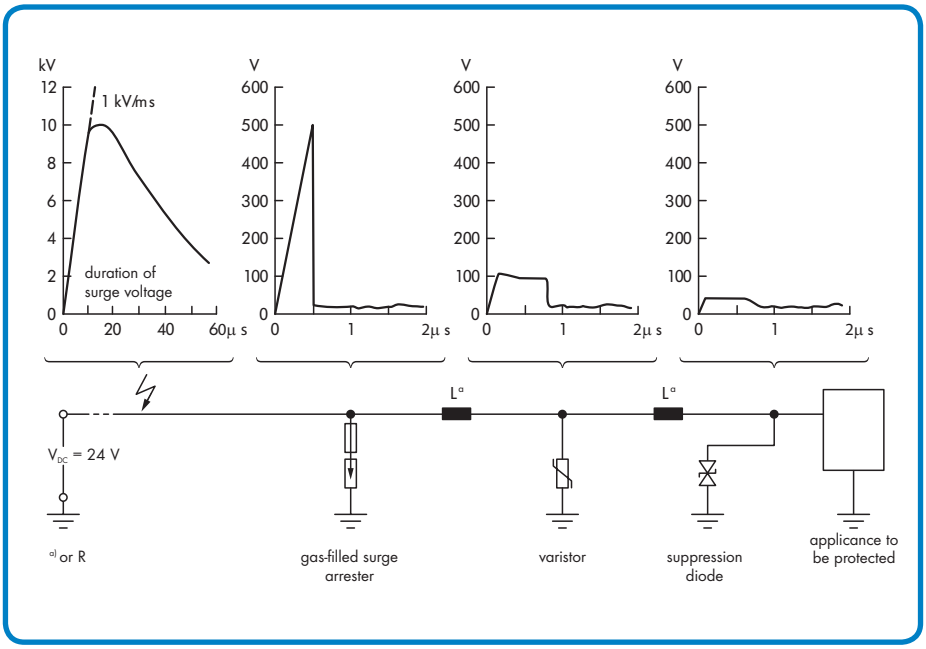
The maximum surge current I_{Smax} defines the maximum value of a current having the 8/20µs waveform, which can flow through the surge arrester once without destroying it.

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.

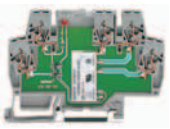
Response time (t_{an})

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 1kV/µs.



Function diagram of a multi-stage surge voltage protection module

Overview: Relay Modules


859 Series

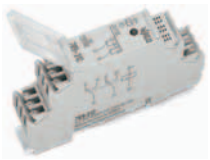

857 Series


788 Series


858 Series


288 and 287 Series


286 Series


789 Series

Relays with Changeover Contacts

Nominal voltage	5 V		12 V		24 V				48 V		60 V		115 V		230 V	
1 changeover contact	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
DC	859-302	32	859-303	32	859-304	32	286-304	113	859-305	32	859-306	32	859-307	32	859-308	32
	286-302	113	857-303	50	859-314	33	286-394	114	857-305	50	857-306	50	859-317	33	859-318	35
			788-303	72	859-390	36	286-380	121	788-305	72	788-306	72	859-391	37	857-308	50
			286-303	113	859-398	37	286-381	121	788-342	82	286-306	113	857-307	50	857-318	50
			287-853	105	859-392	38	288-304	101	286-305	113			857-317	50	286-308	113
					857-304	50	287-774	103	286-395	114			788-307	72		
					857-314	50	287-804	104					788-344	82		
					788-304	72	287-824	104					286-307	113		
					788-404	74	287-854	105								
					788-324	76	288-380	107								
					788-354	78	789-304	152								
					788-341	82	789-1341	156								
AC					788-506	73							859-360	34	859-359	34
					788-541	83							859-367	35	859-368	36
													788-507	73	788-508	73
													788-607	75	788-608	75
													788-543	83	788-528	77
													286-507	113	788-544	83
															286-508	113
															286-904	120
															288-508	101
															288-762	102
															789-508	152
															789-1544	157
AC/DC	286-502	113	859-353	32	859-354	32	286-504	113	859-355	32	286-506	113	859-357	32	859-358	32
			286-503	113	857-354	50	286-594	114	286-505	113			857-357	50	857-358	50
					857-364	50	288-554	101					857-367	50	857-368	50
							288-504	101					288-761	102		
							288-758	102								
							287-814	104								
							287-834	104								
							789-504	152								

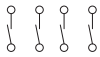
Nominal voltage	5 V		12 V		24 V				48 V		60 V		115 V		230 V	
2 changeover contacts	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
DC	286-310	115	788-311	72	788-312	72	286-312	115	788-313	72	788-314	72	788-315	72	286-316	115
			286-311	115	788-412	74	286-384	119	788-347	82	286-314	115	788-349	82	858-328	95
					788-334	76	288-312	102	858-325	95			858-327	95		
					788-384	80	288-437	108	286-313	115			286-315	115		
					788-346	82	789-312	153	789-313	153			789-315	153		
					858-324	95	789-1346	156								
AC	286-510	115	286-511	115	788-512	73	286-512	115	286-513	115	286-514	115	788-515	73	788-516	73
					788-546	83							788-615	75	788-616	75
													788-548	83	788-538	77
													286-515	115	788-549	83
													789-515	153	858-528	95
															286-516	115
															789-516	153
															789-1549	157
AC/DC							288-512	102								
							789-512	153								

Nominal voltage	5 V		12 V		24 V				48 V		60 V		115 V		230 V	
4 changeover contacts	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
DC					858-304	92	286-375	118					858-392	94	858-391	94
					858-314	92										
					858-390	94										
AC													286-578	118	858-508	93
															858-518	93
															286-579	118

Relays with Make Contacts

Nominal voltage	5 V		12 V		24 V		48 V		60 V		115 V		230 V	
1 make contact	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
DC					286-364 788-355 288-364 288-320 287-475 287-474 286-376 789-571	112 79 100 106 106 106 119 158	286-365	112	286-366	112				
AC					286-564	112					286-566	112	286-567 789-570	112 158
AC/DC					857-1330 288-564	52 100	288-565	100			288-567	100		

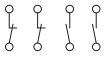
Nominal voltage	5 V		12 V		24 V		48 V		60 V		115 V		230 V	
2 make contacts	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
 DC	286-326	116	286-327	116	286-328	116	286-329	116	286-330	116			286-332	116
AC														
AC/DC														

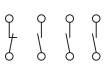
Nominal voltage	5 V		12 V		24 V		48 V		60 V		115 V		230 V	
4 make contacts	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
 DC	286-350	118	286-351	118	286-352 789-352	118 154	286-353	118	286-354	118	286-355	118		
AC					286-552	118					286-555	118	286-556	118
AC/DC			789-551	154	789-552	154								

Relays with break contacts and make contacts

Nominal voltage	5 V		12 V		24 V		48 V		60 V		115 V		230 V	
1 break contact	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
 DC					286-368	112	286-369	112	286-370	112				
AC					286-568	112								
AC/DC					288-568	100								

Nominal voltage	5 V		12 V		24 V		48 V		60 V		115 V		230 V	
1 break contact/ 1 make contact	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
 DC	286-318	116	286-319	116	286-320 286-906 286-571	116 120 121	286-321	116	286-322	116			286-324	116
AC					286-520	116							286-570	121
AC/DC														

Nominal voltage	5 V		12 V		24 V		48 V		60 V		115 V		230 V	
2 break contacts/ 2 make contacts	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
 DC	286-334	117	286-335	117	286-336 789-336	117 155	286-337	117	286-338	117	286-339	117		
AC					286-536	117							286-540	117
AC/DC			789-535	155	789-536	155								

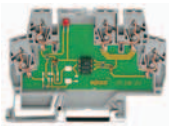
Nominal voltage	5 V		12 V		24 V		48 V		60 V		115 V		230 V	
1 break contact/ 3 make contacts	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
 DC	286-342	117	286-343	117	286-344	117	286-345	117	286-346	117	286-347	117		
AC					286-544	117					286-547	117	286-548	117
AC/DC														

Nominal voltage	5 V		12 V		24 V		48 V		60 V		115 V		230 V	
Safety relays 4 break contacts/ 4 make contacts	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
DC	288-412 288-422	109 109	288-413 288-423	109 109	288-435	108								
AC													288-418 288-428	109 109
AC/DC					288-414 288-424	109 109	288-415 288-425	109 109	288-416 288-426	109 109				

Overview: Timing Relays, Optocouplers and Special Functions

Timing Relay with Changeover Contact

Nominal voltage 1 changeover contact	Timer Range	On-Delay Item No.	Page	Off-Delay Item No.	Page	Pulsing Item No.	Page	Pulse Lengthening Item No.	Page
24 VDC	0.1 s ... 1 s	286-600	122	286-440	124	286-460	125	286-426	123
	1 s ... 10 s	286-602	122	286-442	124	286-462	125	286-427	123
	10 s ... 100 s	286-604	122	286-444	124	286-464	125	286-428	123
230 VAC	0.1 s ... 1 s	286-610	122	286-446	124	286-470	125		
	1 s ... 10 s	286-612	122	286-448	124	286-472	125		
	10 s ... 100 s	286-614	122	286-450	124	286-474	125		
Multirange Timing Relay 24 VAC, 115 VAC, 230 VAC, 24 VDC	0.3 s ... 3 s; 3 s ... 12 s 10 s ... 100 s; 100 s ... 800 s	286-616	126						
Multifunction Timing Relays 24 VDC	0.3 s ... 3 s; 3 s ... 12 s 10 s ... 100 s; 100 s ... 800 s	286-640 127 286-640/004-000 150							



859 Series



857 Series



788 Series



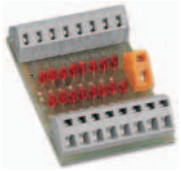
286 Series

Optocouplers

Function	Input	Output	Max. Perm. Continuous. Current	859 Series Item No.	Page	857 Series Item No.	Page	788 Series Item No.	Page	286 Series Item No.	Page
2-Wire Optocouplers	5 VDC	24 VDC	100 mA	859-795	40						
		60 VDC		859-793	39						
	24 VDC	24 VDC		859-796	40						
				859-794	41						
			2 A			857-724	58				
			3 A	859-730	42						
				859-740	42						
			3.5 A					788-700	84		
			5 A					788-701	84		
		2 x 24 VDC	0.5 A			857-1432	61				
		48 VDC	100 mA			857-704	54				
		60 VDC	100 mA	859-791	39					286-791	133
										286-794	134
		240 VAC	1 A			857-714	56				
								788-720	85		
		2 x 24 VDC	2 x 250 mA							286-790	135
	2 x 24 VDC									286-792	134
		2 x 3 ... 30 VDC	3 A			857-1430	60				
		2 x 9 .. 60 VDC	0.1 A			857-1494	60				
	24 V AC/DC	12 ... 275 VAC	2 A					788-721	85		
	115 V AC/DC	48 VDC	100 mA			857-707	54				
		240 VAC	1 A			857-717	56				
		24 VDC	2 A			857-727	58				
	230 V AC/DC	48 VDC	100 mA			857-708	55				
		240 VAC	1 A			857-718	57				
		24 VDC	2 A			857-728	59				
2-Wire Optocouplers with zero volt switch	5 VDC	230 VAC	0.5 A	859-902	47						
			1 A							286-732	132
	12 VDC									286-733	132
	24 VDC									286-734	132
3-Wire Optocouplers positive switching	5 VDC	24 VDC	0.5 A	859-752	45					286752/002000	131
	24 VDC	5 VDC		859-756	46					286-750	128
		15 VDC								286-751	128
		24 VDC		859-758	46					286-752	128
			4 A							286-723	131
		24 VDC programmable (L or H)	300 mA							286-938	135
	230 VAC	5 VDC	0.5 A							286-754	129
		15 VDC								286-756	129
		24 VDC		859-772	43					286-758	129
3-Wire Optocouplers negative switching	5 VDC	24 VDC	0.5 A	859-702	44						
		110 VDC	1.6 A							286-726	132
	12 VDC									286-728	132
	24 VDC	5 VDC	0.5 A	859-706	45					286-700	128
		15 VDC								286-701	128
		24 VDC		859-708	44					286-702	128
			2 A							286-720	130
			3 A	859-720	41						
			5 A							286-721	130
		110 VDC	1.6 A							286-730	132
	230 VAC	5 VDC	0.5 A							286-704	129
		15 VDC								286-706	129
		24 VDC		859-712	43					286-708	129
	10 ... 30 V AC/DC		1 ... 500 mA							286-725	133
Power Optocouplers	S0 current meter interface	AC Output								286-740	136
		DC Output								286-741	136
Supply Module	passive S0 current meter interfaces									286-742	137



286 Series



289 Series

Special Functions

Funktion			289 / 789 Series		286 Series	
			Item No.	Page	Item No.	Page
NAMUR Switching Amplifiers	with relay output 250 VAC /120 VDC				286-880	138
	with transistor output 24 VDC				286-881	138
Current Flow Monitoring Modules	AC/DC 15 mA DC/35 mA ... 300 mA AC	Optocoupler			286-659	140
	AC 80 mA ... 6 A	Transformer			286-661	140
	AC 0.2 A ... 3 A	1 changeover contact			286-664	141
	AC 1 A ... 10 A	1 changeover contact			286-665	141
	DC 0.4 A ... 1.5 A	1 make contact			286-662	141
Switching Modules	1-pole changeover	with changeover rocker switch			286-895	139
		with momentary switch			286-896	139
	manual-0-automatic switch		789-323	159		
		with monitoring contact	789-325	160		
		with switch position monitoring	789-329	161		
Bridge Rectifiers	230 V / 1 A AC				280-804/281-419	143
	230 V / 1 A AC	with varistor protection			286-840	142
	24 V / 1 A AC				286-830	142
Fuse Module for replaceable microfuses 5 x 20 mm	Operating voltage 24 V AC/DC	Blown fuse indication, LED green			286-890	144
	Operating voltage 230 V AC/DC	Blown fuse indication, neon lamp			286-891	144
Diode Gate Modules	common anode	3 diodes			286-803	145
		5 diodes			286-805	145
		7 diodes			286-807	145
		9 diodes			286-809	145
	common cathode	3 diodes			286-813	145
		5 diodes			286-815	145
		7 diodes			286-817	145
		9 diodes			286-819	145
Polarized Diode Gate	common anode	14 diodes	289-121	212		
	common cathode	14 diodes	289-111	212		
Open Diode Gate	with 8 diodes, individual connection possible	Diode 1 N 4007	289-101	210		
		Diode P 600 B	289-103	210		
	with 9 diodes, individual connection possible	Diode 1 N 5408	289-105	211		
AND Gate Module	with 6 inputs, relay output with 1 make contact				286-826	146
Flip-Flop Module	Operating voltage 24 VDC				286-825	147
LED Indicator Module	with 8 LEDs	common cathode			286-822	146
LED Gate Module	with 16 LEDs	common anode	289-202	213		
		common cathode	289-201	213		
Lamp Test Circuit	with 20 diodes for testing 10 lamps		289-151	213		
Open Resistor Gate	with 8 resistors, individual connection possible		289-114	214		
Resistor Gate	with 1 end commoned, 8 resistors		289-113	214		
Fault Indicator Modules, with reset	Auxiliary and fault indication voltage 230 VAC	Alarm with continuous light			286-681	148
	60 VDC	Alarm with continuous light			286-684	148
	24 VDC	Indication of original fault with single flashing light			286-683	149
Connection Modules for sensors and actuators	8 x 3-conductor sensors		289-664	208		
		LED indicator for positive switching	289-665	208		
		LED indicator for negative switching	289-666	208		
	8 actuators		289-667	208		
		with ground (earth) contact	289-671	208		

Overview: Transducers

JUMPFLEX®– Transducers

Function	Input Signal (switchable in a calibrated way)	Output Signal (switchable in a calibrated way)	Configuration	Electrical Isolation	Supply Voltage V_N	Item No.	Page
Isolation Amplifier, Configurable	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 0 ... 10 V, 2 ... 10 V, 1 ... 5 V	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 0 ... 10 V, 2 ... 10 V, 1 ... 5 V	DIP switch	3 ways, 2.5 kV	24 VDC	857-400	218
Isolation Amplifier, Configurable with Digital Output	-10...+10 V, -20...+20 mA, 0...+30 V (31.2 V (V_{IN}) 100 mA (I_{IN})	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V, 0... 5 V, 1 ... 5 V, 0 ... 10 mA, 2 ... 10 mA	DIP switch or configuration software	3 ways, 2.5 kV	24 VDC	857-401	220
Universal Isolation Amplifier Configurable	± 60/100/150/300/500 mV; 0 ... 60/100/150/300/500 mV ± 1/5/10/100/200 V 0 ... 1/5/10/100/200 V 1 ... 5 V, 2 ... 10 V ± 0.3/1/5/10/20/50/100 mA 0 ... 0.3/1/5/10/20/50/100 mA 2 ... 10 mA, 4 ... 20 mA	± 5 V, 0 ... 5 V, 1 ... 5 V, ± 10 V, 0 ... 10 V, 2 ... 10 V ± 10 mA, 0 ... 10 mA, 2 ... 10 mA, ± 20 mA, 0 ... 20 mA, 4 ... 20 mA	DIP switch or Push/Slide Switch	3 ways, 2.5 kV	24 VDC	857-402	222
Bipolar Isolation Amplifier	± 5 V, 0 ... 5 V, 1 ... 5 V, ± 10 V, 0 ... 10 V,2 ... 10 V, ± 10 mA, 0 ... 10 mA, 2 ... 10 mA, ± 20 mA, 0 ... 20 mA, 4 ... 20 mA	± 5 V, 0 ... 5 V, 1 ... 5 V, ± 10 V, 0 ... 10 V,2 ... 10 V, ± 10 mA, 0 ... 10 mA, 2 ... 10 mA, ± 20 mA, 0 ... 20 mA, 4 ... 20 mA	DIP switch	3 ways, 2.5 kV	24 VDC	857-409	224
Isolation amplifiers, fixed setting	0(4) ... 20 mA	0(4) ... 20 mA	–	3 ways, 2.5 kV	24 VDC	857-411	226
	0(2) ... 10 V	0(2) ... 10 V				857-412	
	0 ... 10 V	0 ... 20 mA				857-413	
	0 ... 10 V	4 ... 20 mA				857-414	
	0 ... 20 mA	0 ... 10 V				857-415	
	4 ... 20 mA	0 ... 10 V				857-416	
Repeater Power Supply	0 ... 20 mA, 4 ... 20 mA	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 0 ... 10 V, 2 ... 10 V, 1 ... 5 V	DIP switch	3 ways, 2.5 kV	24 VDC	857-420	228
Repeater Power Supply HART	4 ... 20 mA	4 ... 20 mA	-	3 ways, 2.5 kV	24 VDC	857-421	230
Signal Splitter	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 0 ... 10 V, 2 ... 10 V, 1 ... 5 V	2 x 0(4) ... 20 mA	DIP switch	4 ways, 2.5 kV	24 VDC	857-423	232
Loop-Powered Isolation Amplifier	± 5/10/20 mA 0 ... 5/10/20 mA 2 ... 10 mA, 4 ... 20 mA ± 1/5/10/20/2 V 0 ... 1/5/10/20/2 V 1 ... 5 V, 2 ... 10 V ±	4 ... 20 mA	DIP switch	2 ways, 2.5 kV	–	857-450	234
Passive Isolator 1-Channel	0(4) ... 20 mA	0(4) ... 20 mA	–	2 ways, 2.5 kV	24 VDC	857-451	236
Passive Isolator 2-Channel	0(4) ... 20 mA	0(4) ... 20 mA	–	2 ways, 2.5 kV	24 VDC	857-452	237

Function	Input Signal	Connection	Output Signal	Configuration	Electrical Isolation	Supply Voltage V_N	Item No.	Page
Temperature Transducers for RTD	Pt 100, Pt 200, Pt 500, Pt 1000 0 ...1 kΩ, 0 ...4.5 kΩ	2 wire, 3 wire, 4 wire	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V, 0 ... 5 V, 1 ... 5 V, 0 ... 10 mA, 2 ... 10 mA	DIP switch	3 ways, 2.5 kV	24 VDC	857-800	238
Temperature Transducers for RTD	Pt 100, Pt 200, Pt 500, Pt 1000 0 ...1 kΩ, 0 ...4.5 kΩ	2 wire, 3 wire, 4 wire	0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V, 0 ... 5 V, 1 ... 5 V, 0 ... 10 mA, 2 ... 10 mA	DIP switch or configuration Software	3 ways, 2.5 kV	24 VDC	857-801	240
Temperature Transducers for Thermocouples	Thermocouples of types J and K		0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V, 0 ... 5 V, 1 ... 5 V, 0 ... 10 mA, 2 ... 10 mA	DIP switch	3 ways, 2.5 kV	24 VDC	857-810	242
Temperature Transducers for Thermocouples	Thermocouples of types J and K		0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V, 0 ... 5 V, 1 ... 5 V, 0 ... 10 mA, 2 ... 10 mA	DIP switch or configuration Software	3 ways, 2.5 kV	24 VDC	857-811	244
Ni Transducer	Ni sensors		0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V	DIP switch	2 ways, 2.5 kV	24 VDC	857-818	246
Millivolt Transducer	-100 mV ... +100 mV, 0 mV ... 200 mV to 0 mV ... 1000 mV (in steps of 100)		0 ... 20 mA, 4 ... 20 mA, 0 ... 10 V, 2 ... 10 V, 0... 5 V, 1 ... 5 V, 0 ... 10 mA, 2 ... 10 mA	DIP switchor configuration Software	3 ways, 2.5 kV	24 VDC	857-819	248
KTY Transducer	KTY sensors		0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V	DIP switch	2 ways, 2.5 kV	24 VDC	857-820	250
Potentiometer Position Transducer	Potentiometers and resistors		0 ... 10 V, 2 ... 10 V, 0 ... 5 V, 1 ... 5 V, 0 ... 20 mA, 4 ... 20 mA 0 ... 10 mA, 2 ... 10 mA	DIP switch or Push/Slide Switch	2 ways, 2.5 kV	24 VDC	857-809	252
Frequency transducer	Frequency generators, NAMUR sensors, NPN/PNP transistor outputs; mechanical contacts		0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V, 0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA	DIP switch	2 ways, 2.5 kV	24 VDC	857-500	256
Threshold Value Switch	-10...+10 V, -20...+20 mA, 0...+30 V (31.2 V (V_{IN}) 100 mA (I_{IN})		1 changeover contact 1 digital switching output	DIP switch, Push/Slide Switch, configuration Software	4 ways, 2.5 kV	24 VDC	857-531	260
Current transducer	0 ... 1 A AC/DC; 0 ... 5 A AC/DC		0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V, 0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA	DIP switch	2 ways, 2.5 kV	24 VDC	857-550	262
Rogowski Transducer	RC1 500 A; RC2A 2000 A; RC2B		0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V, 0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA	DIP switch	2 ways, 2.5 kV	–	857-552	264



786 Seriea

Signal Conditioning Modules

Function	Input	Output	Electrical Isolation	Supply Voltage V_N	Item No.	Page
Signal Conditioning Modules for Standard Signals	0 ... 10 V	0 ... 10 V	2 ways, 4 kV	24 VDC	786-301	278
			3 ways, 4 kV		786-321	278
		0 ... 20 mA	2 ways, 4 kV		786-302	278
			3 ways, 4 kV		786-322	278
		4 ... 20 mA	2 ways, 4 kV		786-303	278
			3 ways, 4 kV		786-323	278
	0 ... 20 mA	0 ... 10 V	2 ways, 4 kV	24 VDC	786-304	279
			3 ways, 4 kV		786-324	280
		0 ... 20 mA	2 ways, 4 kV		786-305	279
			3 ways, 4 kV		786-325	280
		4 ... 20 mA	2 ways, 4 kV		786-306	279
			3 ways, 4 kV		786-326	280
	4 ... 20 mA	0 ... 10 V	2 ways, 4 kV	24 VDC	786-307	279
			3 ways, 4 kV		786-337	280
		0 ... 20 mA	2 ways, 4 kV		786-308	279
			3 ways, 4 kV		786-338	280
		4 ... 20 mA	2 ways, 4 kV		786-309	279
			3 ways, 4 kV		786-339	280



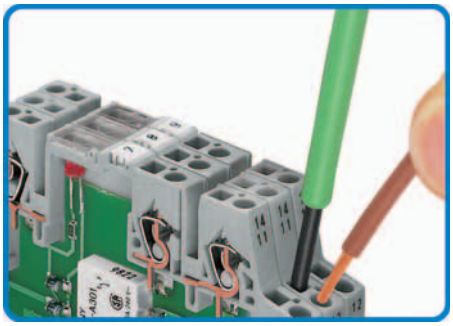
286 Series

Temperature Transducers

Function	Input	Temperature Range	Connection	Output	Electrical Isolation	Supply Voltage V_N	Item No.	Page
Temperature Transducers	Pt 100	0 °C ... 100 °C	2 wire	0 ... 10 V	–	24 VDC	286-860	272
			3 wire				286-870	272
			2 wire	0 ... 20 mA			286-861	272
			3 wire				286-871	272
			2 wire	4 ... 20 mA			286-862	272
			3 wire				286-872	272
		-30 °C ... +150 °C	2 wire	0 ... 10 V	–	24 VDC	286-860/150-030	274
			3 wire				286-870/150-030	274
			2 wire	0 ... 20 mA			286-861/150-030	274
			3 wire				286-871/150-030	274
			2 wire	4 ... 20 mA			286-862/150-030	274
			3 wire				286-872/150-030	274
		0 °C ... 300 °C	2 wire	0 ... 10 V	–	24 VDC	286-860/000-300	275
			3 wire				286-870/000-300	275
			2 wire	0 ... 20 mA			286-861/000-300	275
			3 wire				286-871/000-300	275
			2 wire	4 ... 20 mA			286-862/000-300	275
			3 wire				286-872/000-300	275
	Pt 1000	0 °C ... 100 °C	2 wire	0 ... 10 V	–	24 VDC	286-873	276
				0 ... 20 mA			286-874	276
				4 ... 20 mA			286-875	276
	Thermocouple Type J	0 °C ... 750 °C		0 ... 10 V	–	24 VDC	286-863	273
				0 ... 20 mA			286-865	273
				4 ... 20 mA			286-867	273
	Thermocouple Type K	0 °C ... 1000 °C		0 ... 10 V	–	24 VDC	286-864	273
				0 ... 20 mA			286-866	273
				4 ... 20 mA			286-868	273

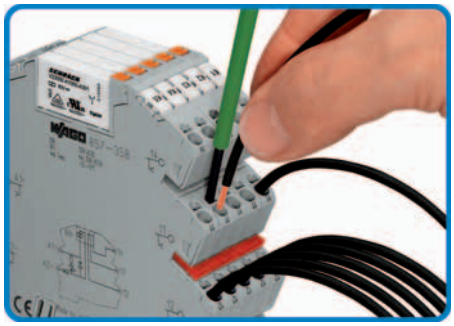
Installation Notes

859 Series
Relay Modules and
Optocoupler Modules



Connection of conductor

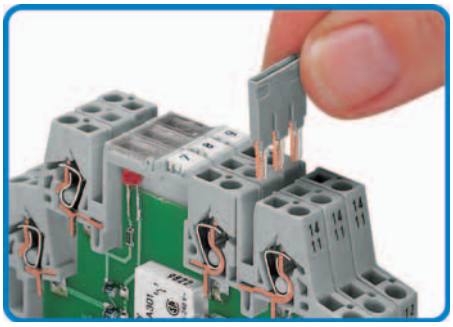
857 Series
JUMPFLEX®– Transducers / Relay and
Optocoupler Modules



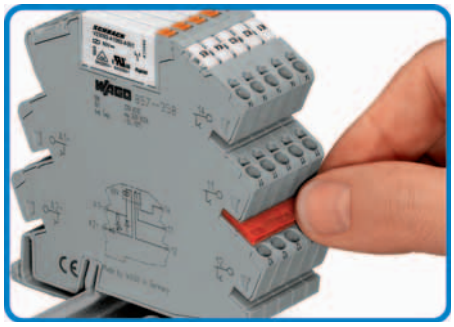
Connection of conductor



Operation of the relay ejector



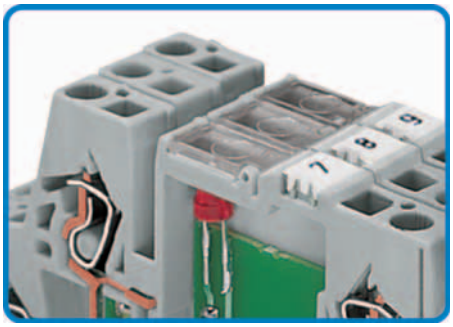
Easy commoning using
adjacent jumpers



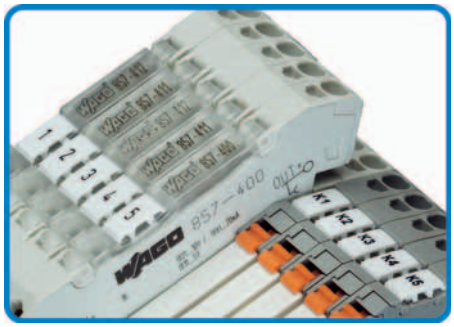
Easy commoning using
adjacent jumpers



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

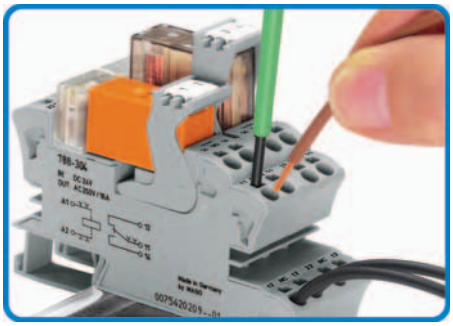


Marking using Miniature quick
marking card

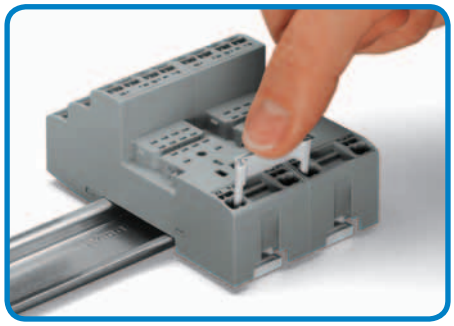


Marking using WMB Multi markers

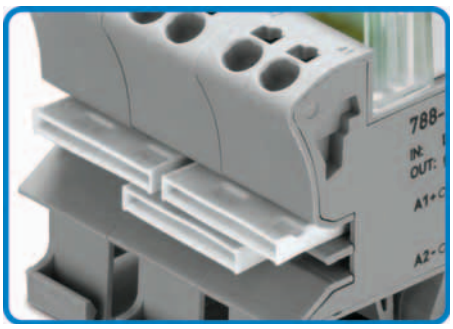
788 Series
Sockets for Miniature Switching Relay / Optocoupler



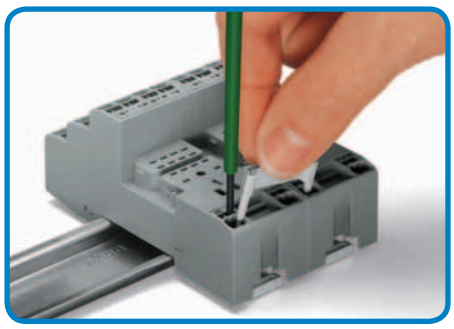
Connection of conductor



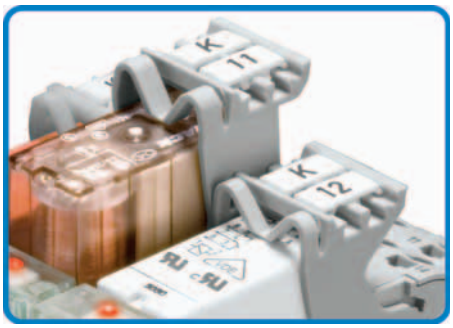
Easy commoning using adjacent jumpers



Easy commoning using adjacent jumpers



Remove jumper with screwdriver

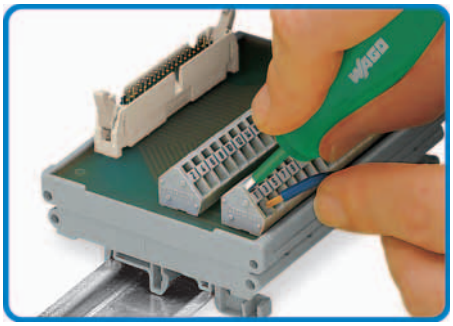


Marking using WMB Multi markers and group marker carriers

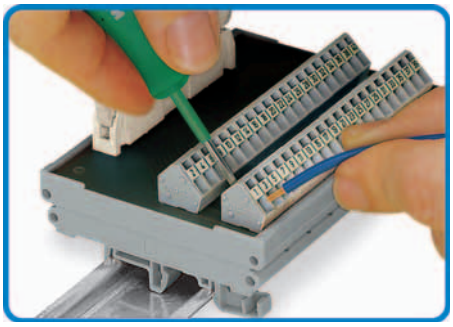
858 Series
Sockets with Industrial Relay

Installation Notes

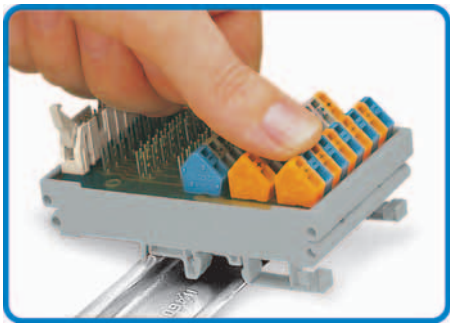
287 / 288 Series Mounting Carriers with Miniature Switching Relay



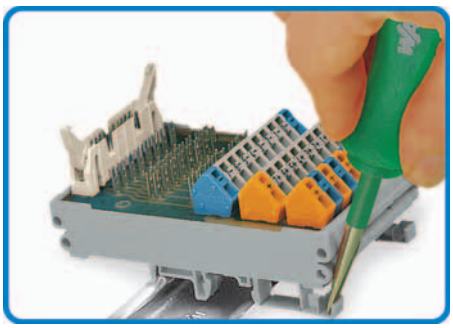
Connection of conductor "front-entry"



Connection of conductor "side-entry"

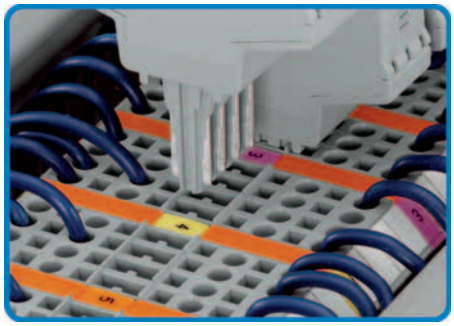


Assembly of a module on the carrier rail

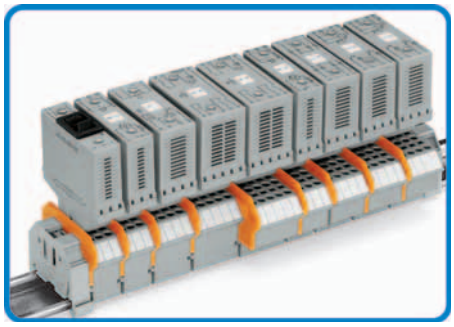


Removal of a module from the carrier rail

286 / 786 Series Pluggable Function Modules



Coding ensures correct polarity



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

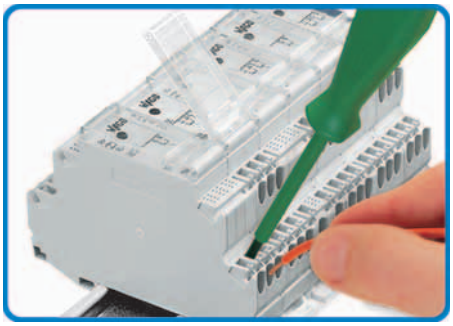


Marking using WMB Multi markers

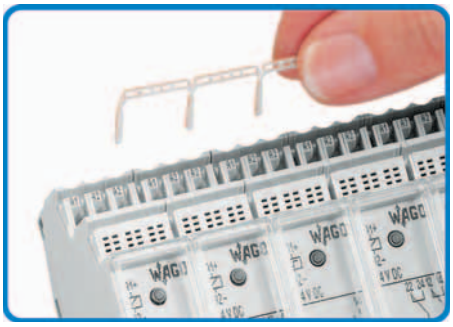


Easy testing at touchproof contacts

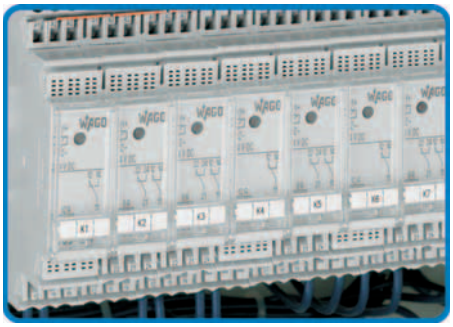
789 Series Relay Modules in DIN-Rail Mounted Enclosure



Connection of conductor

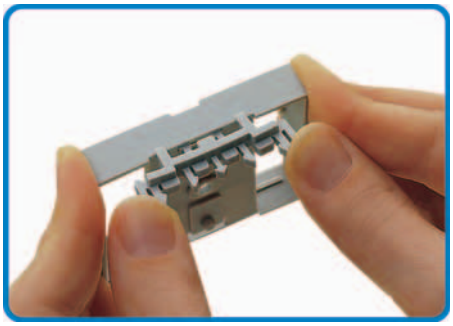


Easy commoning using adjacent jumpers

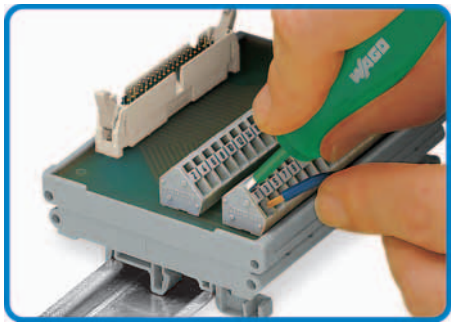


Marking using Miniature quick marking card

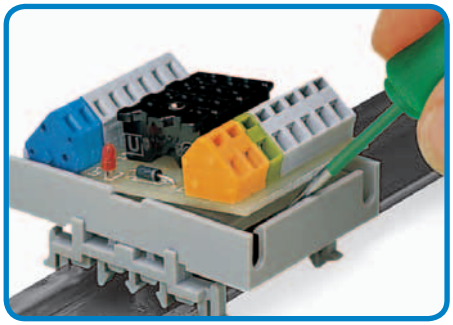
289 Series Interface Modules



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



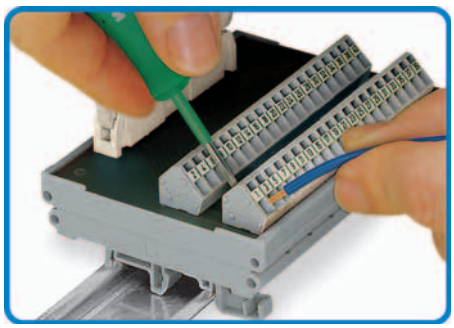
Fitting of an individual module to the mounting carrier



Removal of an individual module from the mounting carrier

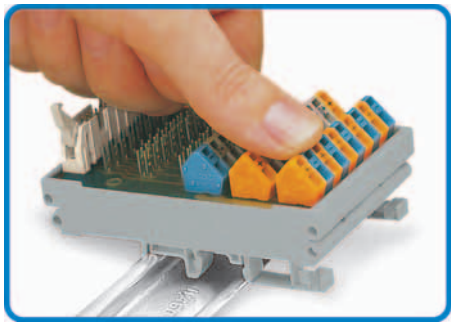
289 Series Interface Modules

Connection of conductor "front-entry"

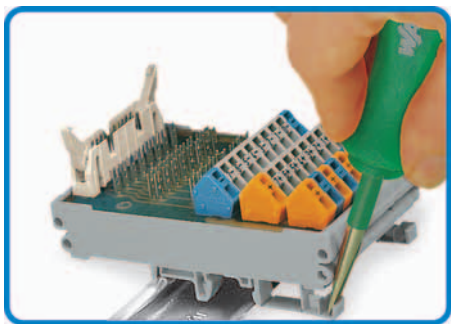


Connection of conductor "side-entry"

289 Series Interface Modules



Assembly of a module on the carrier rail

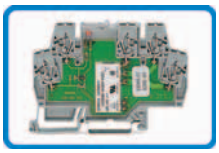


Removal of a module from the carrier rail



WAGO Application: Cerestar (Cargill GmbH), Barby, Saxony-Anhalt, Germany
Manufacturer of starches and starch derivatives.
WAGO Products:
Matrix Patchboards and Pluggable Electronic Modules





859 Series

Rail-Mounted Terminal Blocks with Miniature Switching Relay 32 – 38
Rail-Mounted Terminal Blocks with Optocoupler 39 – 47
Rail-Mounted Terminal Blocks with Miniature Switching Relays and Optocouplers with an Extended Input Voltage and Operating Temperature Rangeh 48
Accessories, 859 Series 49



857 Series

JUMPFLEX® Relay Socket with Miniature Switching Relay 50 – 52
JUMPFLEX® Relay Socket with Solid State Relay 54 – 61
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Miniature Switching Relays, Solid State Relays, Sockets, Accessories, 857 Series 68 – 71



788 Series

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Sockets with Industrial Relay 92 – 95
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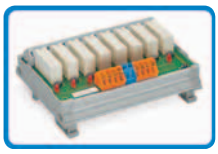

287/288 Series

Mounting Carriers with Miniature Switching Relay 100 – 111



286 Series

Pluggable Modules – Relays, Time Relays, Optocouplers, S0 Optocouplers, S0 Supply Module, NAMUR Switching Amplifiers, Current Flow Monitoring, Switches, Bridge Rectifiers, Fuses, Diode Gates, AND Gate and LED Indicator, Flip-Flop, Fault Indication 112 – 151



789 Series

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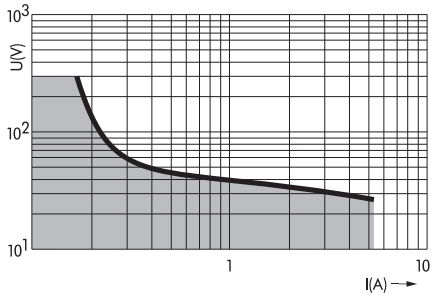
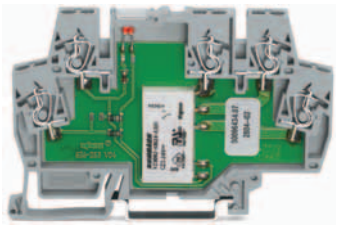
Manual Control Modules 173

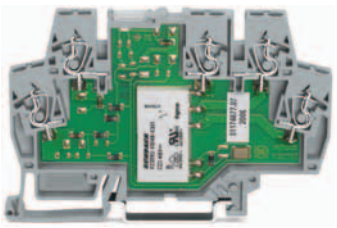
Rail-Mounted Terminal Blocks with Miniature Switching Relay

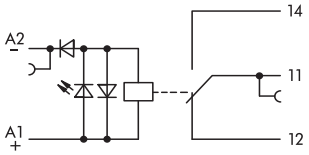
	Relay with 1 changeover contact (1u) for normal switching power Nominal input voltage V_N 5 V, 12 V, 24 V, 48 V, 60 V, 110 V, 220 V DC	Relay with 1 changeover contact (1u) for normal switching power Nominal input voltage V_N 12 V, 24 V, 48 V, 115 V, 230 V AC/DC

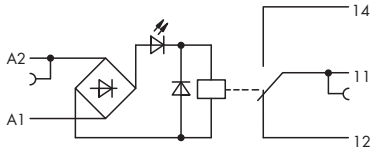


DC load limit curve







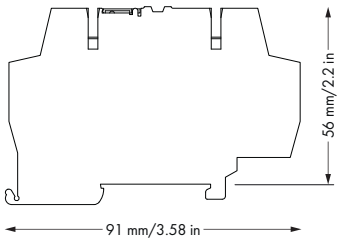


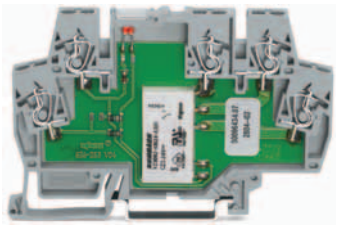
Note: Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

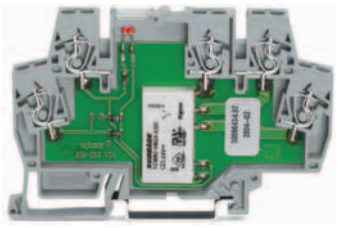
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with miniature switching relay, for DIN 35 rail	5 V DC	31 mA	**859-302**	1	12 V AC/DC	15 mA	**859-353**	1
	12 V DC	17 mA	**859-303**	1	24 V AC/DC	8 mA	**859-354**	1
	24 V DC	10 mA	**859-304**	1	48 V AC/DC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

Technical Data	Accessories see page 49	Accessories see page 49
Contact material	AgNi	AgNi
Input voltage range	V_N -15 % ... +20 %	V_N -15 % ... +20 %
Max. switching voltage	250 V AC	250 V AC
Max. continuous current (terminal blocks in a row)	5 A	5 A
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	≥ 100 mA / 12 V AC/DC
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}	6 min^{-1} / 20 s^{-1}
Operating power	< 320 mW	< 300 mW
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	4 kV	4 kV
Dielectric strength contact-coil (1.2/50 µs)	6 kV	6 kV
Dielectric strength, open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature (V_N)	-25 °C ... +50 °C	-25 °C ... +50 °C
Ambient operating temperature (1.2 x V_N)	-25 °C ... +40 °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	0.34 mm² ... 2.5 mm² / AWG 22 ... 14	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5;	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5;
	UL 508; EEx nC II T4; ㊏	UL 508; EEx nC II T4; ㊏
		(OT = On-time)

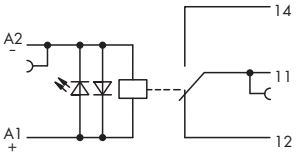
	Relay with 1 changeover contact (1u) Contacts 5 µm Au hard gold plated for normal switching power Nominal input voltage V_N 24 V DC	**Relay with 1 changeover contact (1u) Contacts 5 µm Au hard gold plated with an extended Input voltage range: V_N -30 % ... +25 % Operating temperature range: -25 °C ... +70 °C for normal switching power Nominal input voltage V_N 115 V DC**

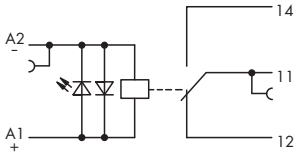






* In order to prevent the gold layer from being damaged these values should not be exceeded. Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.



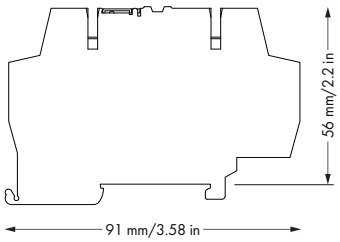


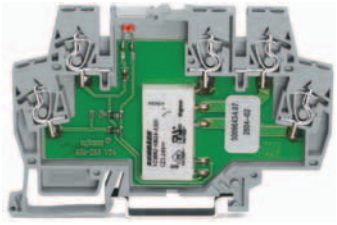
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with miniature switching relay, for DIN 35 rail	24 V DC	10 mA	**859-314**	1	115 V DC	3.1 mA	**859-317**	1

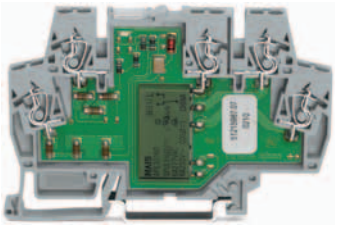
Technical Data	Accessories see page 49	Accessories see page 49
Contact material	AgNi + 5 µm Au	AgNi + 5 µm Au
Input voltage range	V_N -15 % ... +20 %	V_N -30 % ... +25 %
Max. switching voltage	30 V *	30 V *
Max. continuous current (terminal blocks in a row)	50 mA *	50 mA *
Recommended minimum load	1 V / 1 mA / 1 mW	1 V / 1 mA / 1 mW
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}	6 min^{-1} / 20 s^{-1}
Operating power	< 320 mW	< 320 mW
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	4 kV	4 kV
Dielectric strength contact-coil (1.2/50 µs)	6 kV	6 kV
Dielectric strength, open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature (V_N)	-25 °C ... +50 °C	-25 °C ... +70 °C
Ambient operating temperature (1.2 x V_N)	-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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; UL 508; EEx nC II T4; GL	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; VDE 0115 part 200 / EN 50155; UL 508; EEx nC II T4; GL
		(OT = On-time)

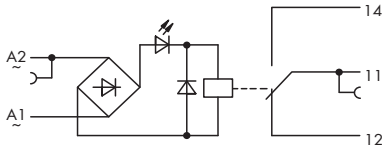
Rail-Mounted Terminal Blocks with Miniature Switching Relay

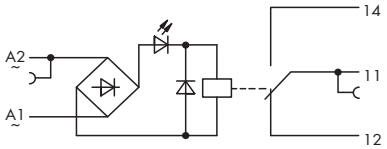
	Relay with 1 changeover contact (1u) Contacts 5 µm Au hard gold plated for normal switching power Nominal input voltage V_N 230 V AC	Relay with 1 changeover contact (1u) Contacts 5 µm Au hard gold plated for normal switching power Nominal input voltage V_N 115 V AC







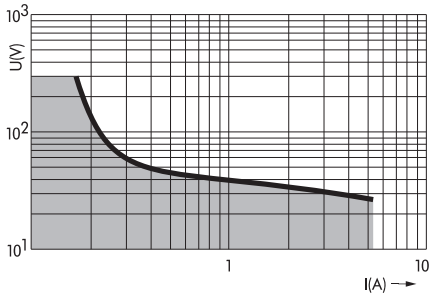




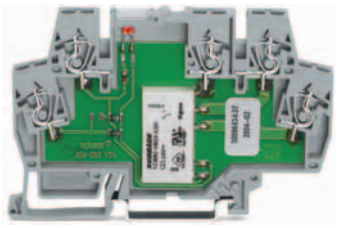
* In order to prevent the gold layer from being damaged, these values shall not be exceeded. Higher switching power leads to evaporation of the gold layer.

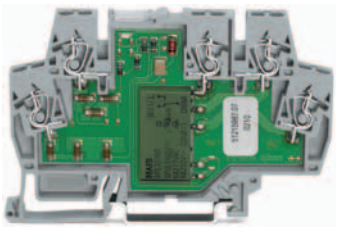
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with miniature switching relay, for DIN 35 rail	230 V AC	3.5 mA	**859-359**	1	115 V AC	3.1 mA	**859-360**	1
Technical Data	Accessories see page 49				Accessories see page 49			
Contact material	AgNi + 5 µm Au				AgNi + 5 µm Au			
Input voltage range	V_N -15 % ... +20 %				V_N -15 % ... +20 %			
Max. switching voltage	30 V *				30 V *			
Max. continuous current (terminal blocks in a row)	50 mA *				50 mA *			
Recommended minimum load	1 V / 1 mA / 1 mW				1 V / 1 mA / 1 mW			
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}				6 min^{-1} / 20 s^{-1}			
Operating power	< 820 mW				< 370 mW			
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms				5 ms / 6 ms / 5 ms			
Nominal operating mode	continuous duty				continuous duty			
Dielectric strength contact-coil	4 kV				4 kV			
Dielectric strength contact-coil (1.2/50 µs)	6 kV				6 kV			
Dielectric strength, open contact	1 kV				1 kV			
Nominal voltage acc. to VDE 0110 Part 1/4.97,								
IEC 60664-1	250 V / 4 kV / 3				250 V / 4 kV / 3			
Mechanical life	5 x 10^6 switching operations				5 x 10^6 switching operations			
Mechanical life at max. load (resistance)	5 x 10^4 switching operations				5 x 10^4 switching operations			
Ambient operating temperature (V_N)	-25 °C ... +50 °C				-25 °C ... +50 °C			
Ambient operating temperature (1.2 x V_N)	-25 °C ... +40 °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 mm² ... 2.5 mm² / AWG 28 ... 14				0.08 mm² ... 2.5 mm² / AWG 28 ... 14			
Stripped lengths	5 ... 6 mm / 0.22 in				5 ... 6 mm / 0.22 in			
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; UL 508; EEx nC II T4; ㊏				VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; UL 508; EEx nC II T4; ㊏			
					(OT = On-time)			

	Relay with 1 changeover contact (1u) Contacts 5 µm Au hard gold plated for low switching power Nominal input voltage V_N 220 V DC	Relay with 1 changeover contact (1u) defined turn-on/turn-off threshold for normal switching power Nominal input voltage V_N 115 V AC

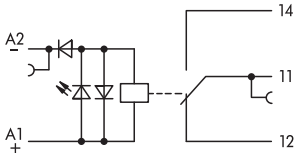


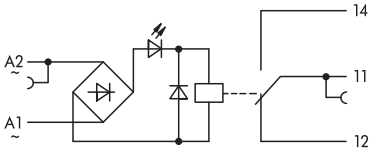
DC load limit curve





* In order to prevent the gold layer from being damaged these values should not be exceeded. Higher switching power leads to evaporation of the gold layer. The resulting deposits in the endosure may cause sparkover between the coil and the contact.



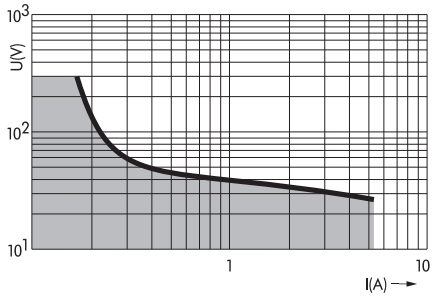


Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with miniature switching relay, for DIN 35 rail	220 V DC	3.2 mA	**859-318**	1	115 V AC	4.2 mA	**859-367**	1

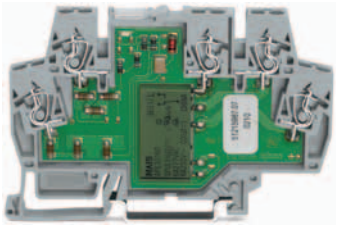
Technical Data	Accessories see page 49	Accessories see page 49
Contact material	AgNi + 5 µm Au	AgNi
Input voltage range	V_N -15 % ... +20 %	V_N ± 10 %
Turn-on threshold relay/LED		95 V AC/ 80 V AC
Turn-off threshold relay/LED		60 V AC/60 V AC
Max. switching voltage	30 V *	250 V AC
Max. continuous current (terminal blocks in a row)	-	5 A
Max. Switching power (resistive)		1250 VA AC ; DC see load limit curve
Recommended minimum load	1 V / 1 mA / 1 mW	≥ 100 mA / 12 V AC/DC
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}	6 min^{-1} / 20 s^{-1}
Operating power	< 750 mW	< 820 mW
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	4 kV	4 kV
Dielectric strength contact-coil (1.2/50 µs)	6 kV	6 kV
Dielectric strength, open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature (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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0435 (corresp. parts); DIN EN 61810;	DIN VDE 0160, DIN EN 50178; VDE 0435
	DIN VDE 0140, DIN EN 61140 E175199, UL 508; GL	(corresp. parts); DIN EN 61810; VDE 0140,
		DIN EN 61140; GL
		(OT = On-time)

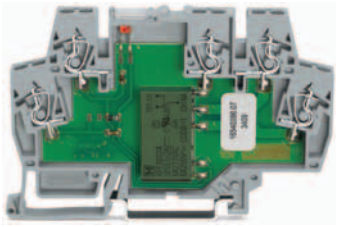
Rail-Mounted Terminal Blocks with Miniature Switching Relay

	Relay with 1 changeover contact (1u) defined turn-on/turn-off threshold for normal switching power Nominal input voltage V_N 230 V AC	Relay with 1 changeover contact (1u) with an extended Input voltage range: V_N -30 % ... +25 % Operating temperature range: -25 °C ... +70 °C for normal switching power Nominal input voltage V_N 24 V DC Railway applications

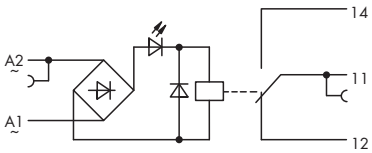


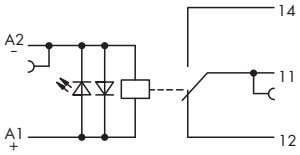
DC load limit curve





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

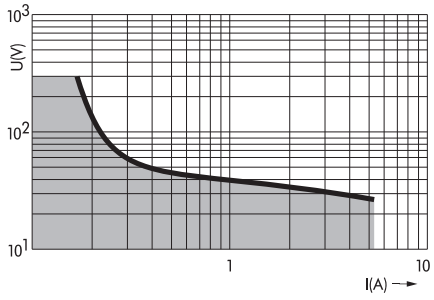




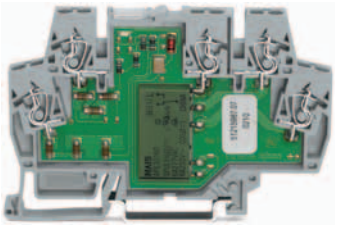
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with miniature switching relay, for DIN 35 rail	230 V AC	4.2 mA	**859-368**	1	24 V DC	12 mA	**859-390**	1

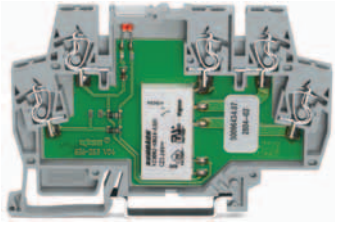
Technical Data	Accessories see page 49	Accessories see page 49
Contact material	AgNi	AgNi
Input voltage range	V_N ± 10 %	V_N -30 % ... +25 %
Turn-on threshold relay/LED	190 V AC / 165 V AC	
Turn-off threshold relay/LED	140 V AC / 150 V AC	
Max. switching voltage	250 V AC	250 V AC
Max. continuous current (terminal blocks in a row)	5 A	3 A
Max. Switching power (resistive)	1250 VA AC ; DC see load limit curve	750 VA AC ; DC see load limit curve
Recommended minimum load	≥ 100 mA / 12 V AC/DC	≥ 100 mA / 15 V AC/DC
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}	6 min^{-1} / 20 s^{-1}
Operating power	< 820 mW	< 320 mW
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	4 kV	4 kV
Dielectric strength contact-coil (1.2/50 µs)	6 kV	6 kV
Dielectric strength, open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature (V_N)	-25 °C ... +50 °C	-25 °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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5;	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5;
	UL 508; EEx nC II T4; GL	UL 508; EEx nC II T4; GL
		(OT = On-time)

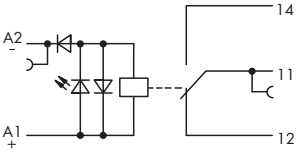
	Relay with 1 changeover contact (1u) with an extended Input voltage range: V_N ±30 % Operating temperature range: -25 °C ... +70 °C for normal switching power Nominal input voltage V_N 110 V DC Railway applications	Relay with 1 changeover contact (1u) with an extended Input voltage range: V_N ±40 % Operating temperature range: -25 °C ... +70 °C for normal switching power Nominal input voltage V_N 24 V DC Railway applications

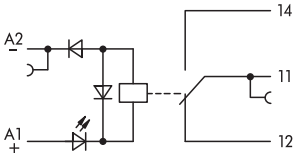


DC load limit curve









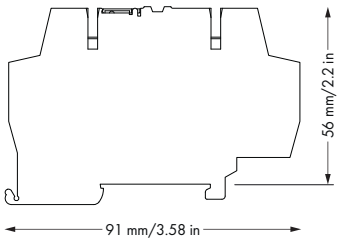
NOTE: Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

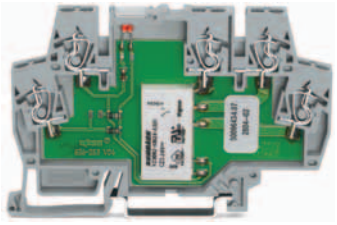
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with miniature switching relay, for DIN 35 rail	110 V DC	2.7 mA	**859-391**	1	24 V DC	14.4 mA	**859-398**	1

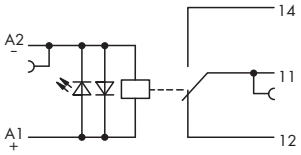
Technical Data	Accessories see page 49	Accessories see page 49
Contact material	AgNi	AgNi
Input voltage range	V_N ± 30 %	V_N ± 40 %
Max. switching voltage	250 V AC	250 V AC
Max. continuous current (terminal blocks in a row)	3 A	3 A
Max. Switching power (resistive)	750 VA AC ; DC see load limit curve	750 VA AC ; DC see load limit curve
Recommended minimum load	≥ 100 mA / 15 V AC/DC	≥ 100 mA / 12 V AC/DC
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}	6 min^{-1} / 20 s^{-1}
Operating power	< 370 mW	< 400 mW
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	4 kV	4 kV
Dielectric strength contact-coil (1.2/50 µs)	6 kV	6 kV
Dielectric strength, open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature (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	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; UL 508; EEx nC II T4;	DIN VDE 0160 and IEC 60255; VDE 0435 (corresp. parts); DIN VDE 0140, DIN EN 61140; DIN VDE 0115 Part 200; DIN EN 50155;
		(OT = On-time)

Rail-Mounted Terminal Blocks with Miniature Switching Relay

Relay with 1 changeover contact (1u)
Contacts 5 µm Au hard gold plated
with an extended
Input voltage range: V_N -30 % ... +25 %
Operating temperature range: -25 °C ... +70 °C
Nominal input voltage V_N 24 V DC
Railway applications







* In order to prevent the gold layer from being damaged these values should 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
Rail-mounted terminal blocks with miniature switching relay, for DIN 35 rail	24 V DC	10 mA	**859-392**	1

Technical Data

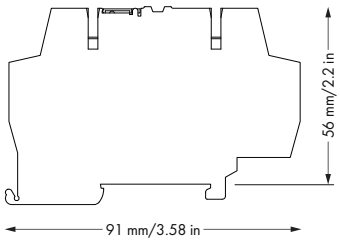
Accessories see page 49

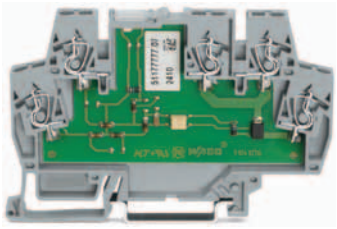
Contact material	AgNi + 5 µm Au
Input voltage range	V_N -30 % ... +25 %
Max. switching voltage	30 V *
Max. continuous current (terminal blocks in a row)	50 mA *
Recommended minimum load	1 V / 1 mA / 1 mW
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}
Operating power	< 320 mW
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty
Dielectric strength contact-coil	4 kV
Dielectric strength contact-coil (1.2/50 µs)	6 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	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^6 switching operations
Ambient operating temperature (V_N)	-25 °C ... +70 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	6 x 56 x 91
	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in
Approvals	EN 60664; EN 61810-5; EN 50155; UL 508;
	EEx nC II T4; ⓖⓛ

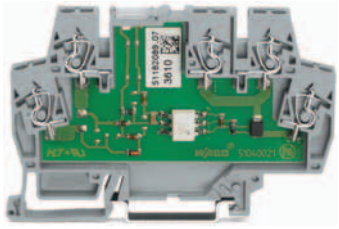
(OT = On-time)

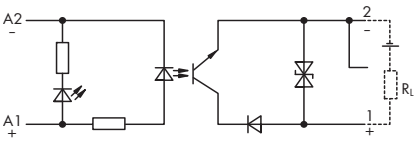
Rail-Mounted Terminal Blocks with Optocoupler

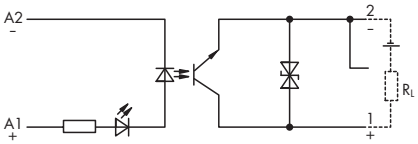
	Optocoupler Input: 5 V DC Output: 60 V DC/100 mA with an extended output voltage and operating temperature range for use in railway traffic	Optocoupler Input: 24 V DC Output: 60 V DC/100 mA with an extended output voltage and operating temperature range for use in railway traffic









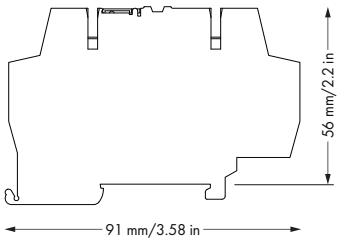


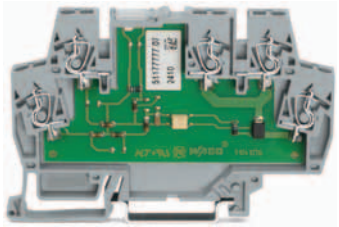
Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	5 V DC	**859-793**	1	24 V DC	**859-791**	1

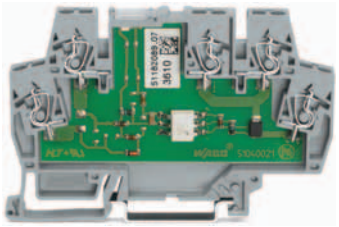
Technical Data	Accessories see page 49	Accessories see page 49
Nominal input voltage (V_N)	5 V DC	24 V DC
Input voltage range low level	0 V ... 0.8 V DC	0 V ... 5 V DC
Input voltage range high level	2 V ... 6.25 V DC	16 V ... 30 V DC
Input current range	1.3 mA ... 10 mA DC	2 mA ... 5.5 mA DC
Current at nominal voltage	7.5 mA DC	4 mA DC
Output nominal voltage	24 V DC	24 V DC
Output voltage range	3 V ... 60 V DC	7 V ... 60 V DC
Max. continuous current (20 °C)	100 mA	100 mA
Max. continuous current (70 °C)	50 mA	50 mA
Reverse voltage transistor	100 V	100 V
Switch on /switch off time	20 µs / 120 µs	20 µs / 120 µs
Max. operating frequency	1.5 kHz	3 kHz
Leakage current at nominal voltage	25 µA	30 µA
Max. voltage drop at output	≤ 2.5 V	≤ 1.5 V
Test voltage input / output	2.5 kV eff.	4 kV eff.
Nominal operating mode	continuous duty	continuous duty
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Max. operating temperature with reduced current	+70 °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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; VDE 0115 Part 200 / EN 50155; UL 508; EEx nA II T4	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; VDE 0115 Part 200 / EN 50155; UL 508; EEx nA II T4
		(OT = On-time)

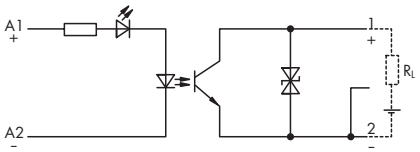
Rail-Mounted Terminal Blocks with Optocoupler

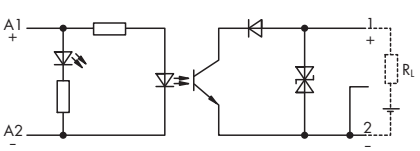
	Optocoupler Input: 24 V DC Output: 24 V DC/100 mA	Optocoupler Input: 5 V DC Output: 24 V DC/100 mA





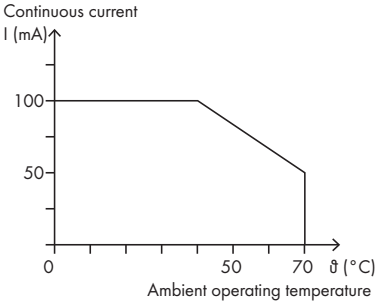




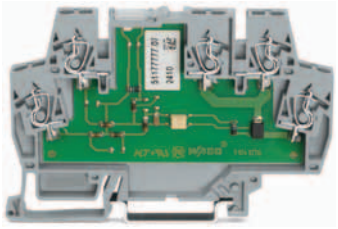


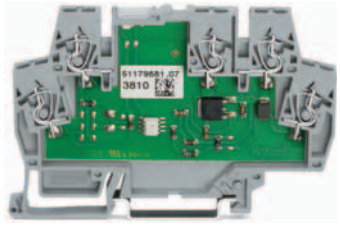
Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	24 V DC	**859-796**	1	5 V DC	**859-795**	1
Technical Data		Accessories see page 49			Accessories see page 49	
Nominal input voltage (V_N)		24 V DC			5 V DC	
Input voltage range low level		0 V ... 5 V DC			0 V ... 0.8 V DC	
Input voltage range high level		18 V ... 30 V DC			2 V ... 6.25 V DC	
Input current range		3.8 mA ... 12.5 mA DC			3.8 mA ... 23 mA DC	
Current at nominal voltage		9.2 mA DC			17.5 mA DC	
Output nominal voltage		24 V DC			24 V DC	
Output voltage range		3 V ... 30 V DC			3 V ... 30 V DC	
Max. continuous current (20 °C)		100 mA			100 mA	
Max. continuous current (70 °C)		50 mA			50 mA	
Reverse voltage transistor		65 V			65 V	
Switch on /switch off time		10 µs / 50 µs			10 µs / 50 µs	
Max. operating frequency		10 kHz			10 kHz	
Leakage current at nominal voltage		25 µA			25 µA	
Voltage drop at output		≤ 1 V			≤ 1 V	
Test voltage input / output		2.5 kV eff.			2.5 kV eff.	
Nominal operating mode		continuous duty			continuous duty	
Ambient operating temperature		-25 °C ... +40 °C			-25 °C ... +40 °C	
Max. operating temperature with reduced current		+70 °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	
		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 mm² ... 2.5 mm² / AWG 28 ... 14			0.08 mm² ... 2.5 mm² / AWG 28 ... 14	
Stripped lengths		5 ... 6 mm / 0.22 in			5 ... 6 mm / 0.22 in	
Approvals		VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; UL 508; EEx nA II T4			VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; UL 508; EEx nA II T4	
					(OT = On-time)	

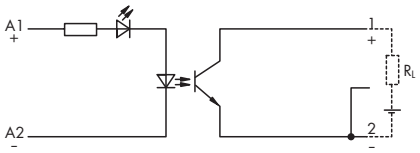
	Optocoupler Input: 24 V DC Output: 24 V DC/100 mA	Power optocoupler Input: 24 V DC Output: 24 V DC/3 A Negative switching

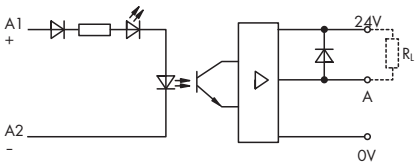


Derating for 859-794







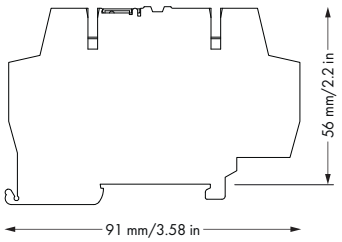


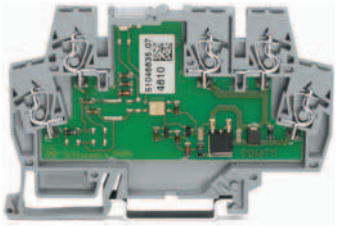
Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	24 V DC	**859-794**	1	24 V DC	**859-720**	1

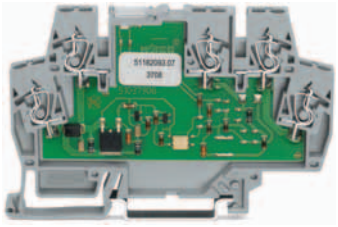
Technical Data	Accessories see page 49	Accessories see page 49
Nominal input voltage (V_N)	24 V DC	24 V DC
Input voltage range		16 V ... 30 V DC
Input voltage range low level	0 V ... 5 V DC	
Input voltage range high level	16 V ... 30 V DC	
Input current range	2 mA ... 5.5 mA DC	2.5 mA ... 5.5 mA DC
Current at nominal voltage	4.2 mA DC	4 mA DC
Output nominal voltage	24 V DC	24 V DC
Output voltage range	9 V ... 60 V DC	10 V ... 30 V DC
Max. continuous current		3 A
Max. continuous current (20 °C)	100 mA	
Max. continuous current (70 °C)	50 mA	
Peak output current		20 A
Reverse voltage transistor	100 V	55 V
Switch on /switch off time	20 µs / 120 µs	25 µs / 75 µs
Max. operating frequency	1.5 kHz	
Switching frequency		f < 500 Hz
IL < 2 A / IL < 1 A / IL < 500 mA		f < 1 kHz / f < 2 kHz / f < 3 kHz
Leakage current at nominal voltage	25 µA	< 25 µA
Collector / emitter voltage drop Vce sat		≤ 0.5 V
Voltage drop at output	≤ 2 V	
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Nominal operating mode	continuous duty	continuous duty
Ambient operating temperature	-25 °C ... +40 °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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5;	VDE 0110 / EN 60664; VDE 0435 / EN 61810-5;
	UL 508; EEx nA II T4	UL 508; EEx nA II T4
		(OT = On-time)

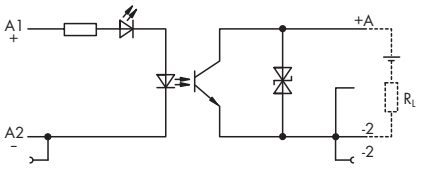
Rail-Mounted Terminal Blocks with Optocoupler

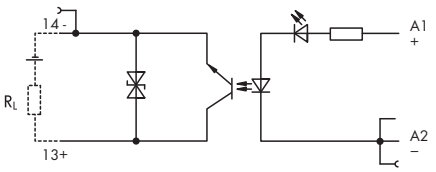
	Power optocoupler Input: 24 V DC Output: 24 V DC/3 A 3 A power optocoupler	Power optocoupler Input: 24 V DC Output: 3V ... 30 V DC/3A 3 A power optocoupler





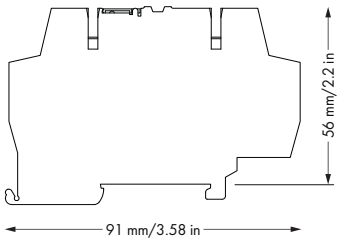


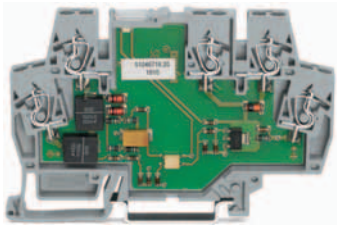


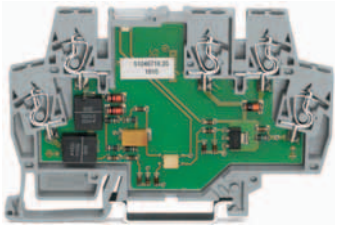


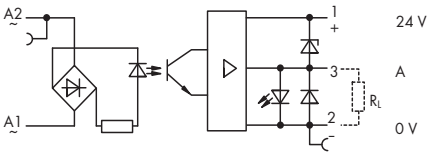
Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	24 V DC	**859-730**	1	24 V DC	**859-740**	1
Technical Data		Accessories see page 49			Accessories see page 49	
Nominal input voltage (V_N)		24 V DC			24 V DC	
Input voltage range low level		0 V ... 5 V DC			0 V ... 9 V DC	
Input voltage range high level		15 V ... 27 V DC			19 V ... 27 V DC	
Current at nominal voltage		14 mA DC			7 mA DC	
Input wiring		Status LED (red)			status indication LED (yellow), reverse voltage protection	
Output circuit		2-wire, isolated			2-wire, isolated, overvoltage protection	
Output nominal voltage		24 V DC			24 V DC	
Output voltage range		3 V ... 30 V DC			3 V ... 30 V DC	
Max. continuous current		3 A			3 A	
Peak output current		25 A			25 A	
Reverse voltage transistor		55 V				
Residual voltage drop		< 0.4 V			< 0.2 V	
Switch on /switch off time		25 µs / 450 µs			25 µs / 450 µs	
Switching frequency		f < 350 Hz			f < 350 Hz	
Test voltage input / output		2.5 kV eff.			2.5 kV eff.	
Nominal operating mode		continuous duty			continuous duty	
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	
		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 mm² ... 2.5 mm² / AWG 28 ... 14			0.08 mm² ... 2.5 mm² / AWG 28 ... 14	
Stripped lengths		5 ... 6 mm / 0.22 in			5 ... 6 mm / 0.22 in	
Approvals		VDE 0110 / EN 60664; VDE 0435 / EN 61810-5; UL 508; EEx nA II T4			IEC 60664 / IEC 60664A / DIN VDE 0110	
					(OT = On-time)	

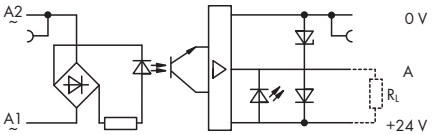
	Optocoupler **Input: 230 V AC** **Output: 24 V DC/0.5 A** **Positive switching increased input frequency up to 100 Hz** **Input voltage up to 270 V AC**	**Optocoupler** **Input: 230 V DC** **Output: 24 V DC/0.5 A** **Negative switching**









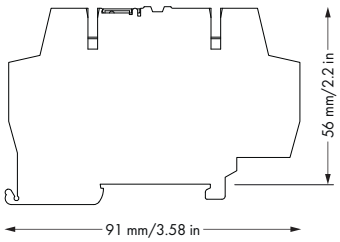


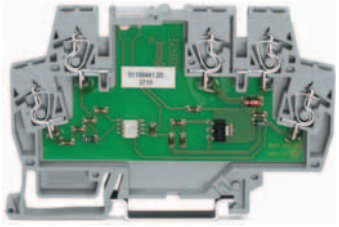
859-772
- Increased input frequency up to 100 Hz
- Input voltage up to 270 V AC

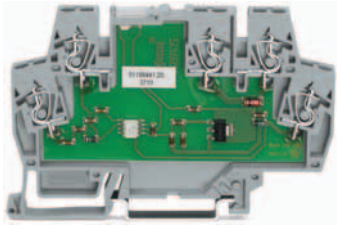
Description	V_N	**Item No.**	**Pack. Unit**	V_N	**Item No.**	**Pack. Unit**
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	230 V AC	**859-772**	1	230 V AC	**859-712**	1
Technical Data		Accessories see page 49			Accessories see page 49	
Nominal input voltage (V_N)		230 V AC/ 50 Hz ... 60 Hz			230 V AC	
Input voltage range low level		0 V ... 90 V AC			0 V ... 90 V AC	
Input voltage range high level		175 V ... 270 V AC			175 V ... 250 V AC	
Input current range		0.04 mA ... 0.7 mA			0.4 mA ... 0.7 mA	
Current at nominal voltage		0.6 mA			0.6 mA	
Input wiring		Varistor 300 V			Varistor 300 V	
Output circuit		Protection diode, operation indicator			Protection diode, operation indicator LED (red)	
Output nominal voltage		24 V DC			24 V DC	
Output voltage range		20 V ... 30 V DC			20 V ... 30 V DC	
Max. continuous current		500 mA			500 mA	
Reverse voltage transistor		80 V			80 V	
Switch on /switch off time		< 30 ms / < 30 ms			< 30 ms / < 30 ms	
Leakage current at nominal voltage		10 µA			10 µA	
Collector / emitter voltage drop Vce sat		< 1.2 V			< 1.2 V	
Max. output (reverse current)		12 mA			11 mA	
Test voltage input / output		2.5 kV eff.			2.5 kV eff.	
Nominal operating mode		continuous duty			continuous duty	
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	
		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 mm² ... 2.5 mm² / AWG 28 ... 14			0.08 mm² ... 2.5 mm² / AWG 28 ... 14	
Stripped lengths		5 ... 6 mm / 0.22 in			5 ... 6 mm / 0.22 in	
Approvals		VDE 0110 / EN 60664; UL 508; EEx nA II T4			VDE 0110 / EN 60664; UL 508; EEx nA II T4	
					(OT = On-time)	

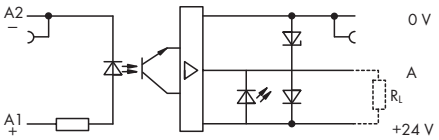
Rail-Mounted Terminal Blocks with Optocoupler

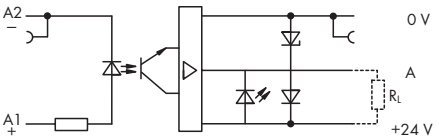
	Optocoupler Input: 5 V DC Output: 24 V DC/0.5A/25 kHz Negative switching	Optocoupler Input: 24 V DC Output: 24 V DC/0.5A/25 kHz Negative switching







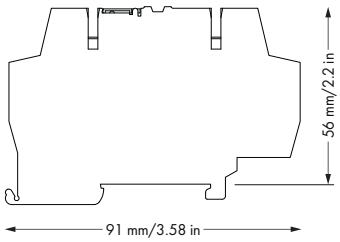


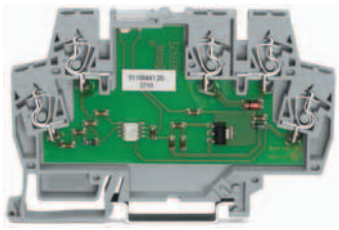


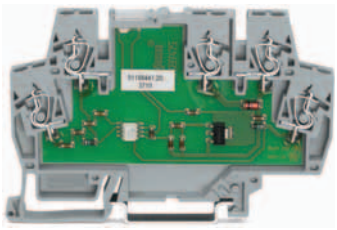
Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	5 V DC	**859-702**	1	24 V DC	**859-708**	1

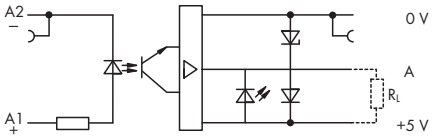
Technical Data	Accessories see page 49	Accessories see page 49
Nominal input voltage (V_N)	5 V DC	24 V DC
Input voltage range low level	0 V ... 1 V DC	0 V ... 5 V DC
Input voltage range high level	4 V ... 6.25 V DC	19 V ... 30 V DC
Input current range	7 mA ... 13 mA	5.7 mA ... 10.2 mA
Current at nominal voltage	9.6 mA DC	7.7 mA DC
Input wiring	Reverse voltage protection	Reverse voltage protection
Output circuit	Protection diode, operation indicator LED (red)	Protection diode, operation indicator LED (red)
Output nominal voltage	24 V DC	24 V DC
Output voltage range	20 V ... 30 V DC	20 V ... 30 V DC
Max. continuous current	500 mA	500 mA
Reverse voltage transistor	80 V	80 V
Switch on /switch off time	< 7 µs / < 15 µs	< 10 µs / < 10 µs
Max. operating frequency	10 kHz	10 kHz
Leakage current at nominal voltage	< 10 µA	< 10 µA
Collector / emitter voltage drop Vce sat	< 1.2 V	< 1.2 V
Max. output (reverse current)	11 mA	11 mA
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Nominal operating mode	continuous duty	continuous duty
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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; UL 508; EEx nA II T4	VDE 0110 / EN 60664; UL 508; EEx nA II T4
		(OT = On-time)

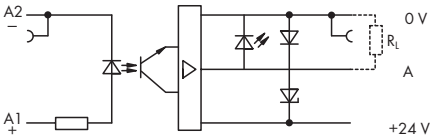
	Optocoupler Input: 24 V DC Output: 5 V DC/0.5A/25 kHz Negative switching	Optocoupler Input: 5 V DC Output: 24 V DC/0.5 A/10 kHz Positive switching









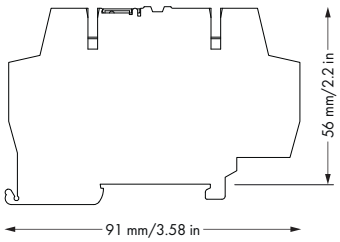


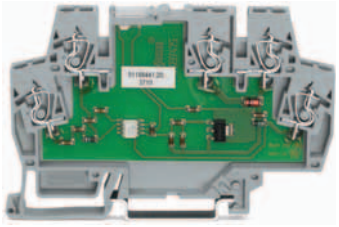
Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	24 V DC	**859-706**	1	5 V DC	**859-752**	1

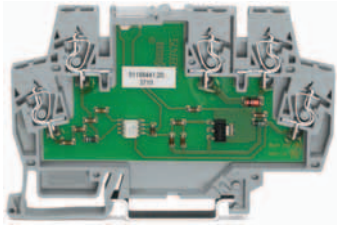
Technical Data	Accessories see page 49	Accessories see page 49
Nominal input voltage (V_N)	24 V DC	5 V DC
Input voltage range low level	0 V ... 5 V DC	0 V ... 1 V DC
Input voltage range high level	18 V ... 30 V DC	4 V ... 6 V DC
Input current range	8 mA ... 14 mA	7 mA ... 13 mA
Current at nominal voltage	11 mA DC	10 mA
Input wiring	Reverse voltage protection	Reverse voltage protection
Output circuit	Protection diode, operation indicator LED (red)	Protection diode, operation indicator LED (red)
Output nominal voltage	5 V DC	24 V DC
Output voltage range	4 V ... 6.25 V DC	20 V ... 30 V DC
Max. continuous current	500 mA	500 mA
Reverse voltage transistor	80 V	80 V
Switch on /switch off time	< 7 µs / < 15 µs	< 15 µs / < 30 µs
Max. operating frequency	10 kHz	10 kHz
Leakage current at nominal voltage	< 10 µA	< 10 µA
Collector / emitter voltage drop Vce sat	< 1.2 V	< 1.2 V
Max. output (reverse current)	7 mA	12.5 mA
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Nominal operating mode	continuous duty	continuous duty
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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; UL 508; EEx nA II T4	VDE 0110 / EN 60664; UL 508; EEx nA II T4
		(OT = On-time)

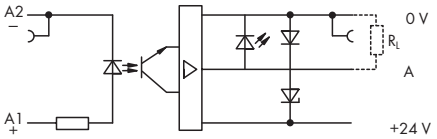
Rail-Mounted Terminal Blocks with Optocoupler

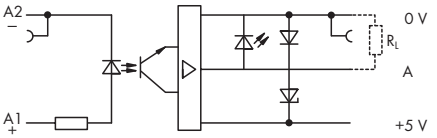
	Optocoupler Input: 24 V DC Output: 24 V DC/0.5 A/10 kHz Positive switching	Optocoupler Input: 24 V DC Output: 5 V DC/0.5 A/10 kHz Positive switching







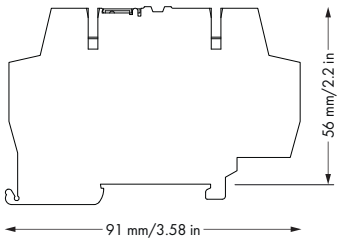


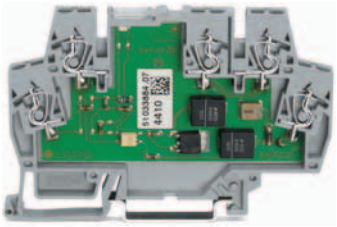


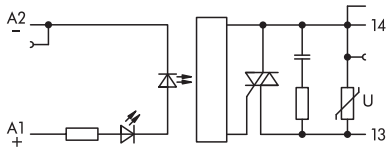
Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	24 V DC	**859-758**	1	24 V DC	**859-756**	1

Technical Data	Accessories see page 49	Accessories see page 49
Nominal input voltage (V_N)	24 V DC	24 V DC
Input voltage range low level	0 V ... 5 V DC	0 V ... 5 V DC
Input voltage range high level	18 V ... 30 V DC	18 V ... 30 V DC
Input current range	5.5 mA ... 10.6 mA	8 mA ... 14.5 mA
Current at nominal voltage	8 mA	11 mA
Input wiring	Reverse voltage protection	Reverse voltage protection
Output circuit	Protection diode, operation indicator LED (red)	Protection diode, operation indicator LED (red)
Output nominal voltage	24 V DC	5 V DC
Output voltage range	20 V ... 30 V DC	4 V ... 6.25 V DC
Max. continuous current	500 mA	500 mA
Reverse voltage transistor	80 V	80 V
Switch on /switch off time	< 15 µs / < 30 µs	< 15 µs / < 30 µs
Max. operating frequency	10 kHz	10 kHz
Leakage current at nominal voltage	< 10 µA	< 10 µA
Collector / emitter voltage drop Vce sat	< 1.2 V	< 1.2 V
Max. output (reverse current)	11 mA	4.5 mA
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Nominal operating mode	continuous duty	continuous duty
Ambient operating temperature	-25 °C ... +40 °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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	VDE 0110 / EN 60664; UL 508;	VDE 0110 / EN 60664; UL 508;
	EEx nA II T4 / DEMKO 02 ATEX 132280U	EEx nA II T4 / DEMKO 02 ATEX 132280U
		(OT = On-time)

	Optocoupler **Input: 5 V DC** **Output: 230 V AC/0.5 A**	







Description	V_N	Item No.	Pack. Unit	
Rail-mounted terminal blocks with optocoupler, for DIN 35 rail	5 V DC	**859-902**	1	

Technical Data

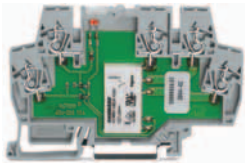
Accessories see page 49

Nominal input voltage (V_N)	5 V DC	
Input voltage range low level	0 V ... 1 V DC	
Input voltage range high level	4 V ... 6.25 V DC	
Input current range	DC 5.6 mA ... 10.3 mA	
Current at nominal voltage	7.7 mA DC	
Input wiring	Reverse voltage protection	
Output circuit	varistor /RC module	
Output nominal voltage	230 V AC	
Output voltage range	24 V ... 260 V AC (50 Hz ... 60 Hz)	
Max. continuous current (20°C)	500 mA	
Surge current (t=20 ms)	30 A	
Min. load current	50 mA	
Peak reverse voltage Triac	600 V	
Switch on /switch off time	10 ms / 10 ms (1 half-wave)	
Leakage current at nominal voltage	< 1 mA	
Max. voltage drop at output	< 1 V	
Test voltage input / output	2.5 kV eff.	
Nominal operating mode	continuous duty	
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	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14	
Stripped lengths	5 ... 6 mm / 0.22 in	
Approvals	IEC 60664 / IEC 60664A / DIN VDE 0110	
		(OT = On-time)

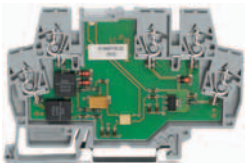
Rail-Mounted Terminal Blocks with Miniature Switching Relays and Optocouplers

with an extended input voltage and operating temperature range VN -30 % ... +25 % Ambient operating temperature -25 °C ... +70 °C for railway applications

Rail-mounted terminal blocks with miniature switching relay



Rail-mounted terminal blocks with optocouplers



Description	Nominal input voltage (V_N)	Input voltage range	Max. switching capacity	Ambient operating temperature (V_N)	Item No.	Pack. Unit
Relay with 1 changeover contact	115 V DC	V_N -30 % ... +25 %	Contact 5 µm Au	-25 °C ... +70 °C	**859-317**	1
Relay with 1 changeover contact	48 V DC	V_N -30 % ... +25 %	Contact 5 µm Au	-25 °C ... +70 °C	**859-384**	1
Relay with 1 changeover contact	36 V DC	V_N -40 % ... +25 %	Contact 5 µm Au	-25 °C ... +70 °C	**859-386**	1
Relay with 1 changeover contact	24 V DC	V_N -30 % ... +25 %	250 V AC / 3 A	-25 °C ... +70 °C	**859-390**	1
Relay with 1 changeover contact	110 V DC	V_N ± 30 %	250 V AC / 3 A	-25 °C ... +70 °C	**859-391**	1
Relay with 1 changeover contact	24 V DC	V_N -30 % ... +25 %	Contact 5 µm Au	-25 °C ... +70 °C	**859-392**	1
Relay with 1 changeover contact	72 V DC	V_N -30 % ... +25 %	250 V AC / 3 A	-25 °C ... +70 °C	**859-393**	1
Relay with 1 changeover contact	36 V DC	V_N -30 % ... +25 %	250 V AC / 3 A	-25 °C ... +70 °C	**859-394**	1
Relay with 1 changeover contact	48 V DC	V_N ± 40 %	250 V AC / 3 A	-25 °C ... +70 °C	**859-397**	1
Relay with 1 changeover contact	24 V DC	V_N ± 40 %	250 V AC / 3 A	-25 °C ... +70 °C	**859-398**	1
Relay with 1 changeover contact	110 V DC	V_N ± 40 %	250 V AC / 3 A	-25 °C ... +70 °C	**859-399**	1
Optocoupler, 2-wire output	24 V DC	V_N -25 % ... +25 %	3 V ... 60 V DC / 50 mA	-25 °C ... +70 °C	**859-794**	1

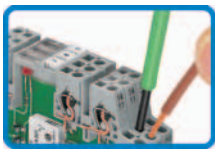
For additional technical data see: www.wago.com

Accessories, 859 Series

Operating tool



Wire connection



Marking pen with fibre tip



Test pin



End and intermediate plate

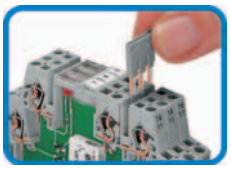


Description		Item No.	Pack. Unit
End and intermediate plate; 1 mm / 0.039 in thick, gray		859-525	100 (4x25)
Test pin; Ø 1 mm / 0.039 in; test wire for sold. onto test plug		859-500	1 (1x1)
Marking pen	for permanent marking	210-110	1
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 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



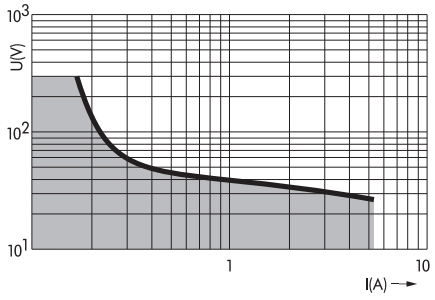
Marking



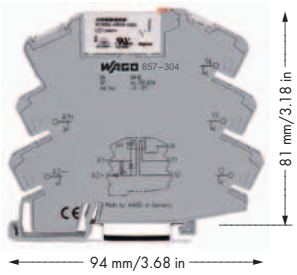
Description		Item No.	Pack. Unit
Miniature WSB Quick marking system	plain	248-501	5 cards
Marking software and printer/plotter see Section 8			
Marking	1 ...10 (10 x)	248-502	5 cards
	11 ... 20 (10x)	248-503	5 cards
	21 ... 30 (10x)	248-504	5 cards
	31 ... 40 (10x)	248-505	5 cards
	41 ... 50 (10 x)	248-506	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			

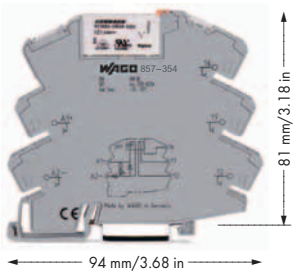
JUMPFLEX® Relay Socket with Miniature Switching Relay

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

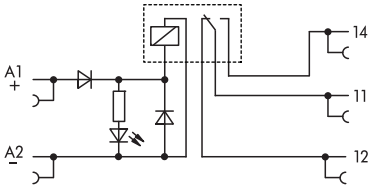


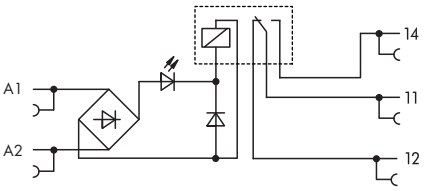
DC load limit curve





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

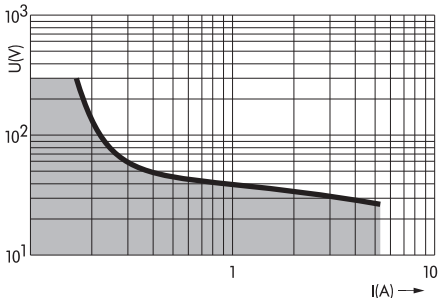




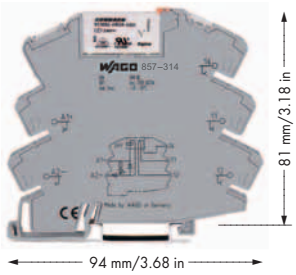
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
***JUMPFLEX*® relay socket with miniature switching relay, for DIN 35 rail**	12 V DC	17 mA	**857-303**	1	24 V AC/DC	8.5 mA	**857-354**	1
	24 V DC	10 mA	**857-304**	1	115 V AC/DC	4 mA	**857-357**	1
	48 V DC	6.5 mA	**857-305**	1	230 V AC/DC	3.5 mA	**857-358**	1
	60 V DC	5.2 mA	**857-306**	1				
	110 V DC	3.5 mA	**857-307**	1				
	220 V DC	3.2 mA	**857-308**	1				

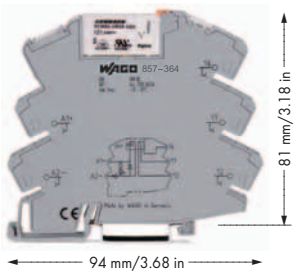
Technical Data	Accessories see pages 68 ... 71	Accessories see pages 68 ... 71
Contact material	AgNi	AgNi
Input voltage range	V_N -15 % ... +20 %	V_N -15 % ... +20 % (857-354/857-357)
		V_N -15 % ... +10 % (857-358)
Max. switching voltage	250 V AC	250 V AC
Max. continuous current (terminal blocks in a row)	6 A	6 A
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	≥ 100 mA / 12 V AC/DC
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}	6 min^{-1} / 20 s^{-1}
Operating power	< 300 mW / < 700 mW	< 300 mVA / < 800 mVA
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	4 kV_{eff}	4 kV_{eff}
Surge capacity open contact	1 kV_{eff}	1 kV_{eff}
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature (V_N)	-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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-1; (857-304: GL)	VDE 0110 / EN 60664; VDE 0435 / EN 61810-1; (857-358: GL)

	Relay with 1 changeover contact (1u) (gold contacts) for normal switching power Nominal input voltage V_N 24 V, 110 V, 220 V DC	Relay with 1 changeover contact (1u) (gold contacts) for normal switching power Nominal input voltage V_N 24 V, 115 V, 230 V AC/DC



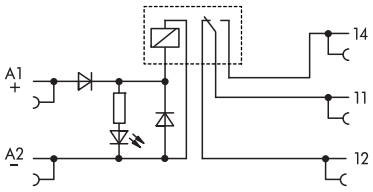
DC load limit curve

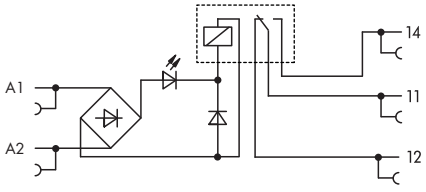




* In order to prevent the gold layer from being damaged, these values shall not be exceeded. Higher switching power leads to evaporation of the gold layer.

In case of damaged gold layer, the values in parens apply.



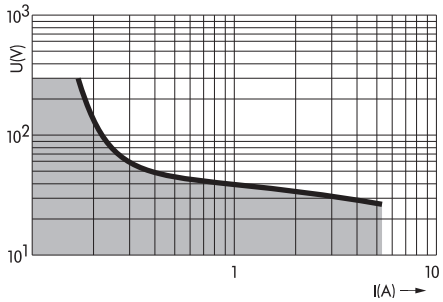


Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
***JUMPFLEX®* relay socket with miniature switching**	24 V DC	10 mA	**857-314**	1	24 V AC/DC	8.5 mA	**857-364**	1
relay, for DIN 35 rail	110 V DC	3.5 mA	**857-317**	1	115 V AC/DC	4 mA	**857-367**	1
	220 V DC	3.2 mA	**857-318**	1	230 V AC/DC	3.5 mA	**857-368**	1

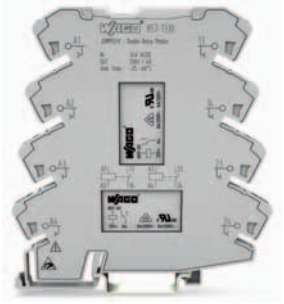
Technical Data	Accessories see pages 68 ... 71	Accessories see pages 68 ... 71
Contact material	AgNi + 5 µ Au	AgNi + 5 µ Au
Input voltage range	V_N -15 % ... +20 %	V_N -15 % ... +20 % (857-364/857-367)
		V_N -15 % ... +10 % (857-368)
Max. switching voltage	*30 V* DC / (250 V AC/DC)*	*(250 V AC/DC)**
Max. continuous current (terminal blocks in a row)	*50 mA* / (6 A)*	*30 V* DC / 50 mA* / (6 A)*
Max. Switching power (resistive)	*(1250 VA AC; DC see load limit curve)*	*(1250 VA AC; DC see load limit curve)*
Recommended minimum load	≥ 1 V / 1 mA / 1 mW	≥ 1 V / 1 mA / 1 mW
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}	6 min^{-1} / 20 s^{-1}
Operating power	< 300 mW / < 700 mW	< 300 mVA / < 800 mVA
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	4 kV_{eff}	4 kV_{eff}
Surge capacity open contact	1 kV_{eff}	1 kV_{eff}
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature (V_N)	-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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-1; cULus (857-314: GL)	VDE 0110 / EN 60664; VDE 0435 / EN 61810-1; cULus (857-368: GL)

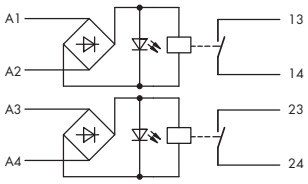
JUMPFLEX® Relay

With 2 relays, with 1 make contact (1 a)
for normal switching power
Nominal input voltage
V_N 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_N	I_N	Item No.	Pack. Unit	
***JUMPFLEX*® Relais, for DIN 35 rail**	AC/DC 24 V	10 mA	**857-1330**	1	

Technical Data

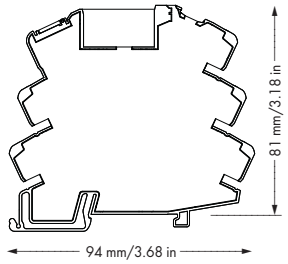
Accessories see pages 68 ... 71

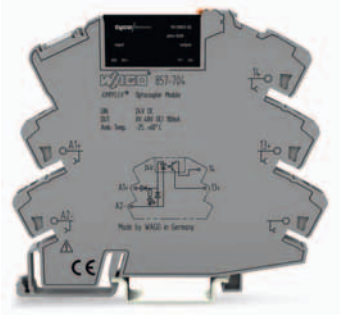
Contact material	AgNi
Input voltage range	V_N -15 % ... +20 %
Max. switching voltage	250 V AC
Max. continuous current (terminal blocks in a row)	4 A
Max. Switching power (resistive)	AC 1000 VA; DC see load limit curve
Recommended minimum load	≥ 100 mA / 12 V AC/DC
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}
Operating power	< 300 mW / < 700 mW
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty
Dielectric strength contact-coil	2.5 kV
Surge capacity open contact	1 kV_{eff}
Nominal voltage acc. to VDE 0110 Part 1/4.97,	
IEC 60664-1	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations
Ambient operating temperature (V_N)	-25 °C ... +60 °C
Storage temperature	-40 °C ... +85 °C
Dimensions (mm) W x H x L	6 x 96 x 94
	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in
Approvals	VDE 0110 / EN 60664; VDE 0435 / EN 61810-1

(OT = On-time)

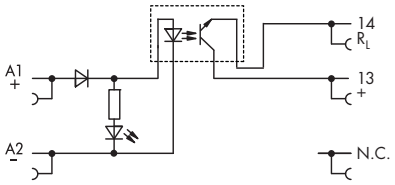
JUMPFLEX® Relay Socket with Solid State Relay

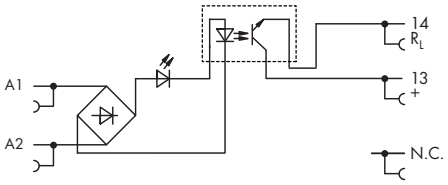
	Solid state relay **Input: 24 V DC** **Output: 0 V ... 48 V DC / 0.1 A**	**Solid state relay** **Input: 115 V AC/DC** **Output: 0 ... 48 V DC / 0.1 A**







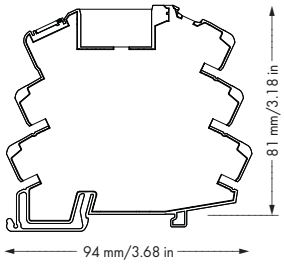




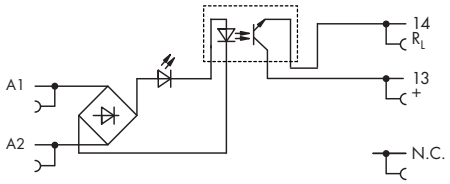
Description	**Item No.**	**Pack. Unit**	**Item No.**	**Pack. Unit**
***JUMPFLEX*® relay socket with solid state relay, for DIN 35 rail**	**857-704**	1	**857-707**	1

Technical Data	Accessories see pages 69 ... 71	Accessories see pages 69 ... 71
Control circuit:		
Nominal input voltage (V_N)	24VDC	115V AC/DC
Input voltage range (low level)	0 - 10V	0 - 25V
Input voltage range (high level)	18 - 28.8V	100 - 138V
Nominal input current (I_N)	9 mA	4.2 mA
Load circuit:		
Switching voltage	0 V ... 48 V DC	0 V ... 48 V DC
Peak reverse voltage	54 V	54 V
Max. switching current	0.1 A DC	0.1 A DC
Forward voltage at max. switching current	< 1VDC	< 1VDC
Switch on/switch off time	60µs / 800µs	15ms / 13ms
Ambient operating temperature	-20 °C ... +60 °C	-20 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dielectric strength control/switching circuit	2.5 kV	2.5 kV
Dimensions (mm) W x H x L	6 x 81 x 94	6 x 81 x 94
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Standards/Specifications	EN 61000-6-4	EN 61000-6-4, EN 60664-1
	The operator has to take appropriate measures so as to meet the requirements of immunity to interference for electrical and electronic devices (acc. to EN 61000-6-2).	The operator has to take appropriate measures so as to meet the requirements of immunity to interference for electrical and electronic devices (acc. to EN 61000-6-2).
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	Item No.	Pack. Unit	
***JUMPFLEX*® relay socket with solid state relay, for DIN 35 rail**	**857-708**	1	

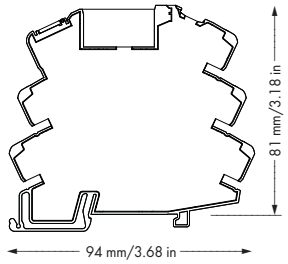
Technical Data

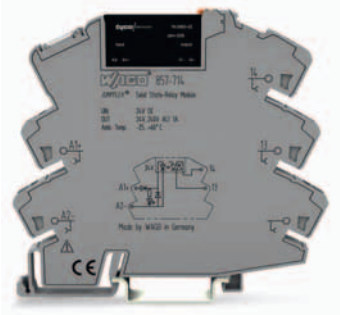
Accessories see pages 69 ... 71

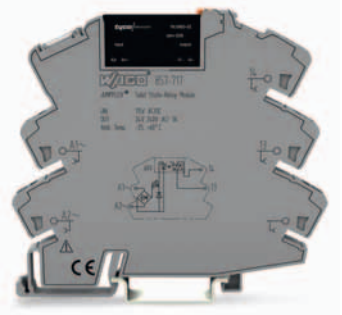
Control circuit:		
Nominal input voltage (V_N)	230V AC/DC	
Input voltage range (low level)	0 - 30V	
Input voltage range (high level)	200 - 253V	
Nominal input current (I_N)	3.25 mA	
Load circuit:		
Switching voltage	0 V ... 48 V DC	
Peak reverse voltage	54 V	
Max. switching current	0.1 A DC	
Forward voltage at max. switching current	< 1VDC	
Switch on/switch off time	25ms / 13ms	
Ambient operating temperature	-20 °C ... +60 °C	
Storage temperature	-40 °C ... +70 °C	
Dielectric strength control/switching circuit	2.5 kV	
Dimensions (mm) W x H x L	6 x 81 x 94	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®S	
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Stripped lengths	9 ... 10 mm / 0.37 in	
Standards/Specifications	EN 61000-6-4, EN 60664-1	
	The operator has to take appropriate measures so as to	
	meet the requirements of immunity to interference for	
	electrical and electronic devices (acc. to EN 61000-6-2).	
Approvals	CE, UL 508	

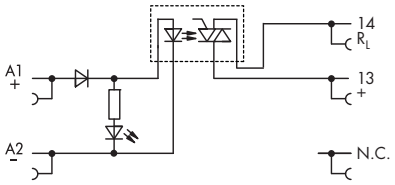
JUMPFLEX® Relay Socket with Solid State Relay

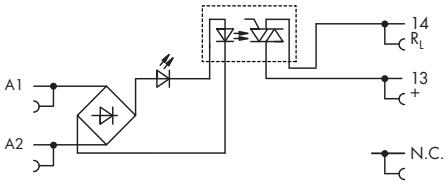
	Solid state relay Input: 24 V DC Output: 24 V ... 240 V AC / 1 A	Solid state relay Input: 115 V AC/DC Output: 24 V ... 240 V AC / 1 A





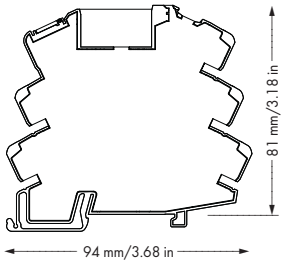


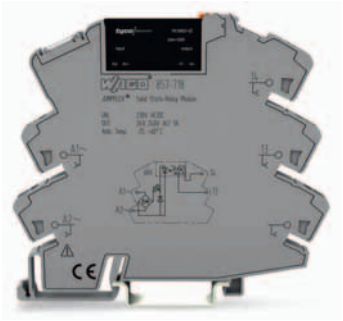


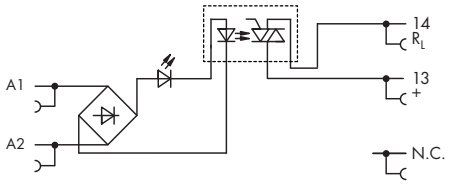


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
***JUMPFLEX*® relay socket with solid state relay, for DIN 35 rail**	**857-714**	1	**857-717**	1
Technical Data	Accessories see pages 69 ... 71		Accessories see pages 69 ... 71	
Control circuit:				
Nominal input voltage (V_N)	24VDC		115V AC/DC	
Input voltage range (low level)	0 - 10V		0 - 25V	
Input voltage range (high level)	20 - 28.8V		90 - 138V	
Nominal input current (I_N)	9.2 mA		3.9 mA	
Load circuit:				
Switching voltage	24 V ... 240 V AC		24 V ... 240 V AC	
Peak reverse voltage	600 V		600 V	
Max. switching current	1 A AC		1 A AC	
Forward voltage at max. switching current	< 1 V AC		< 1 V AC	
Ambient operating temperature	-20 °C ... +60 °C		-20 °C ... +60 °C	
Storage temperature	-40 °C ... +70 °C		-40 °C ... +70 °C	
Dielectric strength control/switching circuit	2.5 kV		2.5 kV	
Dimensions (mm) W x H x L	6 x 81 x 94		6 x 81 x 94	
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®S		CAGE CLAMP®S	
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14		0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Stripped lengths	9 ... 10 mm / 0.37 in		9 ... 10 mm / 0.37 in	
Standards/Specifications	EN 61000-6-4		EN 61000-6-4	
	The operator has to take appropriate measures so as to meet the requirements of immunity to interference for electrical and electronic devices (acc. to EN 61000-6-2).		The operator has to take appropriate measures so as to meet the requirements of immunity to interference for electrical and electronic devices (acc. to EN 61000-6-2).	
Approvals	CE, UL 508		CE, UL 508	

	Solid state relay **Input: 230 V AC/DC** **Output: 24 V ... 240 V AC / 1 A**	







Description	Item No.	Pack. Unit	
***JUMPFLEX®* relay socket with solid state relay, for DIN 35 rail**	**857-718**	1	

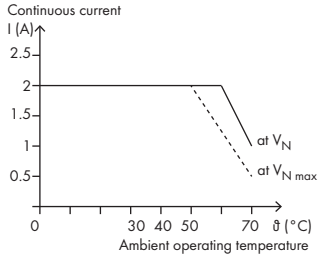
Technical Data

Accessories see pages 69 ... 71

Control circuit:	
Nominal input voltage (V_N)	230V AC/DC
Input voltage range (low level)	0 - 60V
Input voltage range (high level)	200 - 253V
Nominal input current (I_N)	3.2 mA
Load circuit:	
Switching voltage	24 V ... 240 V AC
Peak reverse voltage	600 V
Max. switching current	1 A AC
Forward voltage at max. switching current	< 1 V AC
Ambient operating temperature	-20 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C
Dielectric strength control/switching circuit	2.5 kV
Dimensions (mm) W x H x L	6 x 81 x 94
	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in
Standards/Specifications	EN 61000-6-4
	The operator has to take appropriate measures so as to meet the requirements of immunity to interference for electrical and electronic devices (acc. to EN 61000-6-2).
Approvals	CE, UL 508

JUMPFLEX® Relay Socket with Solid State Relay

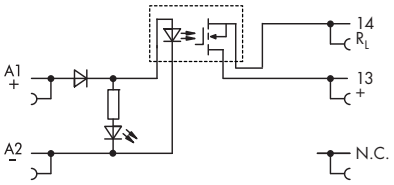
	Solid state relay **Input: 24 V DC** **Output: 0 V ... 24 V DC / 2 A**	**Solid state relay** **Input: 115 V AC/DC** **Output: 0 V ... 24 V DC / 2 A**

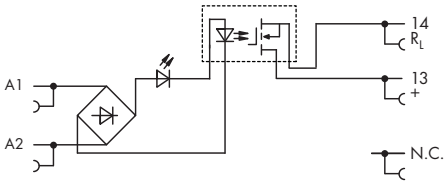


Derating for 857-724S





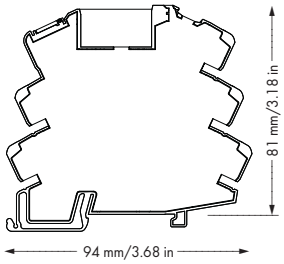




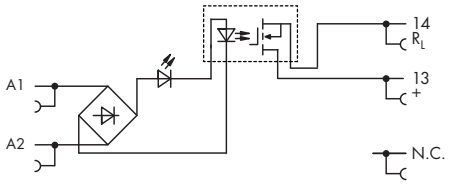
Description	**Item No.**	**Pack. Unit**	**Item No.**	**Pack. Unit**
***JUMPFLEX*® relay socket with solid state relay, for DIN 35 rail**	**857-724**	1	**857-727**	1

Technical Data	Accessories see pages 69 ... 71	Accessories see pages 69 ... 71
Control circuit:		
Nominal input voltage (V_N)	24VDC	115V AC/DC
Input voltage range (low level)	0 - 10V	0 - 25V
Input voltage range (high level)	18.8 ... 31.2 VDC	90 - 138V
Nominal input current (I_N)	9.2 mA	3.9 mA
Load circuit:		
Switching voltage	0 V ... 24 V DC	0 V ... 24 V DC
Peak reverse voltage	33 V	33 V
Max. switching current	2ADC	2ADC
Forward voltage at max. switching current	< 120mV DC	< 120mV DC
Switch on/switch off time	0.1ms / 2ms	5ms / 14ms
Ambient operating temperature	-20 °C ... +70 °C	-20 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dielectric strength control/switching circuit	2.5 kV	2.5 kV
Dimensions (mm) W x H x L	6 x 81 x 94	6 x 81 x 94
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Standards/Specifications	EN 61000-6-4	EN 61000-6-4, EN 60664-1
	In order to meet the interference immunity regarding EN 61000-4-4 and EN 61000-4-5, a shielded cable must be used on the load side. If a shielded cable is not used, the 859-890 Overvoltage Protection Module must be used on the output side.	The operator has to take appropriate measures so as to meet the requirements of immunity to interference for electrical and electronic devices (acc. to EN 61000-6-2).
Approvals	CE, ㏀, UL 508	CE, UL 508

	Solid state relay **Input: 230 V AC/DC** **Output: 0 V ... 24 V DC / 2 A**	







Description	Item No.	Pack. Unit	
***JUMPFLEX*® relay socket with solid state relay, for DIN 35 rail**	**857-728**	1	

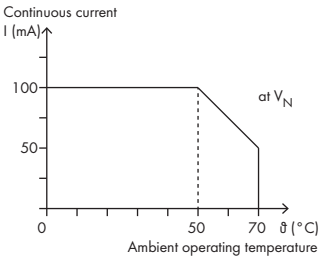
Technical Data

Accessories see pages 69 ... 71

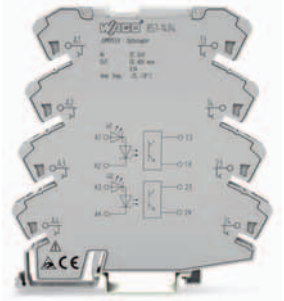
Control circuit:	
Nominal input voltage (V_N)	230V AC/DC
Input voltage range (low level)	0 - 60V
Input voltage range (high level)	200 - 253V
Nominal input current (I_N)	3.2 mA
Load circuit:	
Switching voltage	0 V ... 24 V DC
Peak reverse voltage	33 V
Max. switching current	2ADC
Forward voltage at max. switching current	< 120mV DC
Switch on/switch off time	8ms / 16ms
Ambient operating temperature	-20 °C ... +60 °C
Storage temperature	-40 °C ... +70 °C
Dielectric strength control/switching circuit	2.5 kV
Dimensions (mm) W x H x L	6 x 81 x 94
	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in
Standards/Specifications	EN 61000-6-4, EN 60664-1
	The operator has to take appropriate measures so as to meet the requirements of immunity to interference for electrical and electronic devices (acc. to EN 61000-6-2).
Approvals	CE, UL 508

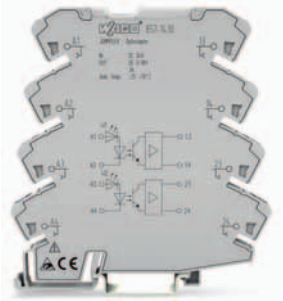
JUMPFLEX® Optocouplers

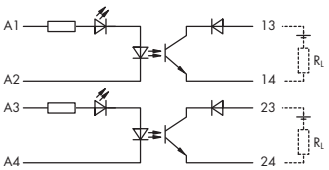
	Optocoupler Input: 2 x 24 VDC Output: 2 x 9 – 60 VDC / 0.1 A	Optocoupler Input: 2 x 24 VDC Output: 2 x 3 – 30 VDC / 3 A

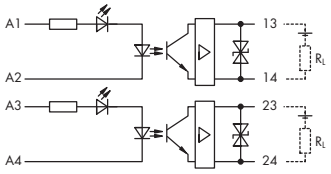


Derating for 857-1494



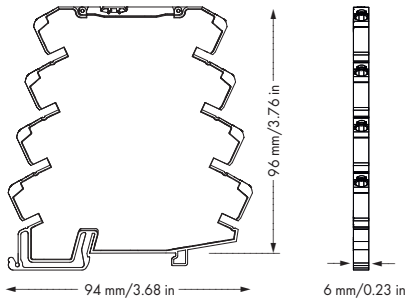


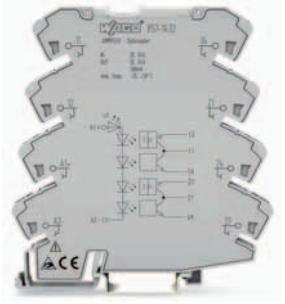


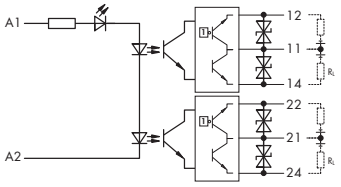


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
***JUMPFLEX*® Optocoupler, for DIN 35 rail**	**857-1494**	1	**857-1430**	1
Technical Data	Accessories see pages 69 ... 71		Accessories see pages 69 ... 71	
Control circuit:				
Nominal input voltage (V_N)	2 x 24 V DC		2 x 24 V DC	
Input voltage range	V_N -30 % ... +25 %		V_N -30 % ... +25 %	
Input voltage range (low level)	0 V ... 5 V		0 V ... 5 V	
Input voltage range (high level)	16.8 V ... 30 V		16.8 V ... 30 V	
Input current range	3 mA ... 7.8 mA		4.25 mA ... 11 mA	
Nominal input current (I_N)	5.6 mA		7.75 mA	
Load circuit:				
Switching voltage	2 x DC 9 V ... 60 V		2 x DC 3 V ... 30 V	
Max. switching current	2 x 0.1 A DC		2 x 3 A DC	
Peak reverse voltage	100 V		55 V	
Forward voltage at max. switching current	< 2 V		< 0.2 V	
Leakage current at nominal voltage	25 µA		250 µA	
Switch on/switch off time	20 µs / 120 µs		25 µs / 250 µs	
Max. switching frequency	1.5 kHz		300 Hz	
Dielectric strength control/switching circuit	2.5 kV		2.5 kV	
Dielectric strength channel/channel	4 kV		4 kV	
Ambient operating temperature	-25 °C ... +70 °C		-25 °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	
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®S		CAGE CLAMP®S	
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14		0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Stripped lengths	9 ... 10 mm / 0.37 in		9 ... 10 mm / 0.37 in	
Approvals			CE, GL	

Optocoupler
Input: 2 x 24 VDC
Output: 2 changeover contacts,
2 x 3 ... 30 VDC / 0.5 A







Description	Item No.	Pack. Unit	
***JUMPFLEX*® Optocoupler, for DIN 35 rail**	**857-1432**	1	

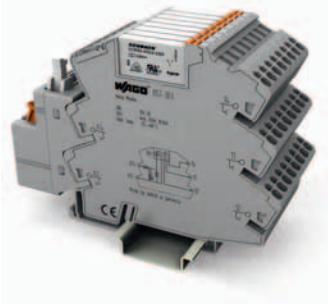
Technical Data

Accessories see pages 69 ... 71

Control circuit:	
Nominal input voltage (V_N)	24 V DC
Input voltage range	V_N -30 % ... +25 %
Input voltage range (low level)	0 V ... 5 V
Input voltage range (high level)	16.8 V ... 30 V
Input current range	5.3 mA ... 6.3 mA
Nominal input current (I_N)	5.9 mA
Load circuit:	
Switching voltage	2 x DC 3 V ... 30 V
Max. switching current	2 x 500 mA
Min. switching current	2 x 0.5 mA
Forward voltage at max. switching current	< 1.5 V
Leakage current at nominal voltage	20 µA
Switch on/switch off time	25 µs / 250 µs
Max. switching frequency	1.5 kHz
Dielectric strength control/switching circuit	3.75 kV
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Dimensions (mm) W x H x L	6 x 96 x 94
	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Stripped lengths	9 ... 10 mm / 0.37 in

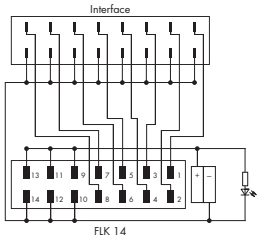
JUMPFLEX® 8-Channel Adapter for System Wiring

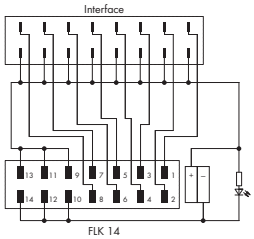
	8-channel adapter with 14-pin ribbon cable connector Input, positive switching	8-channel adapter with 14-pin ribbon cable connector Output, positive switching











Description	Item No.	Pack. unit	Item No.	Pack. unit
***JUMPFLEX*® 8-channel adapter for system wiring**	**857-981**	1	**857-982**	1

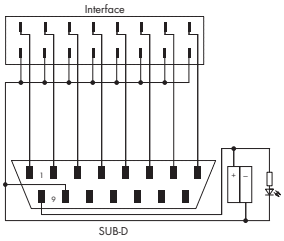
Technical Data

Connection type, signal level	14-pin ribbon cable connector acc. to DIN 41651	14-pin ribbon cable connector acc. to DIN 41651
Performance level	3	3
Contact resistance	≤ 20 mΩ	≤ 20 mΩ
Current carrying capacity	1 A	1 A
Test voltage	500 V / 50 Hz / 1 min.	500 V / 50 Hz / 1 min.
Voltage supply V_N	24 V DC	24 V DC
Supply voltage range	16.8 V ... 31.2 V	16.8 V ... 31.2 V
Max. total current	3 A	3 A
Operational indication	LED, green	LED, green
Connection type, supply	231 Series with CAGE CLAMP®	231 Series with CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

	8-channel adapter with SUB-D male connector Input, positive switching	







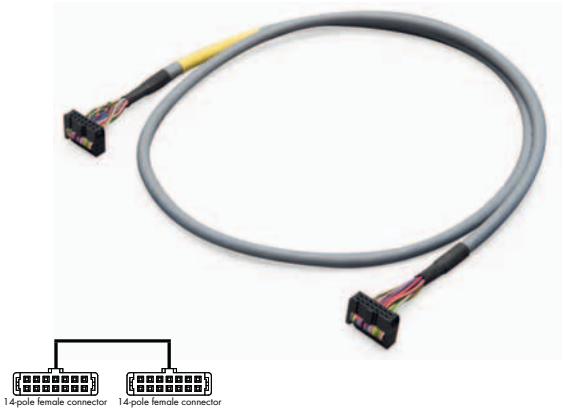
Description	Item No.	Pack. unit	
***JUMPFLEX*® 8-channel adapter for system wiring**	**857-986**	1	

Technical Data

Connection type, signal level	15-pin ribbon cable connector acc. to DIN 41651	
Performance level	2	
Contact resistance	≤ 10 mΩ	
Current carrying capacity	1 A	
Test voltage	500 V / 50 Hz / 1 min.	
Voltage supply V_N	24 V DC	
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 mm² ... 2.5 mm² / AWG 28 ... 14	
Stripped lengths	5 ... 6 mm / 0.22 in	

WAGO Ribbon Cables

for 857 Series

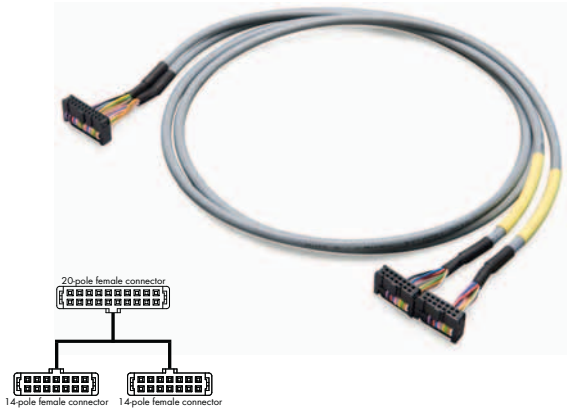


The 14-pin cables transmit signals one-to-one from the 14-pole female connector and are available in 1-, 2- and 3-meter lengths.

Suitable for system wiring when combined with the JUMPFLEX® Interface Adapter (Item No. 857-981 and 857-982)

Description	Item No.	Pack. Unit
WAGO ribbon cable 14/14, 1m long	**706-753/300-100**	1
WAGO ribbon cable 14/14, 2m long	**706-753/300-200**	1
WAGO ribbon cable 14/14, 3m long	**706-753/300-300**	1

Technical Data	
Connections	2 x 14-pole female connector
	acc. to DIN 41651
Wire cross-section	0.14 mm² 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)



The 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 ribbon cables are available in 1-, 2- and 3-meter lengths – each has one 20-pole or two 14-pole female connectors on the ends.

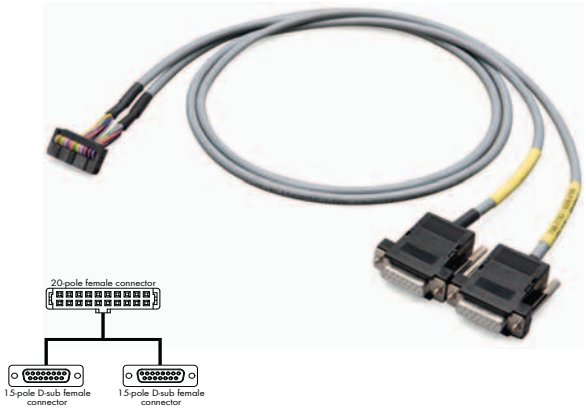
Suitable for system wiring when combined with the JUMPFLEX® Interface Adapter (Item No. 857-981 and 857-982)

Description	Item No.	Pack. Unit
WAGO ribbon cable 20/2x14, 1m long	**706-7753/304-100**	1
WAGO ribbon cable 20/2x14, 2m long	**706-7753/304-200**	1
WAGO ribbon cable 20/2x14, 3m long	**706-7753/304-300**	1

Technical Data	
Connections	1 x 20-pole female connector /
	2 x 14-pole female connector to
	DIN 41651
Wire cross-section	0.14 mm² 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)

FLK=Flachbandkabel

WAGO Ribbon Cables



The 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 ribbon cables are available in 1-, 2- and 3-meter lengths – each has one 20-pole or two 15-pole female connectors on the ends.

Suitable for system wiring when combined with the JUMPFLEX® Interface Adapter (Item No. 857-986)

Description	Item No.	Pack. Unit
WAGO ribbon cable 20/2x15, 1m long	**706-7753/306-100**	1
WAGO ribbon cable 20/2x15, 2m long	**706-7753/306-200**	1
WAGO ribbon cable 20/2x15, 3m long	**706-7753/306-300**	1

Technical Data	
Connections	1 x 20-pole female connector to DIN 41651 / 2 x 15-pole D-sub female connector to DIN 41652
Wire cross-section	0.14 mm² 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)

WAGO Ribbon Cables





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 ribbon cable, 14-pole/one free cable end, lenght 2 m	**706-100/1303-200**	1

Technical Data

Ports	14-pole female connector/ one free cable end
Wire cross-section	0.14 mm² 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

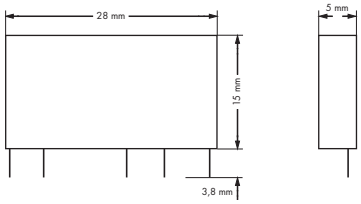
Description	Item No.	Pack. Unit
WAGO ribbon cable, 16-pole/one free cable end, lenght 2 m	**706-100/1602-200**	1

Technical Data

Ports	16-pole female connector/ one free cable end
Wire cross-section	0.14 mm² 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

Miniature Switching Relay, Series 857

	Pluggable miniature switching relays 1 changeover contact	Pluggable miniature switching relays 1 changeover contact (gold contacts)

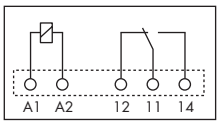


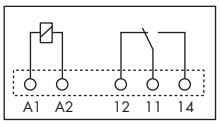




* In order to prevent the gold layer from being damaged these values should not be exceeded. Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.

The values in brackets are valid if the gold layer is damaged.





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

Technical Data

Contact material	AgNi	AgNi + 5 µ Au
Max. switching voltage	250 V AC/DC	30 V*
Max. continuous current (terminal blocks in a row)	6 A	50 mA* / (6 A)
Max. Switching power (resistive)	1250 VA AC	(1250 VA AC)*
Recommended minimum load	≥ 100 mA / 12 V AC/DC	≥ 1 V / 1 mA / 50 mW
Max. switching rate with / without load	6 min^{-1} / 20 s^{-1}	6 min^{-1} / 20 s^{-1}
Rated power consumption	< 220 mW	< 220 mW
Pull-in/drop-out/bounce time typ.	5 ms / 6 ms / 5 ms	5 ms / 6 ms / 5 ms
Nominal operating mode	continuous duty	continious duty
Dielectric strength contact-coil	4 kV_{eff}	4 kV_{eff}
Surge capacity open contact	1 kV_{eff}	1 kV_{eff}
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature (V_N)	-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	5 x 15 x 28	5 x 15 x 28
Weight	13,5 g	13,5 g

Solid State Relays, 857 Series

	Pluggable replacement solid state relay	Pluggable replacement solid state relay



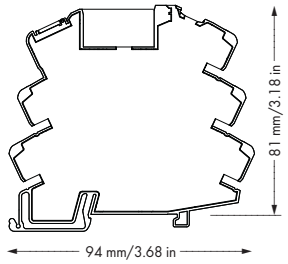


Description	Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Pluggable replacement solid state relay	**857-161**	20	**857-164**	20	**857-167**	20
Technical Data						
Control circuit:						
Nominal input voltage (V_N)	24 V DC		24 V DC		24 V DC	
Input voltage range	18 V ... 30 V DC		16 V ... 30 V DC		18 V ... 30 V DC	
Nominal input current (I_N)	7 mA		7 mA		7 mA	
Load circuit:						
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	2 A DC		100 mA DC		1 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	
General Specifications						
Ambient operating temperature	-20 °C ... +60 °C		-20 °C ... +60 °C		-20 °C ... +60 °C	
Storage temperature	-40 °C ... +70 °C		-40 °C ... +70 °C		-40 °C ... +70 °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						
Control circuit:						
Nominal input voltage (V_N)	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_N)	3 mA		2.8 mA		3.1 mA	
Load circuit:						
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	2 A DC		100 mA DC		1 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	
General Specifications						
Ambient operating temperature	-20 °C ... +60 °C		-20 °C ... +60 °C		-20 °C ... +60 °C	
Storage temperature	-40 °C ... +70 °C		-40 °C ... +70 °C		-40 °C ... +70 °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 Optocoupler

	Sockets for miniature switching relay and optocoupler	





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

Technical Data

Accessories see page 52 + 62 ... 63

Status indication	LED yellow	
Operating temperature	-25 °C ... +60 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	6 x 81 x 94	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®S	
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 14	
Stripped lengths	9 ... 10 mm / 0.37 in	

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

Accessories, 857 Series

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 8			
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



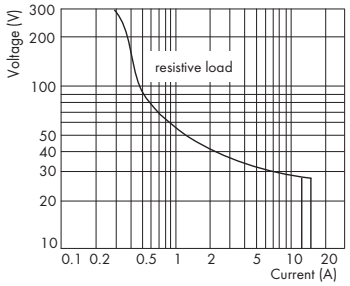
Wire connection



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

Sockets with Miniature Switching Relay

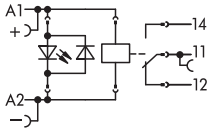
	Relay with 1 changeover contact and status indication (Relay height: 15 mm) Nominal input voltage V_N 12 V, 24 V, 48 V, 60 V, 110 V DC	Relay with 2 changeover contact and status indication (Relay height: 15 mm) Nominal input voltage V_N 12 V, 24 V, 48 V, 60 V, 110 V DC

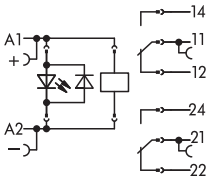


Load limit curve for 788-303 to 788-307, 788-506, 788-507 and 788-508







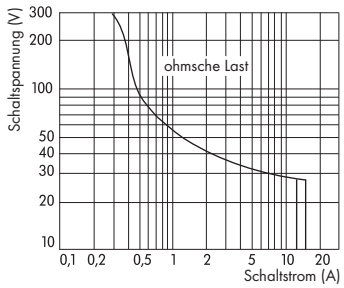


Note: Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

Description	V_N	I_N	Item No.	Pack. unit	V_N	I_N	Item No.	Pack. unit
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	12 V DC	36 mA	**788-303**	1	12 V DC	36 mA	**788-311**	1
	24 V DC	19.1 mA	**788-304**	1	24 V DC	19.1 mA	**788-312**	1
	48 V DC	11 mA	**788-305**	1	48 V DC	11 mA	**788-313**	1
	60 V DC	10.5 mA	**788-306**	1	60 V DC	10.5 mA	**788-314**	1
	110 V DC	6 mA	**788-307**	1	110 V DC	6 mA	**788-315**	1

Technical Data	Accessories see pages 86 ... 91	Accessories see pages 86 ... 91
Contact material	AgNi 90/10	AgNi 90/10
Input voltage range	V_N ± 10 %	V_N ± 10 %
Max. switching voltage	250 V AC	250 V AC
Max. continuous current	16 A	2 x 8 A
Max. make current (resistive) at a 10 % duty cycle	4 s 30 A (AC)	4 s 15 A (AC)
Max. Switching power (resistive)	4 kVA AC, DC see load limit curve	2 x 2 kVA AC, DC see load limit curve
Max. switching rate with / without load	6 min^{-1} / 1200 min^{-1}	6 min^{-1} / 1200 min^{-1}
Operating power	400 mW typ.	400 mW typ.
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / 3 ms	7 ms / 2 ms / 3 ms
Nominal operating mode	continious duty	continious duty
Dielectric strength contact-coil	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations	30 x 10^6 switching operations
Degree of protection	IP20	IP20
Ambient operating temperature	-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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	DIN VDE 0140 part 1, DIN EN 61140;
	DIN VDE 0160, EN 50178	DIN VDE 0160, EN 50178
	(788-307: UL 508, max. 40 °C/10 A)	(788-315: UL 508, max. 40 °C)
		(OT = On-time)

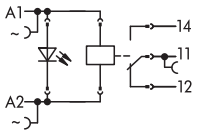
	Relay with 1 changeover contact and status indication (Relay height: 15 mm) Nominal input voltage V_N 24 V, 115 V, 230 V AC	Relay with 2 changeover contact and status indication (Relay height: 15 mm) Nominal input voltage V_N AC 24 V, 115 V, 230 V

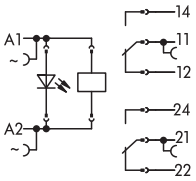


Load limit curve for 788-311 to 788-315, 788-512, 788-515 and 788-516







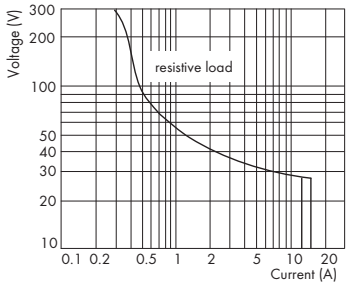


Description	V_N	I_N	Item No.	Pack. unit	V_N	I_N	Item No.	Pack. unit
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	24 V AC	34 mA	**788-506**	1	24 V AC	34 mA	**788-512**	1
	115 V AC	8 mA	**788-507**	1	115 V AC	8 mA	**788-515**	1
	230 V AC	3,5 mA	**788-508**	1	230 V AC	3,5 mA	**788-516**	1

Technical Data	Accessories see pages 86 ... 91	Accessories see pages 86 ... 91
Contact material	AgNi 90/10	AgNi 90/10
Input voltage range	V_N ± 10 %	V_N ± 10 %
Max. switching voltage	250 V AC	250 V AC
Max. continuous current	16 A	2 x 8 A
Max. make current (resistive) at a 10 % duty cycle	4 s 30 A (AC)	4 s 15 A (AC)
Max. Switching power (resistive)	4 kVA AC, DC see load limit curve	2 x 2 kVA AC, DC see load limit curve
Max. switching rate with / without load	6 min^{-1} / 1200 min^{-1}	6 min^{-1} / 1200 min^{-1}
Operating power	0.75 VA	0.75 VA
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / 3 ms	7 ms / 2 ms / 3 ms
Nominal operating mode	continious duty	continious duty
Dielectric strength contact-coil	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	10 x 10^6 switching operations	5 x 10^6 switching operations
Degree of protection	IP20	IP20
Ambient operating temperature	-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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	DIN VDE 0140 part 1, DIN EN 61140; DIN VDE 0160,	DIN VDE 0140 part 1, DIN EN 61140; DIN VDE 0160,
	EN 50178; ㊀;	EN 50178; UL 508; ㊀
	(788-507, 788-508: UL 508, max. 40 °C/10 A)	
		(OT = On-time)

Sockets with Miniature Switching Relay

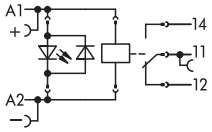
	Relay with 1 changeover contact with gold contacts and and status indication (Relay height: 15 mm) Nominal input voltage V_N 24 V DC	Relay with 2 changeover contact with gold contacts and and status indication (Relay height: 15 mm) Nominal input voltage V_N 24 V DC

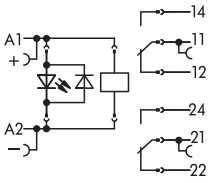


Load limit curve for 788-404, 788-607 and 788-608





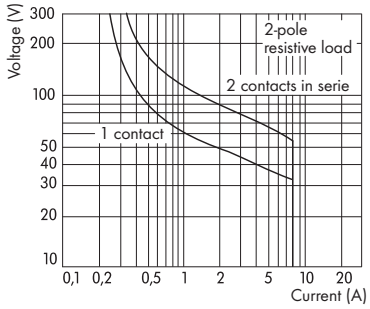




* In order to prevent the gold layer from being damaged these values should not be exceeded. Higher switching power leads to evaporation of the gold layer.

Description	V_N	I_N	Item No.	Pack. unit	V_N	I_N	Item No.	Pack. unit
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	24 V DC	19 mA	**788-404**	1	24 V DC	19 mA	**788-412**	1
Technical Data	Accessories see pages 86 ... 91				Accessories see pages 86 ... 91			
Contact material	AgNi + 5µ AU				AgNi + 5µ AU			
Input voltage range	V_N ± 10 %				V_N ± 10 %			
Max. switching voltage	250 V AC / 36 V DC*				250 V AC / 36 V DC*			
Max. continuous current	50 mA*				2 x 50 mA*			
Max. Switching power (resistive)	4 kVA AC, DC see load limit curve				2 x 2 kVA AC, DC see load limit curve			
Pull-in/drop-out time typ.	7 ms / 3 ms				7 ms / 3 ms			
Nominal operating mode	continious duty				continious duty			
Dielectric strength contact-coil	5 kV				5 kV			
Dielectric strength open contact	1 kV				1 kV			
Dielectric strength contact-contact					2.5 kV			
Nominal voltage acc. to VDE 0110 Part 1/4.97,								
IEC 60664-1	250 V / 4 kV / 3				250 V / 4 kV / 3			
Mechanical life	3 x 10^7 switching operations				3 x 10^7 switching operations			
Degree of protection	IP20				IP20			
Ambient operating temperature	-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			
	Height from upper-edge of DIN 35 rail				Height from upper-edge of DIN 35 rail			
Wire connection	CAGE CLAMP®S				CAGE CLAMP®S			
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12				0.34 mm² ... 2.5 mm² / AWG 22 ... 12			
Stripped lengths	9 ... 10 mm / 0.37 in				9 ... 10 mm / 0.37 in			
Approvals	DIN VDE 0140 part 1, DIN EN 61140;				DIN VDE 0140 part 1, DIN EN 61140;			
	DIN VDE 0160, EN 50178				DIN VDE 0160, EN 50178			
					(OT = On-time)			

	Relay with 1 changeover contact with gold contacts and and status indication (Relay height: 15 mm) Nominal input voltage V_N 115 V, 230 V AC	Relay with 2 changeover contact with gold contacts and and status indication (Relay height: 15 mm) Nominal input voltage V_N 115 V, 230 V AC

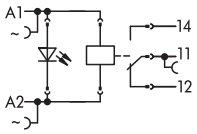


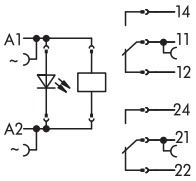
Load limit curve for 788-412, 788-615 and 788-616





* In order to prevent the gold layer from being damaged these values should 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.



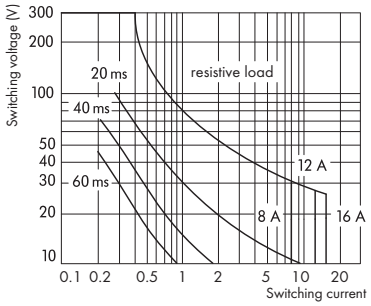


Description	V_N	I_N	Item No.	Pack. unit	V_N	I_N	Item No.	Pack. unit
Relay sockets with pluggable miniature switching	115 V AC	8.2 mA	**788-607**	1	115 V AC	8.2 mA	**788-615**	1
relay, for DIN 35 rail	230 V AC	5 mA	**788-608**	1	230 V AC	5 mA	**788-616**	1

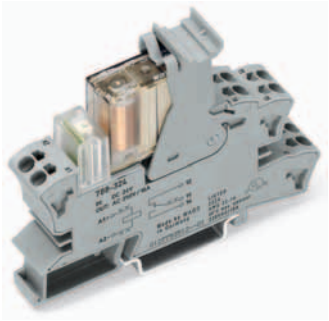
Technical Data	Accessories see pages 86 ... 91	Accessories see pages 86 ... 91
Contact material	AgNi + 5µ AU	AgNi + 5µ AU
Input voltage range	V_N ± 10 %	V_N ± 10 %
Max. switching voltage	250 V AC / 36 V DC*	250 V AC / 36 V DC*
Max. continuous current	50 mA*	2 x 50 mA*
Max. Switching power (resistive)	4 kVA AC, DC see load limit curve	2 x 2 kVA AC, DC see load limit curve
Pull-in/drop-out time typ.	7 ms / 3 ms	7 ms / 3 ms
Nominal operating mode	continious duty	continious duty
Dielectric strength contact-coil	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Dielectric strength contact-contact	2.5 kV	2.5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	3 x 10^7 switching operations	3 x 10^7 switching operations
Degree of protection	IP20	IP20
Ambient operating temperature	-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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	DIN VDE 0140 part 1, DIN EN 61140;
	DIN VDE 0160, EN 50178	DIN VDE 0160, EN 50178; ⓖⓛ
		(OT = On-time)

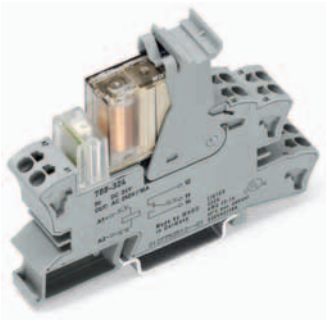
Sockets with Miniature Switching Relay

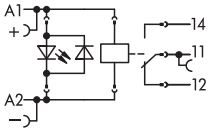
	Relay with 1 changeover contact and status indication (Relay height: 25 mm) Nominal input voltage V_N 24 V DC	Relay with 2 changeover contact and status indication (Relay height: 25 mm) Nominal input voltage V_N 24 V DC

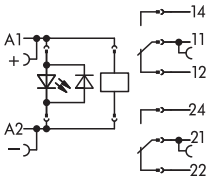


Load limit curve for 788-324 and 788-528





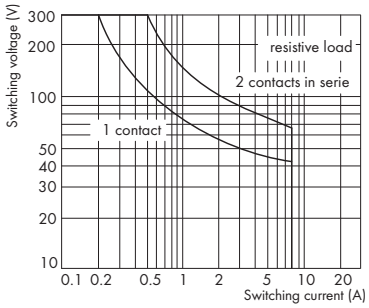




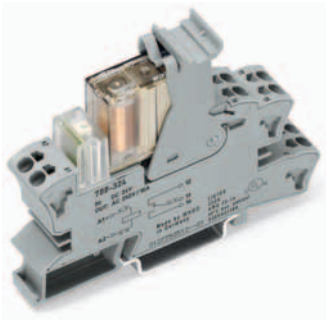
Description	V_N	I_N	Item No.	Pack. unit	V_N	I_N	Item No.	Pack. unit
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	24 V DC	22 mA	**788-324**	1	24 V DC	22 mA	**788-334**	1

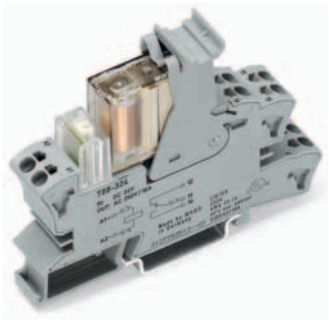
Technical Data	Accessories see pages 86 ... 91	Accessories see pages 86 ... 91
Contact material	AgCdO	AgCdO
Input voltage range	V_N ± 10 %	V_N ± 10 %
Max. switching voltage	250 V AC	250 V AC
Max. continuous current	16 A	2 x 8 A
Max. make current (resistive) at a 10 % duty cycle	4 s 25 A (AC)	4 s 14 A (AC)
Max. Switching power (resistive)	4 kVA AC, DC see load limit curve	2 x 2 kVA AC, DC see load limit curve
Max. switching rate with / without load	10 min^{-1} / 1200 min^{-1}	10 min^{-1} / 1200 min^{-1}
Operating power	500 mW typ.	500 mW typ.
Pull-in/drop-out/bounce time typ.	8 ms / 2 ms / 4 ms	9 ms / 3 ms / 3 ms
Nominal operating mode	continious duty	continious duty
Dielectric strength contact-coil	4 kV	4 kV
Dielectric strength open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations	20 x 10^6 switching operations
Degree of protection	IP20	IP20
Ambient operating temperature	-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 64 x 86	15 x 64 x 86
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	DIN VDE 0140 part 1, DIN EN 61140;
	DIN VDE 0160, EN 50178; UL 508 (max. 40 °C/10 A)	DIN VDE 0160, EN 50178; UL 508 (max. 40 °C)
		(OT = On-time)

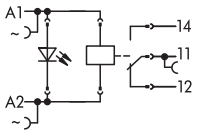
	Relay with 1 changeover contact and status indication (Relay height: 25 mm) Nominal input voltage V_N 230 V AC	Relay with 2 changeover contact and status indication (Relay height: 25 mm) Nominal input voltage V_N 230 V AC

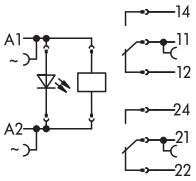


Load limit curve for 788-334 and 788-538







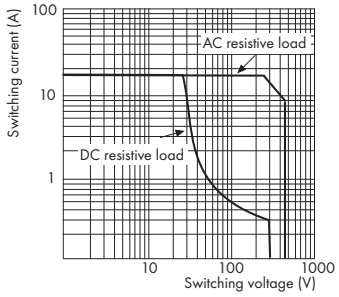


Description	V_N	I_N	Item No.	Pack. unit	V_N	I_N	Item No.	Pack. unit
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	230 V AC	5.6 mA	**788-528**	1	230 V AC	5.6 mA	**788-538**	1

Technical Data	Accessories see pages 86 ... 91	Accessories see pages 86 ... 91
Contact material	AgCdO	AgCdO
Input voltage range	V_N ± 10 %	V_N ± 10 %
Max. switching voltage	250 V AC	250 V AC
Max. continuous current	16 A	2 x 8 A
Max. make current (resistive) at a 10 % duty cycle	4 s 14 A (AC)	4 s 14 A (AC)
Max. Switching power (resistive)	4 kVA AC, DC see load limit curve	2 x 2 kVA AC, DC see load limit curve
Max. switching rate with / without load	10 min^{-1} / 1200 min^{-1}	10 min^{-1} / 1200 min^{-1}
Operating power	500 mW typ.	500 mW typ.
Pull-in/drop-out/bounce time typ.	8 ms / 2 ms / 4 ms	9 ms / 3 ms / 3 ms
Nominal operating mode	continious duty	continious duty
Dielectric strength contact-coil	4 kV	4 kV
Dielectric strength open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations	20 x 10^6 switching operations
Degree of protection	IP20	IP20
Ambient operating temperature	-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 64 x 86	15 x 64 x 86
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	DIN VDE 0140 part 1, DIN EN 61140;
	DIN VDE 0160, EN 50178; UL 508 (max. 40 °C/10 A)	DIN VDE 0160, EN 50178; UL 508 (max. 40 °C)
		(OT = On-time)

Sockets with Miniature Switching Relay

Relay with 1 changeover contact and status indication (Relay height: 15 mm) Nominal input voltage V_N 24 V DC

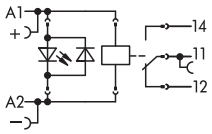


Load limit curve



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	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



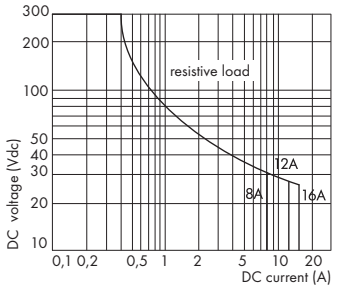
Description	V_N	I_N	Item No.	Pack. unit	
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	24 V DC	19 mA	**788-354**	1	

Technical Data

Accessories see pages 86 ... 91

Contact material	Ag alloy	
Input voltage range	U_N -15 % ... +20 %	
Max. switching voltage	250 V AC	
Max. continuous current	16 A	
Max. make current (resistive) at a 10 % duty cycle	(50 ms) 120 A at 230 V AC	
Recommended minimum load	> 100 mA / 12 V AC/DC	
Max. Switching power (resistive)	4 kVA AC, DC see load limit curve	
Operating power	400 mW	
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -	
Nominal operating mode	continious duty	
Dielectric strength contact-coil	5 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	10 x 10^6 switching operations	
Mechanical life at max. load (resistance)	min. 100.000 switching operations	
Service life at lamp load	see table lamp loads	
Degree of protection	IP20	
Type of relay	ALZ	
Ambient operating temperature	-25 °C ... +50 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	15 x 54 x 86	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®S	
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	
Stripped lengths	9 ... 10 mm / 0.37 in	
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	
	DIN VDE 0160, EN 50178; UL 508 (max. 10 A)	
		(OT = On-time)

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

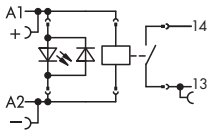


DC load limit curve



Contact life at different lamp loads

Load	Switching operations
12 A, 250 V AC, cos φ = 1	3×10^5
TV 8 acc. to UL 508	25×10^3
2500 W, 230 V AC Halogen lamp	$> 10^4$
1000 W, 250 V AC Incandesent lamp	2.3×10^5
3000 W, 250 V AC Incandesent lamp	3.6×10^4
1500 VA, Fluorescent lamp 163 µF	10^4



Description	V_N	I_N	Item No.	Pack. unit	
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	24 V DC	21.8 mA	**788-355**	1	

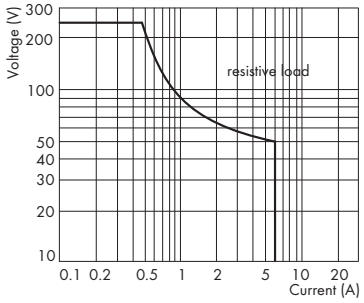
Technical Data

Accessories see pages 86 ... 91

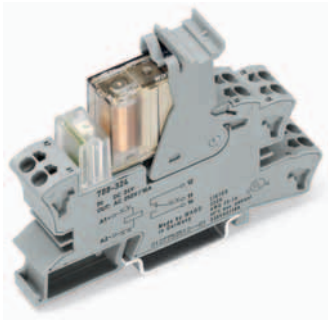
Contact material	$AgSnO_2$	
Input voltage range	U_N -15 % ... +20 %	
Max. switching voltage	250 V AC	
Max. continuous current	16 A	
Max. make current (resistive) at a 10 % duty cycle	4 s 25 A (AC)	
Peak inrush current	20 ms / 120 A	
Recommended minimum load	> 100 mA / 12 V AC/DC	
Max. Switching power (resistive)	4 kVA AC, DC see load limit curve	
Operating power	500 mW	
Pull-in/drop-out/bounce time typ.	8 ms / 2 ms / 2 ms	
Nominal operating mode	continious duty	
Dielectric strength contact-coil	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	30×10^6 switching operations	
Service life at lamp load	see table lamp loads	
Degree of protection	IP20	
Type of relay	RP3SL	
Ambient operating temperature	-25 °C ... +50 °C	
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) W x H x L	15 x 64 x 86	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®S	
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	
Stripped lengths	9 ... 10 mm / 0.37 in	
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	
	DIN VDE 0160, EN 50178; UL 508 (max. 10 A)	
		(OT = On-time)

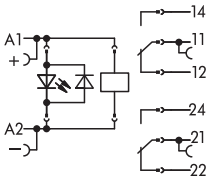
Sockets with Miniature Switching Relay

Safety relay SR2M (2 changeover contacts) with forced guided contacts 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
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	24 V DC	31 mA	**788-384**	1

Technical Data

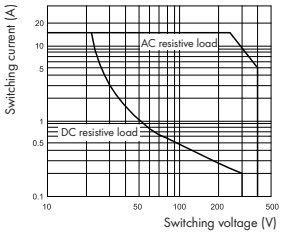
Accessories see pages 86 ... 91

Contact material	AgNi
Input voltage range	V_N ± 10 %
Max. switching voltage	250 V AC
Max. continuous current	6 A
Max. make current (resistive) at a 10 % duty cycle	4 s 14 A (AC)
Recommended minimum load	> 50 mW
Max. Switching power (resistive)	AC 1500 VA; DC see load limit curve
Max. switching rate with / without load	6 min^{-1} / 300 min^{-1}
Operating power	700 mW
Pull-in/drop-out time typ.	10 ms / 4 ms
Nominal operating mode	continious duty
Dielectric strength contact-coil	4 kV
Dielectric strength open contact	1.5 kV
Dielectric strength contact-contact	3 kV
Clearance and creepage distance contact / coil	8 mm
Adjacent contacts	5.5 mm
Nominal voltage acc. to VDE 0110 Part 1/4.97,	
IEC 60664-1	250 V / 4 kV / 3
Mechanical life	10 x 10^6 switching operations
Degree of protection	IP20
Ambient operating temperature	-25 °C ... +50 °C
Storage temperature	-40 °C ... +70 °C
Dimensions (mm) W x H x L	15 x 64 x 86
	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S
Cross sections	0.34 mm^2 ... 2.5 mm^2 / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in
Approvals	EN 50205; UL 508

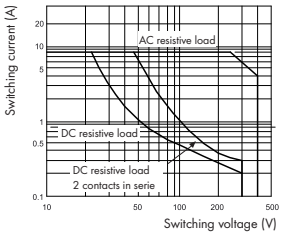
(OT = On-time)

Sockets with Miniature Switching Relay

	Relay with 1 changeover contact Electrical and mechanical status indication Manual operation (Relay height: 25 mm) Nominal input voltage V_N: 24 V DC, 48 V DC, 110 V DC	Relay with 2 changeover contact Electrical and mechanical status indication Manual operation (Relay height: 25 mm) Nominal input voltage V_N: 24 V DC, 48 V DC, 110 V DC



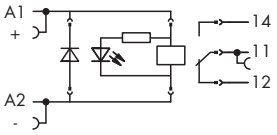
load limit curve 788-341, -342, -344

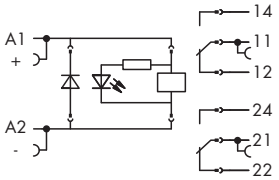


load limit curve 788-346, -347, -349





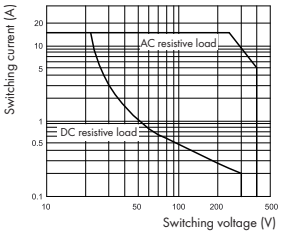




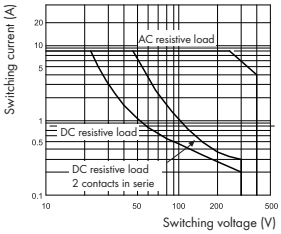
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	24 V DC	16.7 mA	**788-341**	1	24 V DC	16.7 mA	**788-346**	1
	48 V DC	8.3 mA	**788-342**	1	48 V DC	8.3 mA	**788-347**	1
	110 V DC	3.6 mA	**788-344**	1	110 V DC	3.6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

Technical Data	Accessories see pages 86 ... 91	Accessories see pages 86 ... 91
Contact material	AgNi	AgNi
Input voltage range	U_N ± 10 %	U_N ± 10 %
Max. switching voltage	250 V AC	250 V AC
Max. continuous current	16 A	2 x 8 A
Max. Switching power (resistive)	4 kVA AC	2 x 2 kVA AC
Operating power	400 mW typ.	400 mW typ.
Responce time/Drop-out time max.	15 ms / 8 ms	15 ms / 8 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Degree of protection	IP20	IP20
Ambient operating temperature	-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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Standards/Specifications	DIN VDE 0140 part 1, DIN EN 61140;	DIN VDE 0140 part 1, DIN EN 61140;
	DIN VDE 0160, EN 50178; UL 508 (max. 10 A)	DIN VDE 0160, EN 50178; UL 508

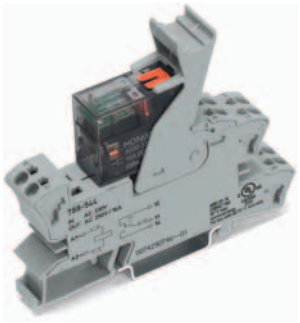
	Relay with 1 changeover contact Electrical and mechanical status indication Manual operation (Relay height: 25 mm) Nominal input voltage V_N: 24 V AC, 115 V AC, 230 V AC	Relay with 2 changeover contact Electrical and mechanical status indication Manual operation (Relay height: 25 mm) Nominal input voltage V_N: 24 V AC, 115 V AC, 230 V AC

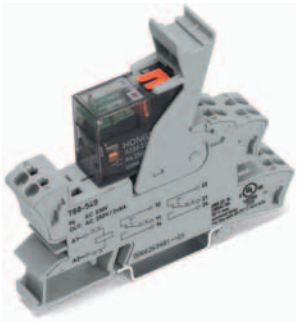


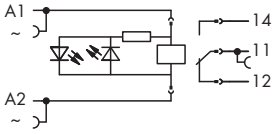
load limit curve 788-541, -543, -544

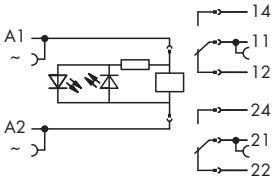


load limit curve 788-546, -548, -549









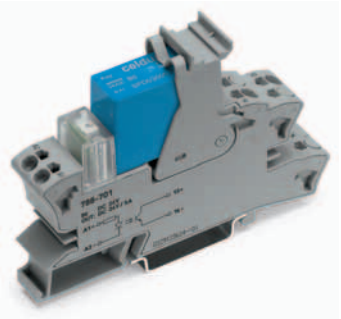
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Relay sockets with pluggable miniature switching relay, for DIN 35 rail	24 V AC	31.6 mA	**788-541**	1	24 V AC	31.6 mA	**788-546**	1
	115 V AC	6.6 mA	**788-543**	1	115 V AC	6.6 mA	**788-548**	1
	230 V AC	3.2 mA	**788-544**	1	230 V AC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

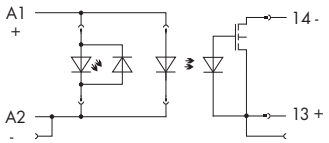
Technical Data	Accessories see pages 86 ... 91	Accessories see pages 86 ... 91
Contact material	AgNi	AgNi
Input voltage range	U_N ± 10 %	U_N ± 10 %
Max. switching voltage	250 V AC	250 V AC
Max. continuous current	16 A	2 x 8 A
Max. Switching power (resistive)	4 kVA AC	2 x 2 kVA AC
Operating power	0.75 VA typ.	0.75 VA typ.
Responce time/Drop-out time max.	15 ms / 8 ms	15 ms / 8 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
Degree of protection	IP20	IP20
Ambient operating temperature	-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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Standards/Specifications	DIN VDE 0140 part 1, DIN EN 61140;	DIN VDE 0140 part 1, DIN EN 61140;
	DIN VDE 0160, EN 50178; UL 508 (max. 10 A)	DIN VDE 0160, EN 50178; UL 508

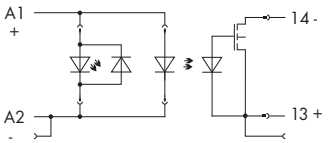
Relay Sockets with Solid State Relay

	Solid state relay **Input: 24 V DC** **Output: 0 V ... 24 V DC / 3.5 A**	**Solid state relay** **Input: 24 V DC** **Output: 0 V ... 24 V DC / 5 A**





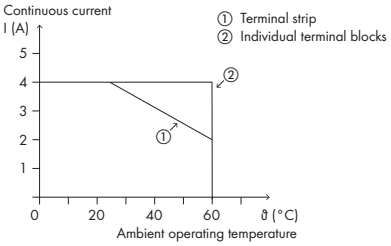




Description	**Item No.**	**Pack. Unit**	**Item No.**	**Pack. Unit**
Relay socket with solid state relay, for DIN 35 rail	**788-700**	1	**788-701**	1

Technical Data	Accessories see pages 89 ... 91	Accessories see pages 89 ... 91
Control circuit:		
Nominal input voltage (V_N)	DC 24 V	DC 24 V
Input voltage range	DC 18 V ... 30 V	DC 15 V ... 30 V
Control current U_N (20 °C)	7 mA ±10 %	9.3 mA ±10 %
Release voltage	DC 8 V	DC 2.5 V
Control circuit resistance	3.2 kΩ	2.1 kΩ
Load circuit:		
Load switching voltage range	DC 0 ... 24 V	DC 0 ... 30 V
Peak reverse voltage	33 V	36 V
Max. switching current	DC 3.5 A	DC 5 A
Min. switching current		DC 1 mA
Pull-in time		50 µs
Drop-out time		600 µs
Switching frequency (max.)		100 Hz at 5 A
Forward voltage at max. switching current	< DC 0.1 V	DC 0.3 V
Nominal operating mode	continuous duty	continuous duty
Dielectric strength control/switching circuit	2.5 kV	2.5 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
Degree of protection	IP 20	IP 20
Ambient operating temperature	-20 °C ... +60 °C	-40 °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 63 x 86
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	DIN VDE 0140 part 1, DIN EN 61140;
	DIN VDE 0160, EN 50178	DIN VDE 0160, EN 50178
		(OT = On-time)

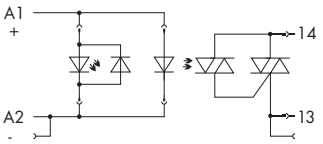
	Solid state relay Input: 24 V DC Output: 24 V ... 240 V AC / 1 A Zero voltage switch	Solid state relay Input: 24 V AC/DC Output: 12 – 275 VAC / 2 A Zero voltage switch

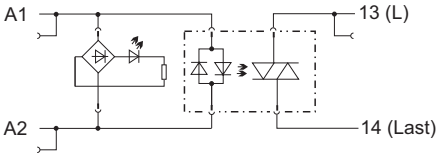


Derating 788-721









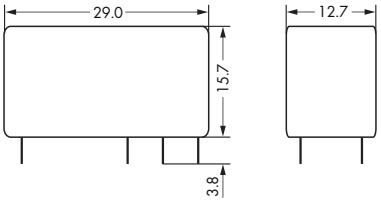
Description	Item No.	Pack. unit	V_N	I_N	Item No.	Pack. Unit
Relay socket with solid state relay, for DIN 35 rail	**788-720**	1	24 V	10 mA	**788-721**	1

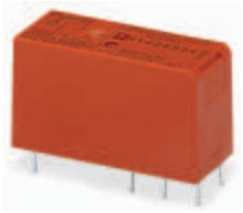
Technical Data	Accessories see pages 89 ... 91	Accessories see pages 89 ... 91
Control circuit:		
Nominal input voltage (V_N)	24 V DC	24 V AC/DC
Input voltage range	18 V ... 30 V DC	15 - 30 VAC
Control current U_N (20°C)	7 mA ±10 %	10 mA
Release voltage	4 V DC	2.5 V AC/DC
Control circuit resistance	3.2 kΩ	2.1 kΩ
Load circuit:		
Max. switching voltage	240 V AC	275 VAC
Load switching voltage range	24 ... 240 V AC	12 - 275 V AC (50/60 Hz)
Peak reverse voltage	600 V	600 V
Max. switching current	1 A AC	4 A AC
Forward voltage at max. switching current	< 1 V AC	< 1.1 VAC
Nominal operating mode	continuous duty	
Dielectric strength control/switching circuit	3.75 kV	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,	250 V / 2.5 kV / 2	
IEC 60664-1		250 V / 2.5 kV / 2
Degree of protection	IP 20	IP20
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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP® S
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	0.34 mm² ... 2.5 mm² / AWG 22 ... 12
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	DIN VDE 0140 part 1, DIN EN 61140; DIN VDE 0160, EN 50178	DIN VDE 0140 part 1, DIN EN 61140; DIN VDE 0160, EN 50178
		(OT = On-time)

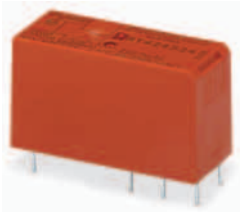
Accessories, 788 Series

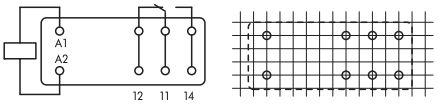
	Pluggable miniature switching relays (Relay height: 15 mm) 1 changeover contact	Pluggable miniature switching relays (Relay height: 15 mm) 2 changeover contact

Relay height 15 mm



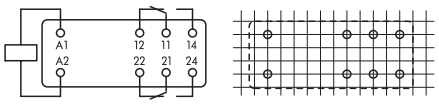






Pinning 5 mm

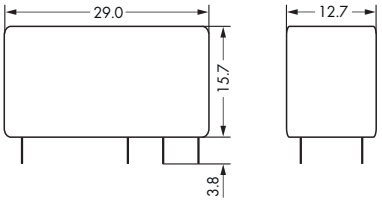
Pinning 5 mm

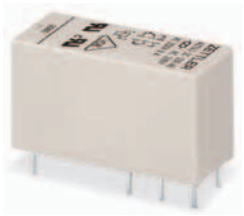


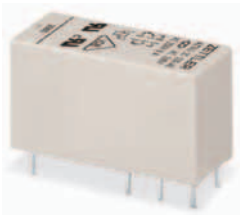
Description	V_N	Item No.	Pack. unit	V_N	Item No.	Pack. unit
Pluggable miniature switching relays	12 V DC	**788-150**	20	12 V DC	**788-152**	20
	24 V DC	**788-154**	20	24 V DC	**788-156**	20
	48 V DC	**788-158**	20	48 V DC	**788-160**	20
	60 V DC	**788-162**	20	60 V DC	**788-164**	20
	110 V DC	**788-166**	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						
Contact material		AgNi			AgNi	
Switching current		16 A			2 x 8 A	
Inrush current		30 A			15 A	
Max. switching voltage		250 V AC			250 V AC	
Switching power		4 kVA			2 kVA	
Min. switching current		10 mA			10 mA	
Nominal consumption, typ		400 mW			400 mW	
Pull-in/drop-out time typ.		7 ms / 3 ms			7 ms / 3 ms	
Nominal operating mode		continious duty			continious duty	
Mechanical life AC coil		> 10 x 10^6 switching operations			> 5 x 10^6 switching operations	
Mechanical life DC coil		> 30 x 10^6 switching operations			> 30 x 10^6 switching operations	
Dielectric strength contact-coil		5 kV			5 kV	
Dielectric strength open contact		1 kV			1 kV	
Dielectric strength contact-contact					2.5 kV	
Weight		approx. 13.5 g			approx. 13.3 g	
Degree of protection		IP40			IP40	
Ambient operating temperature AC coil		-40 °C ... +70 °C			-40 °C ... +70 °C	
Ambient operating temperature DC coil		-40 °C ... +85 °C			-40 °C ... +85 °C	
Flammability acc. to UL 94		V0			V0	
					(OT = On-time)	

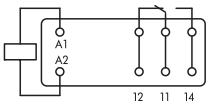
	Pluggable miniature switching relays (Relay height: 15 mm) 1 changeover contact (gold contacts)	Pluggable miniature switching relays (Relay height: 15 mm) 2 changeover contact (gold contacts)

Relay height 15 mm

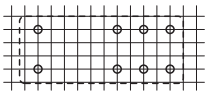


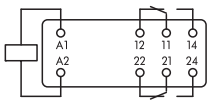




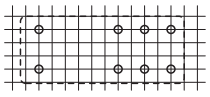


Pinning 5 mm





Pinning 5 mm



Description	V_N	Item No.	Pack. unit	V_N	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

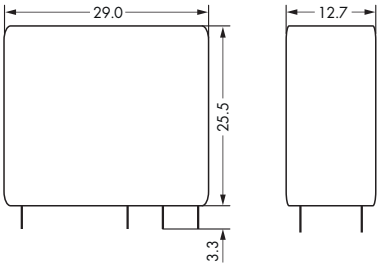
Technical Data

Contact material	AgNi + 5 µm Au	AgNi + 5 µm Au
Switching current	50 mA*	2 x 50 mA*
Max. switching voltage	36 V* DC	36 V* DC
Switching power	min. 50 mW	min. 50 mW
Rated power consumption	200 mW DC	200 mW DC
Rated power consumption	0.422 VA AC	0.422 VA AC
Pull-in/drop-out time typ.	7 ms / 3 ms	7 ms / 3 ms
Nominal operating mode	continious duty	continious duty
Mechanical life AC coil	> 3 x 10^7 switching operations	> 3 x 10^7 switching operations
Mechanical life DC coil	> 3 x 10^7 switching operations	> 3 x 10^7 switching operations
Dielectric strength contact-coil	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Dielectric strength contact-contact		2.5 kV
Weight	approx. 11 g	approx. 15 g
Degree of protection	IP40	IP40
Ambient operating temperature AC coil	-40 °C ... +70 °C	-40 °C ... +70 °C
Ambient operating temperature DC coil	-40 °C ... +85 °C	-40 °C ... +85 °C
Flammability acc. to UL 94	V0	V0
		(OT = On-time)

Accessories, 788 Series

	Pluggable miniature switching relays (Relay height: 25 mm) 1 changeover contact	Pluggable miniature switching relays (Relay height: 25 mm) 2 changeover contact

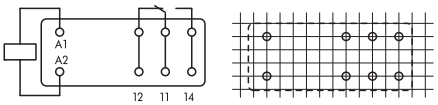
Relay height 25 mm



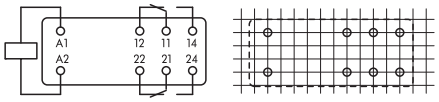




Pinning 5 mm



Pinning 5 mm



Description	V_N	Item No.	Pack. unit	V_N	Item No.	Pack. unit
Pluggable miniature switching relays	12 V DC	**788-182**	20	12 V DC	**788-183**	20
	24 V DC	**788-184**	20	24 V DC	**788-185**	20
	48 V DC	**788-186**	20	48 V DC	**788-187**	20
	60 V DC	**788-188**	20	60 V DC	**788-189**	20
	110 V DC	**788-190**	20	110 V DC	**788-191**	20
	230 V AC	**788-192**	20	230 V AC	**788-193**	20

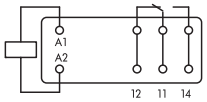
Technical Data

Contact material	AgNi AgSnO (788-192)	AgNi AgSnO (788-193)
Switching current	16 A	2 x 8 A
Max. switching voltage	250 V AC	250 V AC
Switching power	4 kVA	2 kVA
Min. switching current	100 mA	10 mA
Rated power consumption	500 mW DC	500 mW DC
Rated power consumption	1.2 VA AC	1.2 VA AC
Pull-in/drop-out time typ.	9 ms / 3 ms	9 ms / 3 ms
Nominal operating mode	continious duty	continious duty
Mechanical life AC coil	> 10 x 10^6 switching operations	> 10 x 10^6 switching operations
Mechanical life DC coil	> 20 x 10^6 switching operations	> 20 x 10^6 switching operations
Dielectric strength contact-coil	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Dielectric strength contact-contact		2.5 kV
Weight	approx. 18 g	approx. 18 g
Degree of protection	IP40	IP40
Ambient operating temperature AC coil	-40 °C ... +70 °C	-40 °C ... +70 °C
Ambient operating temperature DC coil	-40 °C ... +85 °C	-40 °C ... +85 °C
Flammability acc. to UL 94	V0	V0
		(OT = On-time)

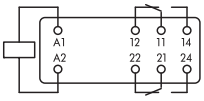
Sockets for Miniature Switching Relay

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

1 changeover contact

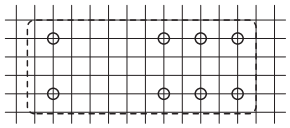


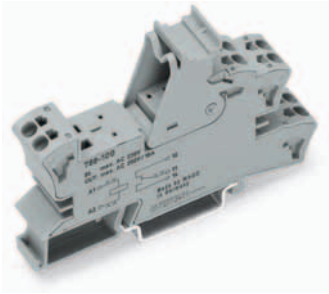
2 changeover contacts

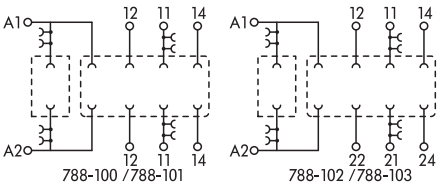


View on pins

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		
Max. continuous current	16 A / 2 x 8 A	
Nominal input voltage (V_N)	depending on relay; max. 250 V AC	
Dielectric strength	5 kV (depending on relay)	
Max. switching voltage	250 V AC	
Max. Switching power (resistive)	4000 VA AC	
Nominal operating mode	continious duty	
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	
Degree of protection	IP20	
Ambient operating temperature	-25 °C ... +70 °C (depending on relay)	
Storage temperature	-40 °C ... +80 °C	
Wire connection	CAGE CLAMP®S	
Cross sections	0.34 mm² ... 2.5 mm² / AWG 22 ... 12	
Stripped lengths	9 ... 10 mm / 0.37 in	
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	
	DIN VDE 0160, EN 50178; degree of protection II	

(OT = On-time)

Accessories, 788 Series

Status indication



Description	Power consumption at V_N	Item No.	Pack. Unit
Status indication 24 V DC (12 V ... 24 V)	2.4 mA	**788-120**	50 (2x25)
Status indication 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**	(intern)	**859-402**	200 (8x25)

WMB Multi marking system



Marking



Group marker carrier

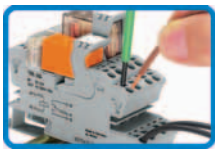


Description		Item No.	Pack. Unit
WMB Multi marking system	**plain**	**793-501**	5 cards
Marking software and printer/plotter see Section 8			
Marking	**1 ... 10 (10x)**	**793-502**	5 cards
	11 ... 20 (10x)	**793-503**	5 cards
	21 ... 30 (10x)	**793-504**	5 cards
	31 ... 40 (10x)	**793-505**	5 cards
	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		**209-112**	50 (1x50)

Operating tool



Wire connection



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

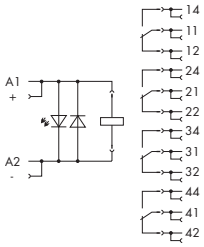
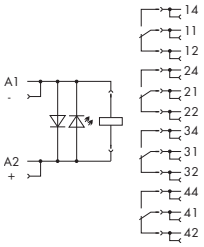
Ferrule





Description	Sleeve for mm² / AWG	Item No.	Pack. Unit
Ferrule, red insulated, 12 mm	2 x 1 mm² / 2 x 18	**216-542**	500

Sockets with Industrial Relay

	Socket with industrial relay Coil voltage: 24 V DC 4 changeover contacts	Socket with industrial relay Coil voltage: 24 V DC 4 changeover contacts (gold contacts)
		
		

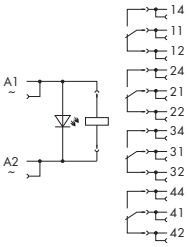
* In order to prevent the gold layer from being damaged, these values shall not be exceeded. Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.

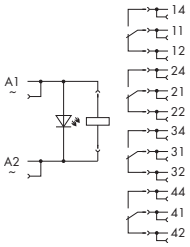
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Relay socket with industrial relay, for DIN 35 rail	**858-304**	1	**858-314**	1
Technical Data	Accessories see pages 96 ... 98		Accessories see pages 96 ... 98	
Coil				
Coil voltage	24 V DC		24 V DC	
Rated power	0.9 W		0.9 W	
Coil current	36.9 mA		36.9 mA	
Operating range	0.8 ... 1.1 x V		0.8 ... 1.1 x V	
Holding voltage	50 % of V_N		50 % of V_N	
Release voltage	0.1 x V		0.1 x V	
Contacts				
Contact material	AgCe		AgCe + 5 µm Au	
Continuous current	5 A		50 mA*	
Inrush current	15 A / 4 s		15 A / 4 s	
Max. switching voltage	250 V AC		30 V DC*	
Switching power (max.) AC1 / AC15	1250 VA / 300 VA		1250 VA / 300 VA	
1-phase motor load AC3	0.12 kW		0.12 kW	
Switching current (max.) DC1	5 A at 30 V DC		5 A at 30 V DC	
Min. switching load	12 V / 100 mA		5 V / 1 mA / 50 mW	
Switching frequency under load	20 cycles/min.		20 cycles/min.	
General Specifications				
Mechanical life	20 x 10^6 switching operations		20 x 10^6 switching operations	
Electrical life	1 x 10^5 switching operations		1 x 10^5 switching operations	
Pull-in/drop-out/bounce time typ.	25 ms / 25 ms / 4 ms		25 ms / 25 ms / 4 ms	
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	
Dielectric strength contact-coil (AC, 1 min)	1.5 kV		1.5 kV	
Dielectric strength open contact	1 kV		1 kV	
Dielectric strength contact-contact	1.5 kV		1.5 kV	
Ambient operating temperature	-25 °C ... +70 °C (V_L + 50 °C)		-25 °C ... +70 °C (V_L + 50 °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	
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®S		CAGE CLAMP®S	
Cross sections	2 x 0.34 mm² ... 2 x 1.5 mm² /		2 x 0.34 mm² ... 2 x 1.5 mm² /	
	1 x 2.5 mm²/		1 x 2.5 mm²/	
	AWG 22 ... 16		AWG 22 ... 16	
Stripped lengths	9 ... 10 mm / 0.37 in		9 ... 10 mm / 0.37 in	
Approvals	GL, UL 508		GL, UL 508	

	Socket with industrial relay Coil voltage: 230 V AC 4 changeover contacts	Socket with industrial relay Coil voltage: 230 V AC 4 changeover contacts (gold contacts)









* In order to prevent the gold layer from being damaged, these values 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.

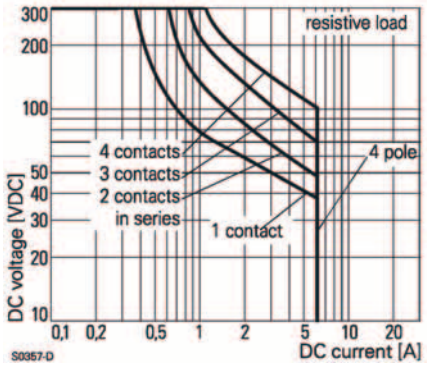
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Relay socket with industrial relay, for DIN 35 rail	**858-508**	1	**858-518**	1

Technical Data

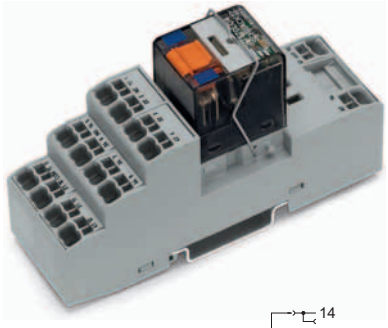
	Accessories see pages 96 ... 98	Accessories see pages 96 ... 98
Coil		
Coil voltage	230 V AC	230 V AC
Rated power	1.2 VA	1.2 VA
Coil current	8.3 mA	8.3 mA
Operating range	0.8 ... 1.1 x V	0.8 ... 1.1 x V
Holding voltage	80 % of V_N	80 % of V_N
Release voltage	0.3 x V	0.3 x V
Contacts		
Contact material	AgCe	AgCe + 5 µm Au
Continuous current	5 A	50 mA*
Inrush current	15 A / 4 s	15 A / 4 s
Max. switching voltage	250 V AC	30 V DC*
Switching power (max.) AC1 / AC15	1250 VA / 300 VA	1250 VA / 300 VA
1-phase motor load AC3	0.12 kW	0.12 kW
Switching current (max.) DC1	5 A at 30 V DC	5 A at 30 V DC
Min. switching load	12 V / 100 mA	5 V / 1 mA / 50 mW
Switching frequency under load	20 cycles/min.	20 cycles/min.
General Specifications		
Mechanical life	20 x 10^6 switching operations	20 x 10^6 switching operations
Electrical life	1 x 10^5 switching operations	1 x 10^5 switching operations
Pull-in/drop-out/bounce time typ.	25 ms / 25 ms / 4 ms	25 ms / 25 ms / 4 ms
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
Dielectric strength contact-coil (AC, 1 min)	1.5 kV	1.5 kV
Dielectric strength open contact	1 kV	1 kV
Dielectric strength contact-contact	1.5 kV	1.5 kV
Ambient operating temperature	-25 °C ... +70 °C (V_L + 50 °C)	-25 °C ... +70 °C (V_L + 50 °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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP®S	CAGE CLAMP®S
Cross sections	2 x 0.34 mm² ... 2 x 1.5 mm² /	2 x 0.34 mm² ... 2 x 1.5 mm² /
	1 x 2.5 mm²/	1 x 2.5 mm²/
	AWG 22 ... 16	AWG 22 ... 16
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	GL, UL 508	GL, UL 508

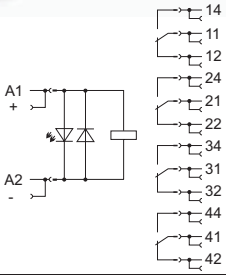
Relay Sockets with Industrial Relay

Relay sockets with industrial relay
Coil voltage:
24 VDC, 110 VDC, 220 VDC
4 changeover contacts



DC load limit curve





Description	V_N	I_N	Item No.	Pack. Unit
Relay socket with industrial relay,	24 VDC	31.5 mA	**858-390**	1
for DIN 35 rail	110 VDC	7.7 mA	**858-392**	1
	220 VDC	4.3 mA	**858-391**	1

Technical Data

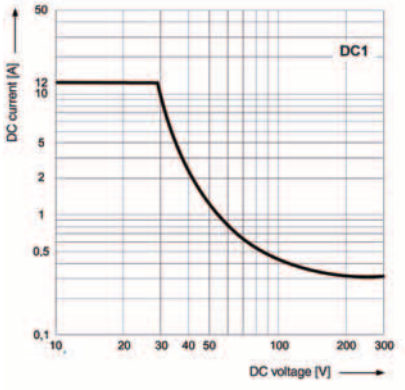
Accessories see pages 96 ... 98

Coil	
Input voltage range	U_N -10 % ... +30 %
Contacts	
Contact material	AgNi 90/10
Max. continuous current	4 x 6 A
Max. make current (resistive) at a 10 % duty cycle	12 A / 20 ms
Max. switching voltage	240 VAC
Max. Switching power (resistive)	4 AC x 1500 VA, DC see load curve
Recommended minimum load	12 V / 10 mA
Pull-in/drop-out/bounce time typ.	15 ms / 18 ms / 8 ms
Mechanical life	30 x 10^6 switching operations
General specifications:	
Nominal voltage acc. to IEC 60664-1	250 V / 2.5 kV / 2
Dielectric strength contact-coil	2.5 kV_{eff}
Surge capacity open contact	1.2 kV_{eff}
Dielectric strength contact-contact (AC, 1 min.)	2 kV_{eff}
Ambient operating temperature (V_N)	-40 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Dimensions (mm) W x H x L	31 x 55 x 97
	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® S
Cross sections	2 x 0.34 mm^2 ... 2 x 1.5 mm^2 /
	1 x 2,5 mm^2
	AWG 22 ... 16
Stripped lengths	9 ... 10 mm / 0.37 in
Approvals	EN 61810-1, EN 60664-1, UL 508

(OT = On-time)

Relay Sockets with Industrial Relay

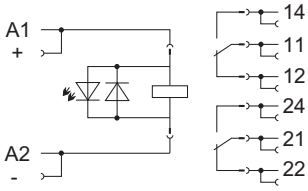
	Relay sockets with industrial relay Coil voltage: 24 VDC, 48 VDC, 110 VDC, 220 VDC 2 changeover contacts	Relay socket with industrial relay Coil voltage: AC 230 V 2 changeover contacts

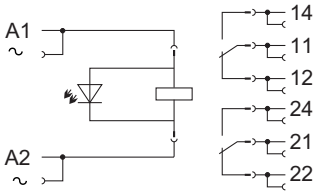


DC load limit curve









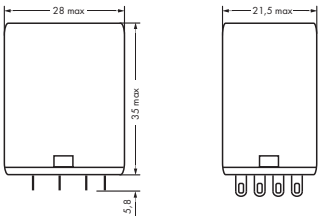
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Relay socket with industrial relay,	24 VDC	37.5 mA	**858-324**	1	230 VAC	11 mA	**858-528**	8
for DIN 35 rail	48 VDC	18.5 mA	**858-325**	8				
	110 VDC	8.1 mA	**858-327**	8				
	220 VDC	4.1 mA	**858-328**	8				

Technical Data	Accessories see pages 96 ... 98	Accessories see pages 96 ... 98
Coil		
Input voltage range	U_N -20 % ... +10 %	U_N -20 % ... +10 %
Contacts		
Contact material	AgNi	AgNi
Max. continuous current	2 x 12 A	2 x 12 A
Max. make current (resistive) at a 10 % duty cycle	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 curve	2 AC x 3000 VA, DC see load 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.	13 ms / 3 ms	10 ms / 8 ms
Mechanical life	2 x 10^7 switching operations	2 x 10^7 switching operations
General specifications:		
Nominal voltage acc. to IEC 60664-1	250 V / 4 kV / 2	250 V / 4 kV / 2
Dielectric strength contact-coil	2.5 kV_{eff}	2.5 kV_{eff}
Surge capacity open contact	1.5 kV_{eff}	1.5 kV_{eff}
Dielectric strength contact-contact (AC, 1 min.)	2.5 kV_{eff}	2.5 kV_{eff}
Ambient operating temperature (V_N)	-40 °C ... +70 °C	-40 °C ... +55 °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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® S	CAGE CLAMP® S
Cross sections	2 x 0.34 mm² ... 2 x 1.5 mm² /	2 x 0.34 mm² ... 2 x 1.5 mm² /
	1 x 2.5 mm²/	1 x 2.5 mm²/
	AWG 22 ... 16	AWG 22 ... 16
Stripped lengths	9 ... 10 mm / 0.37 in	9 ... 10 mm / 0.37 in
Approvals	EN 61810-1, EN 60664-1	EN 61810-1, EN 60664-1

(OT = On-time)

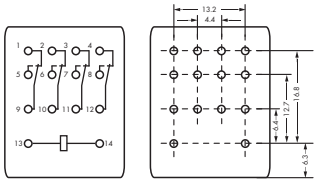
Accessories, 858 Series

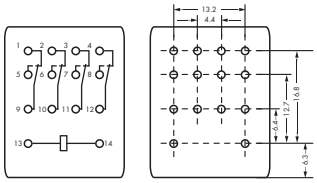
	Pluggable industrial relays, 4 changeover contacts with integrated LED and recovery diode and manual operation	Pluggable industrial relays, 4 changeover contacts with integrated LED and manual operation











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.

Description	V_N	Item No.	Pack. unit	V_N	Item No.	Pack. unit
Pluggable industrial relay	24 V DC	**858-150**	1	240 V AC	**858-151**	1
	24 V DC*	**858-152**	1	240 V AC*	**858-153**	1

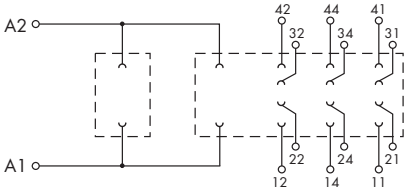
Technical Data

Coil		
Coil voltage	24 V DC	240 V AC
Rated power	0.9 W	1.2 VA
Coil current	36.9 mA	8.3 mA
Operating range	0.8 ... 1.1 x V	0.8 ... 1.1 x V
Holding voltage	50 % of V_N	80 % of V_N
Release voltage	0.1 x V	0.3 x V
Contacts		
Contact material	AgCe, AgCe + 5 µm Au*	AgCe, AgCe + 5 µm Au*
Continuous current	5 A *	5 A *
Inrush current	15 A / 4 s	15 A / 4 s
Max. switching voltage	250 V AC / 30 V DC	250 V AC / 30 V DC
Switching power (max.) AC1 / AC15	1250 VA / 300 VA	1250 VA / 300 VA
1-phase motor load AC3	0.12 kW	0.12 kW
Switching current (max.) DC1	5 A at 30 V DC	5 A at 30 V DC
Min. switching load	12 V / 100 mA	12 V / 100 mA
Switching frequency under load	20 cycles/min.	20 cycles/min.
General Specifications		
Mechanical life	20 x 10^6 switching operations	20 x 10^6 switching operations
Electrical life	1 x 10^5 switching operations	1 x 10^5 switching operations
Pull-in/drop-out/bounce time typ.	25 ms / 25 ms / 4 ms	25 ms / 25 ms / 4 ms
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 2 kV / 2	250 V / 2 kV / 2
Dielectric strength contact-coil (AC, 1 min)	1.5 kV	1.5 kV
Dielectric strength open contact	1 kV	1 kV
Dielectric strength contact-contact	1.5 kV	1.5 kV
Ambient operating temperature	-25°C ... +70°C	-25°C ... +70°C
Mounting distance in a row	6 mm	6 mm
Weight	approx. 37 g	approx. 37 g

Sockets with Industrial Relay

	Socket for industrial relays 2 and 4 changeover contacts	





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

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

Technical Data

Nominal input voltage (V_N)	depending on Relay; max. 250 V AC	
Max. switching voltage	250 V AC	
Max. continuous current	4 x 8 A (4 changeover contacts);	
	2 x 12 A (2 changeover contacts)	
Max. Switching power (resistive)	4000 VA AC	
Nominal operating mode	continious duty	
Dielectric strength	4 kV (depending on relay)	
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	
Degree of protection	IP 20	
Ambient operating temperature	-25 °C ... +70 °C (depending on relay)	
Storage temperature	-40 °C ... +80 °C	
Dimensions (mm) W x H x L	31 x 39 x 97	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP®S	
Stripped lengths	9 ... 10 mm / 0.37 in	
Cross sections	2 x 0.34 mm² ... 2 x 1.5 mm² /	
	1 x 2.5 mm²/	
	AWG 22 ... 16	
Approvals	IEC60664 / IEC60664A / DIN VDE0110	

Accessories, 858 Series

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 24 V DC (12 V ... 24 V)	2.4 mA	**788-120**	50 (2x25)
Status indication 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



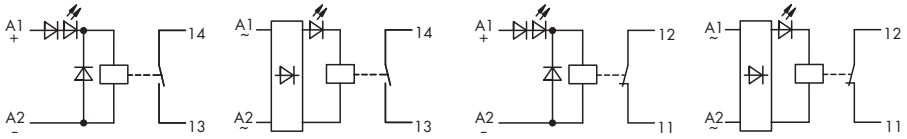
Description		Item No.	Pack. unit
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	**210-720**	1

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







Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	24 V DC	16 mA	**288-364**	1	24 V DC	16 mA	**288-368**	1
	24 V AC/DC	16 mA	**288-564**	1	24 V AC/DC	16 mA	**288-568**	1
	48 V AC/DC	9.1 mA	**288-565**	1				
	115 V AC/DC	4.4 mA	**288-567**	1				

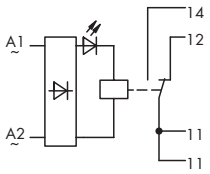
Technical Data

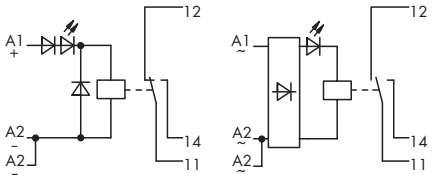
Contact material	AgNi 0.15 + HV	AgNi 0.15 + HV
Max. switching voltage	250 V DC / 250 V AC	250 V DC / 250 V AC
Max. make / break current	4 s 16 A / 8 A	4 s 16 A / 8 A
Max. continuous current	5 A	5 A
Max. switching power (resistive)	100 W/ 1500 VA	100 W/ 1500 VA
Pull-in / operating power	240 mW / 500 mW	240 mW / 500 mW
Pull-in/drop-out/bounce time typ.	4 ms / 6 ms / 2 ms	4 ms / 6 ms / 2 ms
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 / 3	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations	30 x 10^6 switching operations
Mechanical life at max. load (resistance)	2 x 10^5 switching operations	2 x 10^5 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	13 x 47 x 85	13 x 47 x 85
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

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









Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	24 V AC/DC	16 mA	**288-554**	1	24 V DC	21.8 mA	**288-304**	1
					24 V AC/DC	21.8 mA	**288-504**	1
					230 V AC	6.1 mA	**288-508**	1

Technical Data

Contact material	AgNi 0.15 + HV	AgNi 0.15 + HV
Max. switching voltage	250 V DC / 250 V AC	300 V DC / 250 V AC
Max. make / break current	4 s 16 A / 8 A	4 s 20 A / 8 A
Max. continuous current	5 A	6 A
Max. switching power (resistive)	100 W/ 1500 VA	192 W/ 1750 VA
Pull-in / operating power	240 mW / 500 mW	261 mW / 533 mW
Pull-in/drop-out/bounce time typ.	4 ms / 6 ms / 2 ms	9 ms / 3 ms / 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	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations	30 x 10^6 switching operations
Mechanical life at max. load (resistance)	2 x 10^5 switching operations	1 x 10^5 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	13 x 52 x 85	20.5 x 48 x 85
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 231 Series)	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
Stripped lengths	8 ... 9 mm / 0.33 in	5 ... 6 mm / 0.22 in

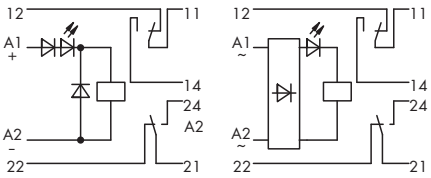
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

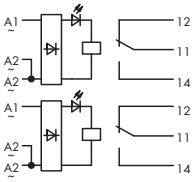
Rail Mounted Relay Modules

	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









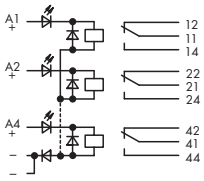
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	24 V DC	21.8 mA	**288-312**	1	24 V AC/DC	21.8 mA	**288-758**	1
	24 V AC/DC	21.8 mA	**288-512**	1	115 V AC/DC	4.8 mA	**288-761**	1
					230 V AC	4.1 mA	**288-762**	1

Technical Data

Contact material	AgNi 0.15 + HV	AgNi 0.15 + HV
Max. switching voltage	250 V DC / 250 V AC	300 V DC / 250 V AC
Max. make / break current	4 s 14 A / 8 A	20 A / 8 A
Max. continuous current	6 A	6 A
Max. switching power (resistive)	100 W/ 1500 VA	192 W/ 1500 VA
Pull-in / operating power	261 mW / 533 mW	261 mW / 533 mW
Pull-in/drop-out/bounce time typ.	8 ms / 3 ms / 2 ms	9 ms / 3 ms / 2 ms
Dielectric strength contact-coil (AC, 1 min)	2.5 kV	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 2.5 kV / 3	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations	30 x 10^6 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 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	22.5 x 48 x 85	38.5 x 48 x 85
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

	with 4 relays, 1 changeover contact each Relay in socket with universal mounting carrier	





Description	V_N	I_N	Item No.	Pack. Unit	
Switching relay module	24 V DC	21.8 mA	**287-774**	1	

Technical Data

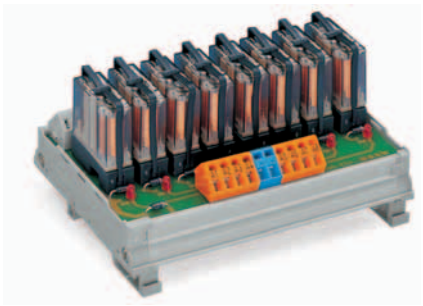
Contact material	AgNi 0.15 + HV	
Max. switching voltage	300 V DC / 250 V AC	
Max. make / break current	20 A / 8 A	
Max. continuous current	6 A	
Max. switching power (resistive)	192 W/ 1500 VA	
Pull-in / operating power	261 mW / 533 mW	
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 2 ms	
Dielectric 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 / 3	
Mechanical life	30 x 10^6 switching operations	
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	
Ambient operating temperature	-25 °C ... +40 °C	
Dimensions (mm) L x W x H		
incl. mounting carrier and relay	63.5 x 58 x 85	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 236 Series)	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in	

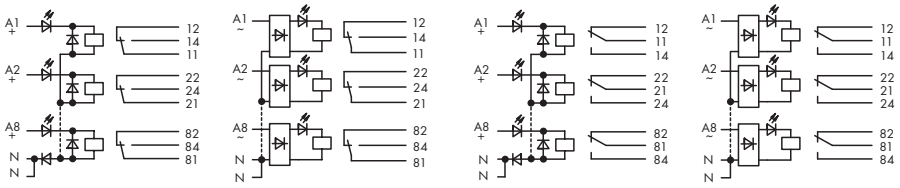
Accessories		
WMB Multi marking system for mounting carrier	see page 408	
Marker strips for mounting carrier	white 709-198 / transparent 709-197	

Rail Mounted Relay Modules

	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





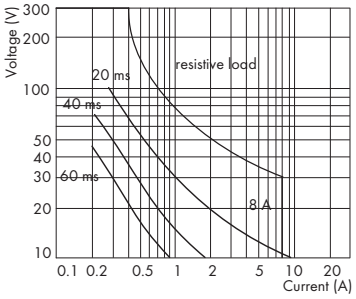


Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	24 V DC	10.2 mA	**287-804**	1	24 V DC	21.8 mA	**287-824**	1
	24 V AC/DC	10.2 mA	**287-814**	1	24 V AC/DC	21.8 mA	**287-834**	1

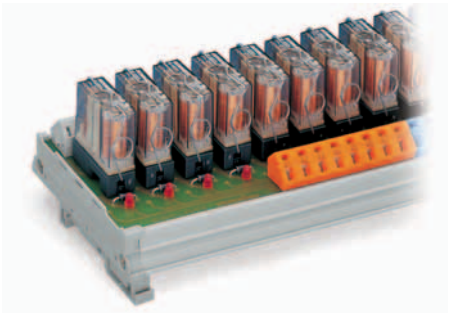
Technical Data

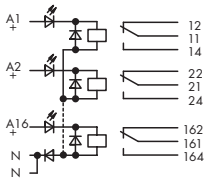
Contact material	AgNi 0.15 + HV	AgNi 0.15 + HV
Max. switching voltage	250 V DC / 250 V AC	300 V DC / 250 V AC
Max. make / break current	4 s 30 A / 8 A	20 A / 8 A
Max. continuous current	6 A	6 A
Max. switching power (resistive)	90 W/ 1500 VA	192 W/ 1500 VA
Pull-in / operating power	170 mW / 245 mW	261 mW / 533 mW
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / 2 ms	9 ms / 3 ms / 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	250 V / 2.5 kV / 3	250 V / 2.5 kV / 3
Mechanical life	20 x 10^6 switching operations	20 x 10^6 switching operations
Mechanical life at max. load (resistance)	2 x 10^5 switching operations	2 x 10^5 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	127 x 38 x 85	127 x 58 x 85
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

	with 16 relays, 1 changeover contact each Relay in socket with universal mounting carrier	



DC load limit curve





Description	V_N	I_N	Item No.	Pack. Unit	
Switching relay module	12 V DC	43.8 mA	**287-853**	1	
	24 V DC	21.8 mA	**287-854**	1	

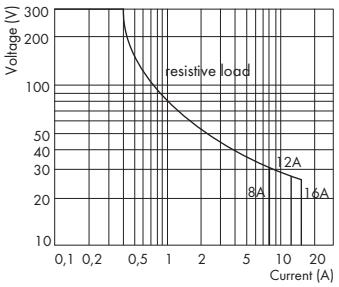
Technical Data

Input voltage range	V_N -15 % ...+20 %	
Contact material	AgNi 0.15	
Max. switching voltage	250 V DC / 250 V AC	
Max. make / break current	4 s 16 A (AC) / 5 A (24 V DC)	
Max. continuous current	6 A	
Max. switching power (resistive)	1500 VA AC; DC see load limit curve	
Recommended minimum load	100 mA / 10 V AC/DC (1 W, 1 VA)	
Pull-in / operating power	533 mW	
Pull-in/drop-out/bounce time typ.	10 ms / 4 ms / 2 ms	
Nominal operating mode	continuous duty	
Dielectric strength contact-coil (AC, 1 min)	4 kV	
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 2.5 kV / 3	
Mechanical life	30 x 10^6 switching operations	
Mechanical life at max. load (resistance)	1 x 10^5 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	287 x 58 x 85	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 236 Series)	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in	
Approvals	DIN VDE 0140, DIN VDE 0160 and IEC 60255,	
	DIN VDE 0435 (corresponding parts)	

Accessories		
WMB Multi marking system for mounting carrier	see page 408	
Marker strips for mounting carrier	white 709-198 / transparent 709-197	(OT = On-time)

Rail Mounted Relay Modules

	Relay with 1 make contact Relay direct soldered with universal mounting carrier Designed for switching high inrush current loads i.e. filament lamp loads	with 4 relays, 1 make contact each Relay direct soldered with universal mounting carrier Designed for switching high inrush current loads i.e. filament lamp loads



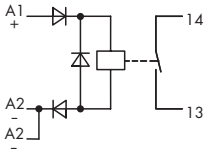
DC load limit curve

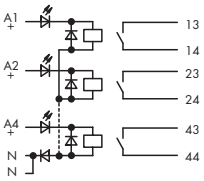




Contact life at lamp load

Load	Switch. oper.
12 A, AC 250 V, cos φ = 1	3×10^5
TV 8 acc. UL 508	25×10^3
2500 W, 230 V AC halogen	$> 10^4$
1000 W, 250 V AC incandescent	2.3×10^5
3000 W, 250 V AC incandescent	3.6×10^4
1500 VA, fluorescent 163 µF	10^4



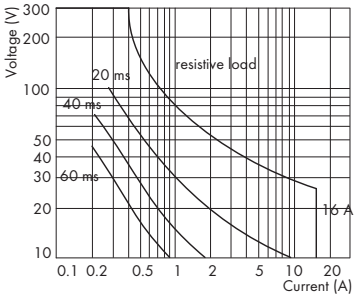


Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	24 V DC	21.8 mA	**288-320**	1	24 V DC	21.8 mA	**287-475**	1

Technical Data

Input voltage range	V_N -15 % ...+20 %	V_N -15 % ...+20 %
Contact material	$AgSnO_2$	$AgSnO_2$
Max. switching voltage	440 V AC	440 V AC
Max. make / break current	4 s 25 A	4 s 25 A
Peak inrush current	20 ms/120 A	20 ms/120 A
Max. continuous current	16 A	16 A
Max. switching power (resistive)	4000 VA AC; DC see load limit curve	4000 VA AC; DC see load limit curve
Recommended minimum load	> 100 mA / 12 V AC/DC	> 100 mA / 12 V AC/DC
Pull-in / operating power	500 mW	500 mW
Pull-in/drop-out/bounce time typ.	8 ms / 2 ms / 2 ms	8 ms / 2 ms / 2 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil (AC, 1 min)	4 kV	4 kV
Dielectric strength open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	30×10^6 switching operations	30×10^6 switching operations
Service life at lamp load	see lamp load table	see lamp load table
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	20.5 x 47 x 85	64 x 47 x 85
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	DIN VDE 0140 Part 18.01 for AC 250 V;	DIN VDE 0140 Part 18.01 for AC 250 V;
	DIN VDE 0160 and IEC 60255;	DIN VDE 0160 and IEC 60255;
	DIN VDE 0435 (corresponding parts); UL 508	DIN VDE 0435 (corresponding parts); UL 508, ㏀
Accessories		(OT = On-time)
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

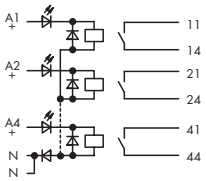
	with 4 relays, 1 make contact each Relay direct soldered with universal mounting carrier	Bistable relay with 1 changeover contact Relay direct soldered with universal mounting carrier

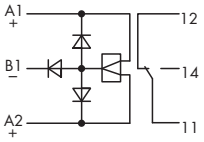


DC load limit curve









Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	24 V DC	21.8 mA	**287-474**	1	24 V DC	41.5 mA	**288-380**	1

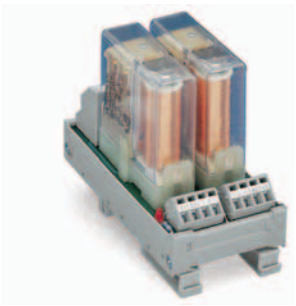
Technical Data

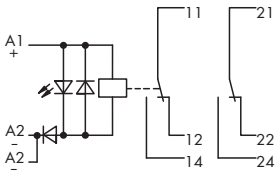
Input voltage range	V_N -15 % ...+20 %	V_N -15 % ...+20 %
Contact material	AgCdO	AgNi 0.15 + HV
Max. switching voltage	250 V DC / 250 V AC	300 V DC / 250 V AC
Max. make / break current	1 s 25 A (AC)	4 s 20 A / 8 A
Max. continuous current	16 A	6 A
Max. switching power (resistive)	4000 VA AC; DC see load limit curve	192 W / 1750 VA
Recommended minimum load	> 100 mA / 12 V AC/DC	
Pull-in / operating power	500 mW	261 mW / 533 mW
Pull-in/drop-out/bounce time typ.	8 ms / 2 ms / 2 ms	9 ms / 3 ms / 2 ms
Nominal operating mode	continuous duty	
Dielectric strength contact-coil (AC, 1 min)	4 kV	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	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations	30 x 10^6 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Storage temperature	-40 °C ... +70 °C	
Dimensions (mm) L x W x H		
incl. mounting carrier and relay	64 x 47 x 85	20.5 x 48 x 85
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	DIN VDE 0160 and IEC 60255;	
	DIN VDE 0435 (corresponding parts), GL	
Accessories		(OT = On-time)
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

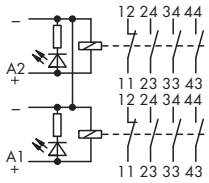
Rail Mounted Relay Modules

	Relay with 2 changeover contacts with forced operated contacts Relay direct soldered with universal mounting carrier	Switching relay module with 2 pluggable safety relays with 3 make contacts and 1 break contact with universal mounting carrier









Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	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

Contact material	AgNi 10 + 5 µm Au	AgCdO + 0.2 µm Au
Contact type	2 changeover contacts	3 make contacts / 1 break contact
Max. switching voltage	380 V	300 V DC / 230 V AC
Max. make / break current	0.3 A	10 A / 7 A
Max. continuous current	5 A	6 A
Max. switching power (resistive)	7 W / 7 VA	120 W / 2000 VA
Recommended minimum load	1 mA / 100 mV AC/DC	300 mA / 12 V
Pull-in / operating power	800 mW	1200 mW
Max. switching rate		5 x / s
Pull-in/drop-out/bounce time typ.	15 ms / 12 ms	23 ms / 20 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil (AC, 1 min)	4 kV	2.5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 2.5 kV / 3	
Test voltage coil - contact	4 kV (1 min)	2500 V eff
Test voltage contact - contact	1 kV (1 min)	2500 V eff
Test voltage contacts - yoke		2500 V eff
Mechanical life	50 x 10^7 switching operations	1 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	
Ambient operating temperature	-40 °C ... +85 °C	-25 °C ... +70 °C
Relay fixing mechanism	soldered	plastic holden with locking latches (by relay manufacturer)
Dimensions (mm) L x W x H		
incl. mounting carrier and relay	19 x 38 x 85	57 x 90 x 107
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	CAGE CLAMP® (WAGO 736 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories		(OT = On-time)
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

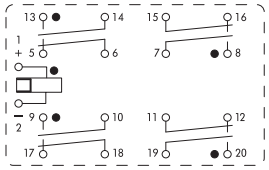
If required a ventilation hole (e) can be made in the cover, reducing the degree of protection from IP67 to IP30.	Safety relay type SDS SF 4 with 4 break contacts and 4 make contacts with 1 relay with universal mounting carrier	Safety relay type SDS SF 4 with 4 break contacts and 4 make contacts with 2 relays with universal mounting carrier

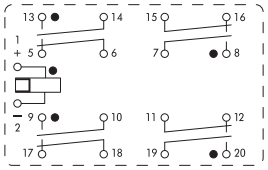






If an outer contact (20) should weld then the forced operated inner contact (12) driven by the actuator (d) remains open. The rotating armature (c) remains free to move. The unaffected contact pairs can operate normally, (i. e. their function to make or break remains unaffected). If an inner contact 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_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	5 V DC	100 mA	**288-412**	1	5 V DC	100 mA	**288-422**	1
	12 V DC	41.7 mA	**288-413**	1	12 V DC	41.7 mA	**288-423**	1
	24 V AC/DC	20.9 mA	**288-414**	1	24 V AC/DC	20.9 mA	**288-424**	1
	48 V AC/DC	10.5 mA	**288-415**	1	48 V AC/DC	10.5 mA	**288-425**	1
	60 V AC/DC	8.4 mA	**288-416**	1	60 V AC/DC	8.4 mA	**288-426**	1
	230 V AC	9.4 mA	**288-418**	1	230 V AC	9.4 mA	**288-428**	1

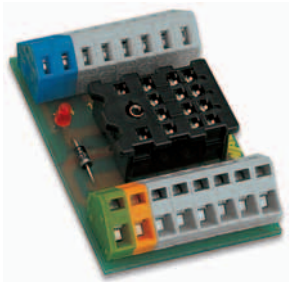
Technical Data

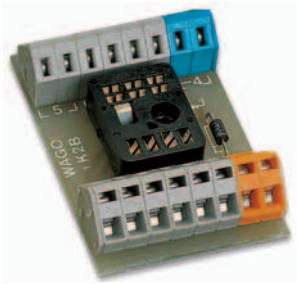
Contact material	Ag Sn O 0.1 µm Au	Ag Sn O 0.1 µm Au
Max. switching voltage	250 V AC	250 V AC
Max. make / break current	20 A / 6 A	20 A / 6 A
Max. continuous current	6 A	6 A
Max. switching power (resistive)	150 W/ 1500 VA	150 W / 1500 VA
Pull-in / operating power	280 mW / 500 mW	280 mW / 500 mW
Pull-in/drop-out/bounce time typ.	18 ms / 6 ms / 4 ms	18 ms / 6 ms / 4 ms
Dielectric strength contact-coil (AC, 1 min)	2.5 kV	2.5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 2.5 kV / 3	250 V / 2.5 kV / 3
Mechanical life	1 x 10^7 switching operations	1 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 switching operations
Ambient operating temperature	-40 °C ... +70 °C	-40 °C ... +70 °C
Dimensions (mm) L x W x H		
incl. mounting carrier and relay	63.5 x 40 x 85	127 x 40 x 85
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 256 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Relay Approvals	SEV approvals, no. D 3.31/192;	SEV approvals, no. D 3.31/192;
	SUVA approvals, no. 36 62 (delayed operation 5 Amp fuse);	SUVA approvals, no. 36 62 (delayed operation 5 Amp fuse);
	TÜV test no. 945/EL 178/88;	TÜV test no. 945/EL 178/88;
	UL recognized, file no. E 43149	UL recognized, file no. E 43149

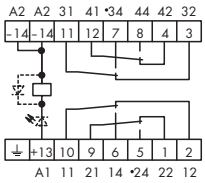
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

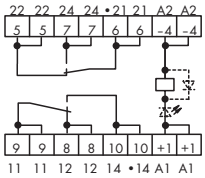
Accessories for Rail Mounted Modules

KAMMRELAIS® is a registered trademark of the Siemens AG	Socket for European standard industrial relay, size 1 with 4 changeover contacts	Socket for KAMMRELAIS® Size I with 2 changeover contacts









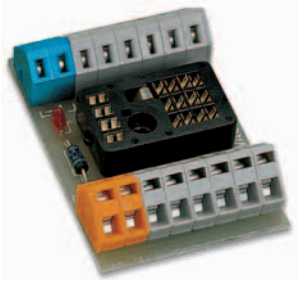
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Relay socket, for AC/DC relays	**288-111**	1	**288-131**	1
Relay socket, for DC relays with free-wheeling diode	**288-112**	1	**288-132**	1
Relay socket, for DC relays with free-wheeling diode and LED	**288-113**	1	**288-133**	1

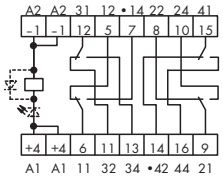
Technical Data

Relay enclosure	14-pole	8-pole
Operating voltage (dependent on the relay voltage)	max. 250 V AC/DC	max. 250 V AC/DC
Nominal current	5 A	5 A
Max. coil current of the LED version	25 mA	25 mA
Dimensions (mm) L x W x H		
incl. mounting carrier and universal mounting feet	42.5 x 32 x 62.5	42.5 x 32 x 62.5
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	CAGE CLAMP® (WAGO 236 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)
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Examples of suitable relays	Schrack RA4 and ZG4;	Schrack ZL2;
	Siemens V23 100;	Siemens V23 154;
	SDS HC 4;	Siemens V 23 162;
	P+B KH/KHA;	SDS K2;
	Aromat HC+HQ;	P+B R 10;
	OMRON MY;	Aromat K
	IDES RM/RY	

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 (also see page 386)	**288-002**	10	**288-002**	10

KAMMRELAIS® is a registered trademark of the Siemens AG	Socket for KAMMRELAIS® Size II with 4 changeover contacts	





Description	Item No.	Pack. Unit	
Relay socket, for AC/DC relays	**288-151**	1	
Relay socket, for DC relays with free-wheeling diode	**288-152**	1	
Relay socket, for DC relays with free-wheeling diode and LED	**288-153**	1	

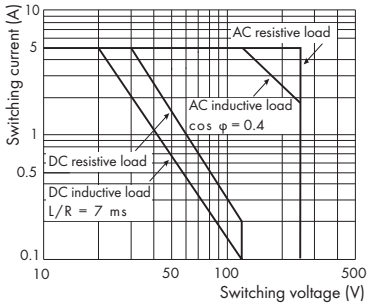
Technical Data

Relay enclosure	14-pole	
Operating voltage (dependent on the relay voltage)	max. 250 V AC/DC	
Nominal current	5 A	
Max. coil current of the LED version	25 mA	
Dimensions (mm) L x W x H		
incl. mounting carrier and universal mounting feet	42.5 x 32 x 62.5	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 236 Series)	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)	
Stripped lengths	5 ... 6 mm / 0.22 in	
Examples of suitable relays	Schrack ZL4;	
	Siemens V23 154;	
	Siemens V 23 162;	
	SDS K4;	
	P+B R 10;	
	Aromat K	

Accessories	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	
Universal mounting foot; snap-fit type; suitable for DIN 15, 32 and 35 rails (also see page 386)	**288-002**	10	

Pluggable Modules - Relays

	Relay with 1 make contact Module width 10 mm / 0.394 in	Relay with 1 break contact Module width 10 mm / 0.394 in



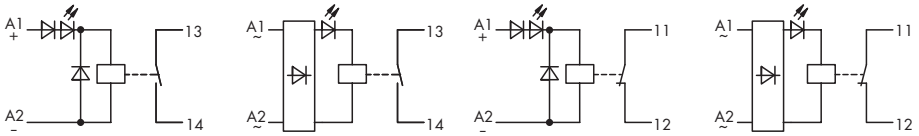
DC load limit curve





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

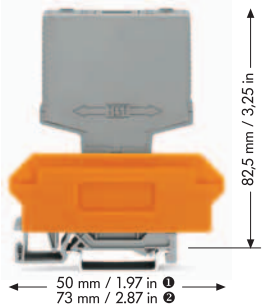


Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	24 V DC	7.4 mA	**286-364**	1	24 V DC	20.4 mA	**286-368**	1
	48 V DC	8.6 mA	**286-365**	1	48 V DC	11.1 mA	**286-369**	1
	60 V DC	7.3 mA	**286-366**	1	60 V DC	10.7 mA	**286-370**	1
	24 V AC	10.2 mA	**286-564**	1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

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Contact material	AgSnO	AgNi
Max. switching voltage	30 V DC / 250 V AC	250 V DC / 250 V AC
Max. make / break current	5 A / 5 A	8 A / 8 A
Max. continuous current	5 A	5 A
Max. Switching power (resistive)	1250 VA	150 W / 1250 VA
Pull-in / operating power	100 mW / 200 mW	300 mW / 450 mW
Pull-in/drop-out/bounce time typ.	8 ms / 10 ms / 2 ms	10 ms / 4 ms / 3 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 / 3	250 V / 4 kV / 3
Mechanical life	5×10^4 switching operations	1×10^7 switching operations
Mechanical life at max. load (resistance)	1×10^5 switching operations	1×10^5 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 ❶	12 mm / 0.472 in	**280-618**	1	12 mm / 0.472 in	**280-618**	1
with 4-conductor terminal blocks, orange separator ❷	12 mm / 0.472 in	**280-608**	1	12 mm / 0.472 in	**280-608**	1
with 4-conductor terminal blocks, marker plate ❷	15 mm / 0.591 in	**280-762**	1	15 mm / 0.591 in	**280-762**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

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

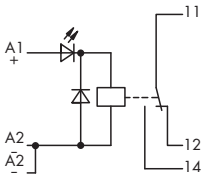


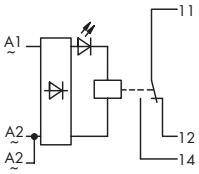




WSB marker cards
- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 11, 12, 14, A1, A2, A2; Item No.: 209-994

5 cards, each containing 10 strips with 10 markers





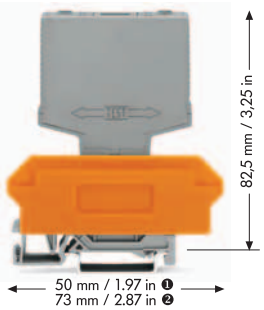
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	5/6 V DC	94.3 mA	**286-302**	1	5/6 V AC/DC	94.3 mA	**286-502**	1
	12 V DC	49.4 mA	**286-303**	1	12 V AC/DC	49.4 mA	**286-503**	1
	24 V DC	19.4 mA	**286-304**	1	24 V AC/DC	21.8 mA	**286-504**	1
	48 V DC	11.4 mA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

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Contact material	AgNi 0.15 + HV	AgNi 0.15 + HV
Max. switching voltage	300 V DC / 250 V AC	300 V DC / 250 V AC
Max. make / break current	16 A / 8 A (10 % continious duty)	16 A / 8 A (10 % continious duty)
Max. continuous current	7 A	7 A
Max. Switching power (resistive)	192 W / 1750 VA	192 W / 1750 VA
Pull-in / operating power	261 mW / 533 mW	261 mW / 533 mW
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 4 ms	8 ms / 6 ms / 4 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 / 3	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations	30 x 10^6 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 switching operations
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
		(OT = On-time)

Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	17 mm / 0.669 in	**280-619**	1	17 mm / 0.669 in	**280-619**	1
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1	17 mm / 0.669 in	**280-609**	1
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1	20 mm/ 0.787 in	**280-763**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Relays

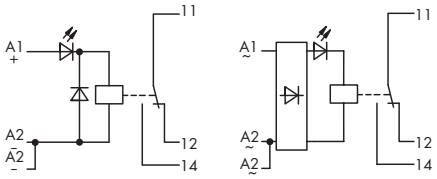
	Relay with 1 changeover contact **Contact 5 µm hard gold plated** **Module width 15 mm / 0.591 in**	





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_N	I_N	Item No.	Pack. Unit	
Switching relay module	24 V DC	21.8 mA	**286-394**	1	
	48 V DC	11.4 mA	**286-395**	1	
	24 V AC/DC	21.8 mA	**286-594**	1	

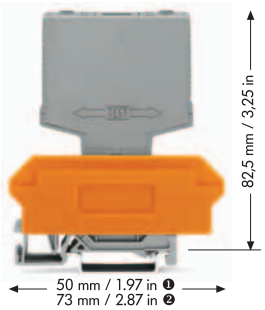
Technical Data

Accessories see pages 150 ... 151

Contact material	AgNi + 5µ Au
Max. switching voltage	36 V DC
Max. continuous current	1 A
Max. Switching power (resistive)	25 W / -
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 / 3
Mechanical life	30 x 10^6 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 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 ❶	17 mm / 0.669 in	**280-619**	1		
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1		
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1		
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;					
stripped length 8 ... 9 mm / 0.33 in					

	Relay with 2 changeover contacts Module width 20 mm / 0.787 in	Relay with 2 changeover contacts Module width 20 mm / 0.787 in

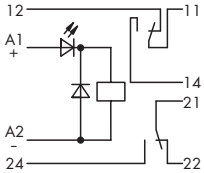


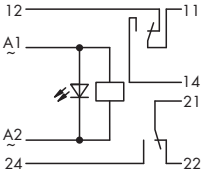




WSB marker cards
- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking 12, A1, A2, 24, 11, 14, 21, 22; Item No.: 209-995

5 cards, each containing 10 strips with 10 markers





Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	5/6 V DC	82.8 mA	**286-310**	1	5/6 V AC	174 mA	**286-510**	1
	12 V DC	46.1 mA	**286-311**	1	12 V AC	89 mA	**286-511**	1
	24 V DC	21.8 mA	**286-312**	1	24 V AC	47 mA	**286-512**	1
	48 V DC	10.3 mA	**286-313**	1	48 V AC	23.3 mA	**286-513**	1
	60 V DC	8.8 mA	**286-314**	1	60 V AC	18.1 mA	**286-514**	1
	115 V DC	4.9 mA	**286-315**	1	115 V AC	10.5 mA	**286-515**	1
	220 V DC	5 mA	**286-316**	1	230 V AC	5.5 mA	**286-516**	1

Technical Data

Accessories see pages 150 ... 151

Accessories see pages 150 ... 151

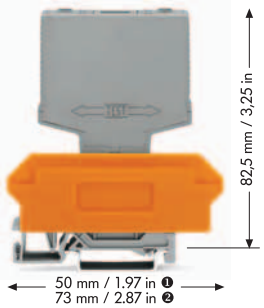
Contact material	Ag Ni 0.15	Ag Ni 0.15
Max. switching voltage	300 V DC / 250 V AC	300 V DC / 250 V AC
Max. make / break current	0.2 s 30 A / 10 A	0.2 s 30 A / 10 A
Max. continuous current	7 A	7 A
Max. Switching power (resistive)	210 W / 1750 VA	210 W / 1750 VA
Pull-in / operating power	600 mW / 1000 mW	0.8 VA / 1 VA
Pull-in/drop-out/bounce time typ.	18 ms / 3 ms / 2 ms	15 ms / 5 ms / 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	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	30 x 10^7 switching operations	30 x 10^7 switching operations
Mechanical life at max. load (resistance)	2.5 x 10^5 switching operations	2.5 x 10^5 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 ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Relays

	Relay with 1 break and 1 make contact Module width 20 mm / 0.787 in	Relay with 2 make contacts Module width 20 mm / 0.787 in

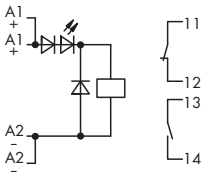


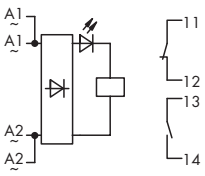


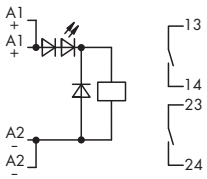


WSB marker cards
- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A1, A2, A2, 11, 12, 13, 14, 23, 24; Item No.: 209-693

5 cards, each containing 10 strips with 10 markers





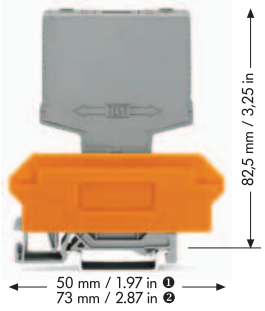


Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	5/6 V DC	47.2 mA	**286-318**	1	5/6 V DC	47.2 mA	**286-326**	1
	12 V DC	19.9 mA	**286-319**	1	12 V DC	19.9 mA	**286-327**	1
	24 V DC	7.4 mA	**286-320**	1	24 V DC	7.4 mA	**286-328**	1
	48 V DC	3.9 mA	**286-321**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

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Contact material	Ag Sn O_2	Ag Sn O_2
Max. switching voltage	250 V DC / 380 V AC	250 V DC / 380 V AC
Max. make / break current	1 s 15 A / 8 A	1 s 15 A / 8 A
Max. continuous current	6 A	6 A
Max. Switching power (resistive)	150 W / 2000 VA	150 W / 2000 VA
Pull-in / operating power	150 mW / 240 mW	150 mW / 240 mW
Pull-in/drop-out/bounce time typ.	10 ms / 4 ms / 1 ms	10 ms / 4 ms / 1 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 / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^7 switching operations	5 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 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 ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

	Relay with 2 break contacts and 2 make contacts Module width 25 mm / 0.984 in	Relay with 1 break contact and 3 make contacts Module width 25 mm / 0.984 in



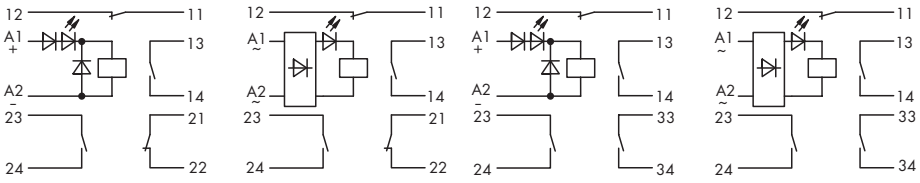




WSB marker cards

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

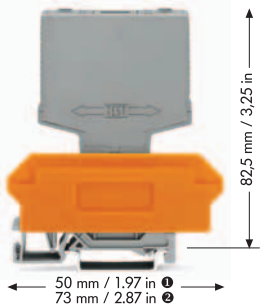
Technical Data

	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Contact material	AuAg10 over AgNi 15	Au Ag 10 over Ag Ni 15
Max. switching voltage	250 V DC / 250 V AC	250 V DC / 250 V AC
Max. make / break current	20 A / 5 A	20 A / 5 A
Max. continuous current	5 A	5 A
Max. Switching power (resistive)	100 W / 1000 VA	100 W / 1000 VA
Pull-in / operating power	50 mW / 205 mW	50 mW / 205 mW
Pull-in/drop-out/bounce time typ.	8 ms / 5 ms / 1 ms	9 ms / 5 ms / 2 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 / 3	250 V / 2.5 kV / 3
Mechanical life	2 x 10^8 switching operations	2 x 10^8 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 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 ❶	27 mm / 1.063 in	**280-639**	1	27 mm / 1.063 in	**280-639**	1
with 4-conductor terminal blocks, orange separator ❷	27 mm / 1.063 in	**280-629**	1	27 mm / 1.063 in	**280-629**	1
with 4-conductor terminal blocks, marker plate ❷	30 mm / 1.181 in	**280-765**	1	30 mm / 1.181 in	**280-765**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Relays

	Relay with 4 make contacts Module width 25 mm / 0.984 in	Relay with 4 changeover contacts Module width 35 mm / 1.378 in

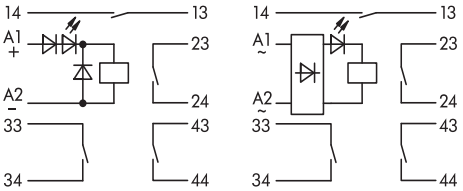


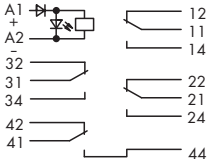




WSB marker cards
- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking 14, A1, A2, 33, 34, 13, 23, 24, 43, 44; Item No.: 209-692
- Marking A1, A2, 32, 31, 34, 42, 41, 12, 11, 14; Item No.: 249-656

5 cards, each containing 10 strips with 10 markers



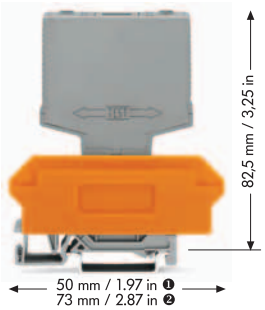


Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	5/6 V DC	42.3 mA	**286-350**	1	24 V DC	32 mA	**286-375**	1
	12 V DC	22.2 mA	**286-351**	1	110/120 V AC	9.2 mA	**286-578**	1
	24 V DC	8.5 mA	**286-352**	1	230 V AC	9.9 mA	**286-579**	1
	48 V DC	5.7 mA	**286-353**	1				
	60 V DC	5.7 mA	**286-354**	1				
	115 V DC	6.6 mA	**286-355**	1				
	24 V AC	11.2 mA	**286-552**	1				
	115 V AC	10.6 mA	**286-555**	1				
	230 V AC	16.2 mA	**286-556**	1				

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Contact material	Au Ag 10 over Ag Ni 15	Ag
Max. switching voltage	250 V DC / 250 V AC	60 V DC / 250 V AC
Max. make / break current	20 A / 5 A	4 A AC / 2 A DC
Max. continuous current	5 A	4 A AC/DC
Max. Switching power (resistive)	100 W / 1000 VA	50 W / 1000 VA
Pull-in / operating power	50 mW / 205 mW	50 mW / 205 mW
Pull-in/drop-out/bounce time typ.	10 ms / 5 ms / 2 ms	6 ms / - / 2 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 / 3	250 V / 4 kV / 3
Mechanical life	2 x 10^8 switching operations	5 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 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 ❶	27 mm / 1.063 in	**280-639**	1			
with 4-conductor terminal blocks, orange separator ❷	27 mm / 1.063 in	**280-629**	1	37 mm / 1.457 in	**280-636**	1
with 4-conductor terminal blocks, marker plate ❷	30 mm / 1.181 in	**280-765**	1			
wire range 0.08 mm² ... 2.5 mm² / 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	Relay with 2 changeover contacts Contacts 5 µm Au Module width 20 mm / 0.787 in



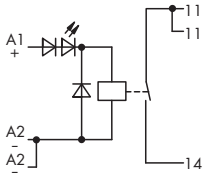


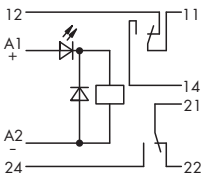


* In order to prevent the gold layer from being damaged these values should not be exceeded. Higher switching power leads to evaporation of the gold layer. The resulting deposits in the enclosure may cause sparkovers between the coil and the contact.

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_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Switching relay module	24 V DC	20 mA	**286-376**	1	24 V DC	19.4 mA	**286-384**	1

Technical Data

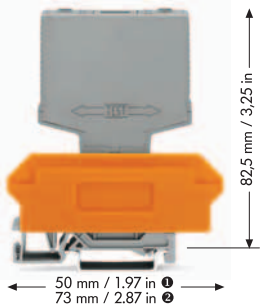
	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Contact material	AgNi 0.15	AgCdO + 5 µm Au
Max. switching voltage	250 V DC / 250 V AC	36 V DC *
Max. make current (resistive)	4 s 14A	
Max. break current 250 V DC/ 110 V DC/ 60 V DC	0.6 A / 1.7 A / 5 A	
Recommended minimum load	> 12 V / 10 mA AC/DC	10 µA / 100 mV
Max. switching rate with / without load	10 min^{-1} / 1200 min^{-1}	
Max. continuous current	5 A	50 mA *
Max. Switching power (resistive)	2000 VA	
Max. switching power 250 V DC/ 110 V DC/ 60 V DC	150 W / 187 W / 300 W	150 W / 187 W / 300 W
Pull-in / operating power	480 mW	500 mW
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 5 ms	9 ms / 3 ms / 3 ms
Dielectric strength contact-coil (AC, 1 min)	4 kV	4 kV
Dielectric strength open contact	2 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	20 x 10^6 switching operations	1 x 10^7 switching operations
Mechanical life at max. load (resistance)		1 x 10^5 switching operations
Mechanical life at max. load DC (resistive)	2 x 10^5 switching operations	
Mechanical life at max. resistive load AC	3 x 10^5 switching operations	
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Approvals	DIN VDE 01110/1.89 / DIN VDE 0160	
	and IEC 60255 / DIN VDE 0435 (corresponding parts)	

Accessories

		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	17 mm / 0.669 in	**280-619**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1	25 mm / 0.984 in	**280-764**	1
ire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Relays

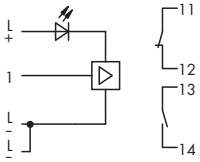
	Low power (≥ 7 mW) relay module **Low power drive relay (0.3 mA) through amplifier Vcc = DC 24 V** **1 break and 1 make contact** **Module width 20 mm / 0.787 in**	





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
- Marking L+, 1, L-, L-, 11, 12, 13, 14; Item No.: 209-954

5 cards, each containing 10 strips with 10 markers



Description	V_N	I_N	Item No.	Pack. Unit	
Switching relay module	24 V DC	10 mA	**286-906**	1	

Technical Data

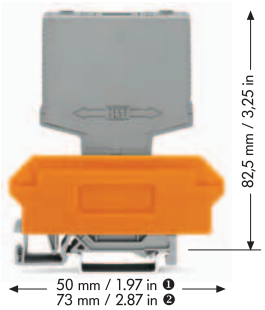
Accessories see pages 150 ... 151

Contact material	AgCdO, with gold flash	
Max. switching voltage	250 V DC / 380 V AC	
Max. make / break current	1 s 15 A / 8 A	
Max. continuous current	6 A	
Max. Switching power (resistive)	150 W / 2000 VA	
Pull-in / operating power	150 mW / 240 mW	
Pull-in/drop-out/bounce time typ.	10 ms / 4 ms / 1 ms	
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 / 3	
Mechanical life	5 x 10^7 switching operations	
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	
Ambient operating temperature	-25 °C ... +40 °C	
Turn-on treshold relay / status indication		
Turn-off treshold relay / status indication		
Control voltage output 0	-2 V ... 3 V DC	
Control voltage output 1	8 V ... 30 V DC	

Accessories

		Item No.	Pack. Unit	
Terminal block for pluggable modules,				
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;				
stripped length 8 ... 9 mm / 0.33 in				

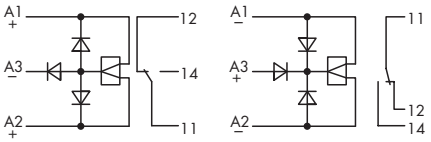
	Bistable relay with 1 changeover contact positive switching, negative switching **Module width 15 mm / 0.591 in**	





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_N	I_N	**Item No.**	**Pack. Unit**	
Switching relay module	24 V DC	41.5 mA	**286-380**	1	
	24 V DC	41.5 mA	**286-381**	1	

Technical Data

Accessories see pages 150 ... 151

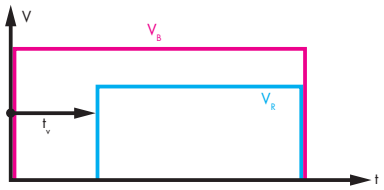
Contact material	AgNi 0.15 + HV
Max. switching voltage	250 V DC / 250 V AC
Max. make / break current	20 A / 8 A
Max. continuous current	6 A
Max. Switching power (resistive)	192 W / 1500 VA
Pull-in / operating power	261 mW / 533 mW
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 2 ms
Dielectric strength contact-coil (AC, 1 min)	4 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,	
IEC 60664-1	250 V / 4 kV / 3
Mechanical life	30 x 10^6 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations
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	17 mm / 0.669 in	**280-619**	1	
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1	
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1	
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;				
stripped length 8 ... 9 mm / 0.33 in				

Pluggable Modules - Time Relays

	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



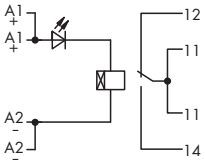
V_B = operating voltage; V_{St} = control voltage;
V_R = voltage on relay; t_v = delay time

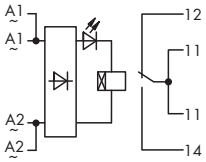




On-delay time relay
V_B on A1+ and A2- applied: relay stays in rest position
delay time t_v is over: relay switches to working condition
WSB marker cards
- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A1, A2, A2, 12, 11, 11, 14; Item No.: 209-996

5 cards, each containing 10 strips with 10 markers



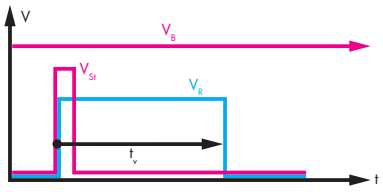


Description	Time range	Item No.	Pack. Unit	Time range	Item No.	Pack. Unit
Time relay module	0.1 - 1 s	**286-600**	1	0.1 - 1 s	**286-610**	1
	1 - 10 s	**286-602**	1	1 - 10 s	**286-612**	1
	10 - 100 s	**286-604**	1	10 - 100 s	**286-614**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
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, with gold flash	AgCdO, with gold flash
Max. switching voltage	250 V DC / 380 V AC	250 V DC / 380 V AC
Max. make / break current	1 s 15 A / 5 A	1 s 15 A / 5 A
Max. continuous current	6 A	6 A
Max. Switching power (resistive)	150 W / 2000 VA	150 W / 2000 VA
Operating power	300 mW	3.3 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 / 3	250 V / 4 kV / 3
Mechanical life	5 x 10^7 switching operations	5 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 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 ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

	Pulse lengthening, with trigger voltage **1 changeover contact** **Module width 20 mm / 0.787 in**	

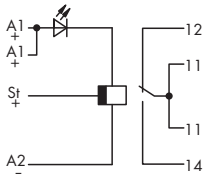




V_B = operating voltage; V_{St} = control voltage;
V_R = voltage on relay; t_v = delay time

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	**286-426**	1	
	1 - 10 s	**286-427**	1	
	10 - 100 s	**286-428**	1	

Technical Data

Accessories see pages 150 ... 151

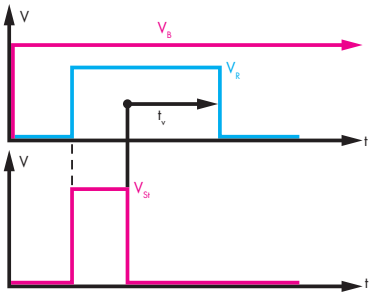
Nominal input voltage (V_N)	24 V DC
Current input at rated voltage (coil 20 °C)	15.0 mA
Contact material	AgCdO, with gold flash
Max. switching voltage	250 V DC / 380 V AC
Max. make / break current	1 s 15 A / 5 A
Max. continuous current	5 A
Max. Switching power (resistive)	150 W / 2000 VA
Operating power	360 mW
Pull-in/drop-out/bounce time typ.	10 ms / 0 ms / 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	250 V / 4 kV / 3
Mechanical life	5 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 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 ❶	22 mm / 0.866 in	**280-638**	1	
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;				
stripped length 8 ... 9 mm / 0.33 in				

Pluggable Modules - Time Relays

	Off-delay timing with trigger voltage 1 changeover contact specified time acc. to IEC 255, part 1 Module width 20 mm / 0.787 in	Off-delay timing with trigger voltage 1 changeover contact specified time acc. to IEC 255, part 1 Module width 20 mm / 0.787 in



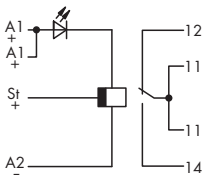
V_B = operating voltage; V_{St} = control voltage;
V_R = voltage on relay; t_v = delay time

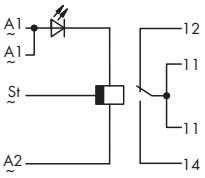
Off-delay time relay with auxiliary voltage
V_B on A1+ and A2- applied: relay stays in rest position;
V_{St} on St+ applied: relay switches to working condition
V_{St} interrupted: t_v is activated; t_v is over: relay switches off
WSB marker cards
- Marking K; Item No.: 209-782
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A1, St, A2, A2, 12, 11, 11, 14; Item No.: 209-601

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	**286-440**	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

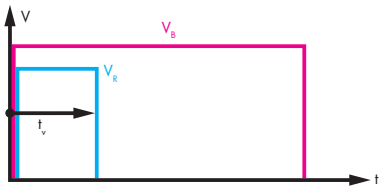
Accessories see pages 150 ... 151

Accessories see pages 150 ... 151

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., with gold flash	Ag.-Leg., with gold flash
Max. switching voltage	250 V DC / 250 V AC	250 V DC / 250 V AC
Max. make / break current	26 A / 5 A	26 A / 5 A
Max. continuous current	5 A	5 A
Max. Switching power (resistive)	100 W / 1250 VA	100 W / 1250 VA
Operating power	400 mW	3.7 VA
Pull-in/drop-out/bounce time typ.	15 ms / 0 ms / 2 ms	15 ms / 0 ms / 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 / 3	250 V / 2.5 kV / 3
Mechanical life	5 x 10^7 switching operations	5 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 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 ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

	Pulse time delay relay 1 changeover contact specified time acc. to IEC 255, part 1 Module width 20 mm / 0.787 in	Pulse time delay relay 1 changeover contact specified time acc. to IEC 255, part 1 Module width 20 mm / 0.787 in



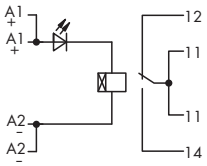


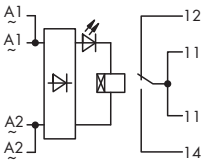


V_B = operating voltage; V_{St} = control voltage;
V_R = voltage on relay; t_v = delay time

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	**286-460**	1	0.1 - 1 s	**286-470**	1
	1 - 10 s	**286-462**	1	1 - 10 s	**286-472**	1
	10 - 100 s	**286-464**	1	10 - 100 s	**286-474**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
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, with gold flash	AgCdO, with gold flash
Max. switching voltage	250 V DC / 380 V AC	250 V DC / 380 V AC
Max. make / break current	1 s 15 A / 5 A	1 s 15 A / 5 A
Max. continuous current	5 A	5 A
Max. Switching power (resistive)	150 W / 2000 VA	150 W / 2000 VA
Operating power	910 mW	10 VA
Pull-in/drop-out/bounce time typ.	15 ms / 15 ms / 1 ms	15 ms / 15 ms / 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 10^7 switching operations	5 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 switching operations	1 x 10^5 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

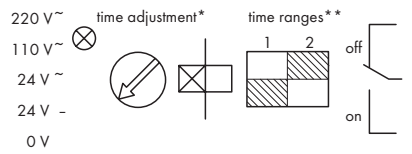
Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
ire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Time Relays

Multirange timing relay, on-delay
4 selectable time ranges,
4 voltage ranges
1 changeover contact

Module width 25 mm / 0.984 in

Time range	03-3s	3-12s	10-100s	100-800s	Switch
Switch-position	OFF	ON	ON	OFF	1
	ON	OFF	ON	OFF	2

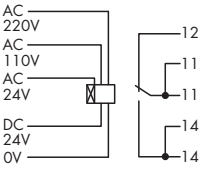




* with trimming potentiometer; ** DIL switch

Within these time ranges, time adjustment can be mode with the timming 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
Multirange timing relay module; on-delay, 4 voltage ranges 230 V AC, 115 V AC, 24 V AC, 24 V DC; 0.3 s ... 3 s, 3 s ... 12 s, 10 s ... 100 s, 100 s ... 800 s Time ranges selectable with DIL switch	**286-616**	1

Technical Data

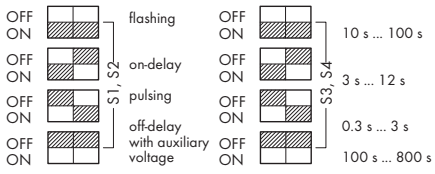
Accessories see pages 150 ... 151

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 with gold flash
Max. switching voltage	30 V DC / 240 V AC
Max. make / break current	5 A / 5 A
Max. continuous current	5 A
Max. Switching power (resistive)	120 W / 600 VA
Pull-in/drop-out/bounce time typ.	0 ms / 15 ms / 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 / 3
Mechanical life	2 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 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
Terminal block for pluggable modules,			
with 2-conductor terminal blocks, orange separator ❶	27 mm / 1.063 in	**280-639**	1
with 4-conductor terminal blocks, orange separator ❷	27 mm / 1.063 in	**280-629**	1
with 4-conductor terminal blocks, marker plate ❷	30 mm / 1.181 in	**280-765**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in			

Multifunction timing relay
4 selectable time ranges,
4 functions
1 changeover contact

Module width 20 mm / 0.787 in



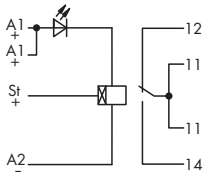
Switch position / Function			Switch position / Time range		
S1	S2		S3	S4	(s)
OFF	OFF	off-delay	OFF	OFF	100 - 800
OFF	ON	pulsing in make pos.	OFF	ON	0,3 - 3
ON	OFF	on-delay	ON	OFF	3 - 12
ON	ON	flashing	ON	ON	10 - 100



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
Multifunction timing relay module; on-delay, off-delay with auxiliary voltage, pulsing in make position, flashing; input voltage DC 24 V; 0.3 s ... 3 s, 3 s ... 12 s, 10 s ... 100 s, 100 s ... 800 s Function and timing range are selected with a DIL switch	**286-640**	1

Technical Data

Accessories see pages 150 ... 151

Nominal input voltage (V_N)	24 V DC
Current input at rated voltage (coil 20 °C)	24 mA
Contact material	Ag.-Leg., with gold flash
Max. switching voltage	300 V DC / 440 V AC
Max. make / break current	26 A / 5 A
Max. continuous current	5 A
Max. Switching power (resistive)	150 W / 1250 VA
Pull-in/drop-out/bounce time typ.	0 ms / 0 ms / 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 / 3
Mechanical life	1.5 x 10^7 switching operations
Mechanical life at max. load (resistance)	1 x 10^5 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

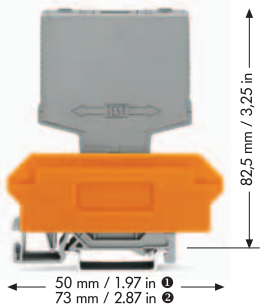
Accessories

		Item No.	Pack. Unit
Terminal block for pluggable modules,			
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in			

Pluggable Modules - Optocouplers

Optocoupler
Input 24 V DC
Output 5 V, 15 V, 24 V DC/500 mA
Positive switching

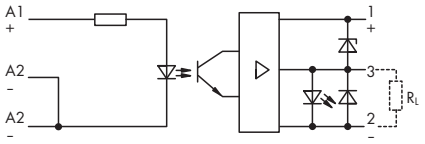
Module width 15 mm / 0.591 in





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
Optocoupler module	5 V DC (3 V ... 6 V DC)	**286-750**	1
	15 V DC (10 V ... 20 V DC)	**286-751**	1
	24 V DC (20 V ... 30 V DC	**286-752**	1

Technical Data

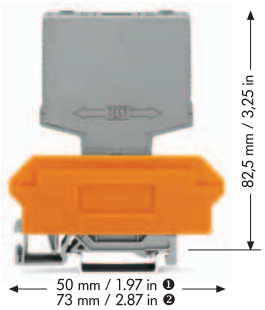
Accessories see pages 150 ... 151

Nominal input voltage (V_N)	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
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 Vce sat	≤ 1.2 V
Max. output (reverse current)	5 mA ; 10 mA ; 12 mA
Test voltage input / output	2.5 kV eff.
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3
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	17 mm / 0.669 in	**280-619**	1
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;			
stripped length 8 ... 9 mm / 0.33 in			

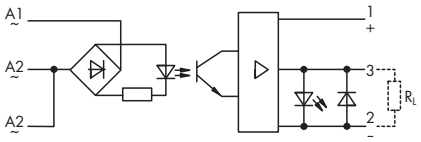
	Optocoupler **Input 230 V AC** **Output 5 V, 15 V, 24 V DC/500 mA** **Positive switching** **Module width 15 mm / 0.591 in**	





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	
Optocoupler module	5 V DC (3.5 V ... 7 V DC)	**286-754**	1	
	15 V DC (10 V ... 20 V DC)	**286-756**	1	
	24 V DC (20 V ... 30 V DC)	**286-758**	1	

Technical Data

Accessories see pages 150 ... 151

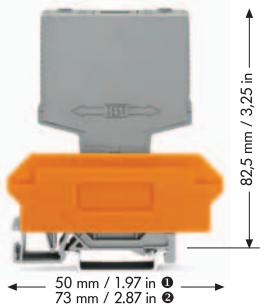
Nominal input voltage (V_N)	230 V AC
Input voltage range	40 V ... 250 V AC
Input current range	0.2 mA ... 2.9 mA AC
Current at nominal voltage	2.6 mA AC
Reverse voltage transistor / Triac	80 V DC
Max. permissible continuous current	500 mA
Switch on / Switch off time	< 10 ms / < 40 ms
Leakage current at nominal voltage	2.5 µA
Collector / emitter voltage drop Vce sat	≤ 1.2 V
Max. output (reverse current)	5 mA ; 7.5 mA ; 7.5 mA
Test voltage input / output	2.5 kV eff.
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3
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	17 mm / 0.669 in	**280-619**	1	
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1	
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1	
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;				
stripped length 8 ... 9 mm / 0.33 in				

Pluggable Modules - Optocouplers

	Optocoupler Input 24 V DC Output 24 V DC/2 A Negative switching Module width 15 mm / 0.591 in	Optocoupler Input 24 V DC Output 24 V DC/5 A Negative switching Module width 15 mm / 0.591 in

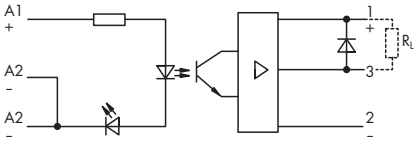


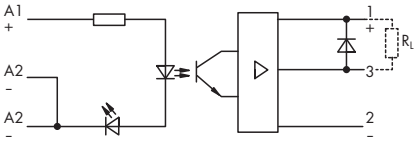




WSB marker cards
- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2; Item No.: 209-685

5 cards, each containing 10 strips with 10 markers



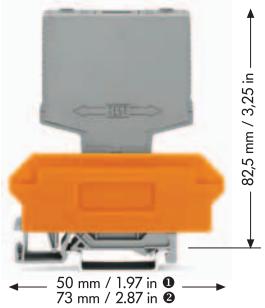


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Optocoupler module	**286-720**	1	**286-721**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal input voltage (V_N)	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	50 V DC
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 Vce sat	≤ 0.5 V	≤ 0.5 V
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
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 ❶	17 mm / 0.669 in	**280-619**	1	17 mm / 0.669 in	**280-619**	1
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1	17 mm / 0.669 in	**280-609**	1
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1	20 mm/ 0.787 in	**280-763**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

	Optocoupler Input 5 V DC Output 24 V DC/500 mA Positive switching Module width 15 mm / 0.591 in	Optocoupler Input 24 V DC Output 24 V DC/4 A Positive switching Module width 15 mm / 0.591 in

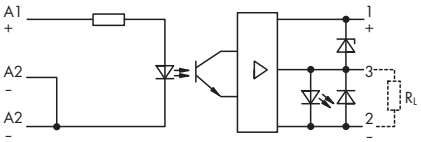


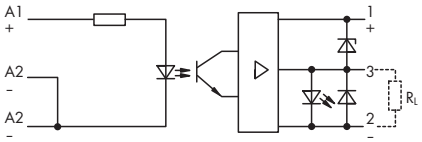




WSB marker cards
- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2; Item No.: 209-685

5 cards, each containing 10 strips with 10 markers





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

Technical Data

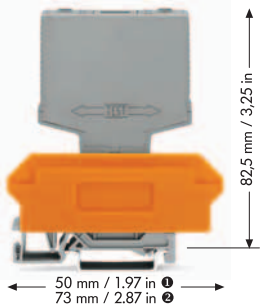
	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal input voltage (V_N)	5 V DC	24 V DC
Input voltage range	2 V ... 6.25 V DC	15 V ... 30 V DC
Input current range	3.3 mA ... > 18.5 mA	7.9 mA ... 18 mA DC
Current at nominal voltage	14 mA DC	14 mA DC
Output nominal voltage	24 V DC	24 V DC
Output voltage range	20 V ... 30 V DC	20 V ... 30 V DC
Reverse voltage transistor / Triac	80 V DC	100 V DC
Max. permissible continuous current	500 mA	4 A at 6 R
Switch on / Switch off time	< 5 µs / < 10 µs	≤ 15 µs / ≤ 25 µs
Max. operating frequency	25 kHz	5 kHz
Leakage current at nominal voltage	2.5 µA	2.5 µA
Collector / emitter voltage drop Vce sat	≤ 1.2 V	≤ 1.2 V
Max. output (reverse current)	12 mA	12 mA
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Approvals	IEC 60664 / IEC 60664A / DIN VDE 0110; pollution degree 2; overvoltage category III	

Accessories

		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ❶	17 mm / 0.669 in	**280-619**	1	17 mm / 0.669 in	**280-619**	1
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1	17 mm / 0.669 in	**280-609**	1
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1	20 mm/ 0.787 in	**280-763**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Optocouplers

	Optocoupler Input 5 V DC 12 V DC 24 V DC Output 110 V DC/1.6 A Negative switching Module width 15 mm / 0.591 in	Optocoupler Input 5 V DC 12 V DC 24 V DC Output 230 V AC/50 mA ... 1 A Module width 15 mm / 0.591 in

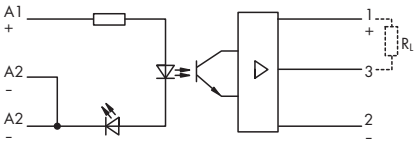


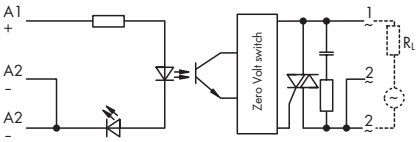




WSB marker cards
- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 3, 2, A1, A2, A2; Item No.: 209-685
- Marking A1, A2, A2, 1, 2, 2, A1, A2, A2; Item No.: 209-686

5 cards, each containing 10 strips with 10 markers



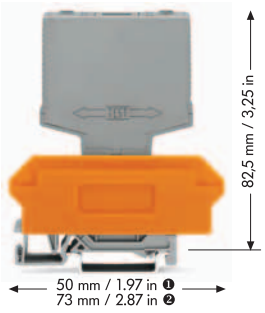


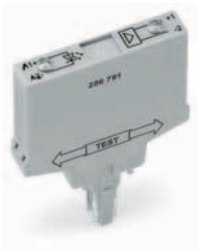
Description	Input	Item No.	Pack. Unit	Input	Item No.	Pack. Unit
Optocoupler module	5 V DC (4.5 V ... 6,5 V DC)	**286-726**	1	5 V DC (3.5 V ... 7.5 V DC)	**286-732**	1
	12 V DC (10 V ... 20 V DC)	**286-728**	1	12 V DC (9 V ... 18 V DC)	**286-733**	1
	24 V DC (15 V ... 30 V DC)	**286-730**	1	24 V DC (10 V ... 30 V DC)	**286-734**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Input current range	6.5 mA ... 20 mA DC	0.5 mA ... 17 mA DC
	4 mA ... 12 mA DC	4 mA ... 11 mA DC
	3.5 mA ... 8 mA DC	2 mA ... 8 mA DC
Current at nominal voltage	6.5 mA DC	6 mA DC
	6.4 mA DC	
	6.2 mA DC	
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	600 V AC
Max. permissible continuous current	1.6 A at 69 R	1 A
Switch on / Switch off time	≤ 20 µs / ≤ 0.5 ms	1 half-wave ms / 1 half-wave ms
Max. operating frequency	350 Hz	
Leakage current at nominal voltage	3 µA	5 mA
Collector / emitter voltage drop Vce sat	≤ 0.5 V	
Voltage drop at output		< 1.7 V AC
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
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 ❶	17 mm / 0.669 in	**280-619**	1	17 mm / 0.669 in	**280-619**	1
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in	**280-609**	1	17 mm / 0.669 in	**280-609**	1
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in	**280-763**	1	20 mm/ 0.787 in	**280-763**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

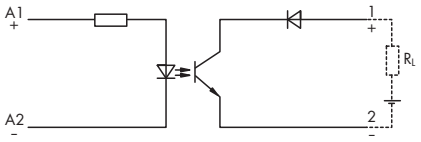
	Optocoupler **Input 24 V DC** **Output 60 V DC/100 mA** **Module width 10 mm / 0.394 in**	





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 150 ... 151

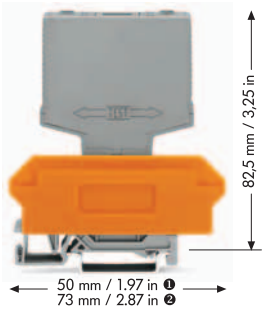
Nominal input voltage (V_N)	24 V DC	
Input voltage range	15 V ... 30 V DC	
Input current range	7.5 mA ... 18 mA DC	
Current at nominal voltage	14 mA	
Output nominal voltage	60 V DC	
Output voltage range	20 V ... 60 V DC	
Reverse voltage transistor / Triac	80 V DC	
Max. permissible continuous current	100 mA	
Switch on / Switch off time	10 µs / 50 µs	
Max. operating frequency	3 kHz	
Leakage current at nominal voltage	2.5 µA	
Collector / emitter voltage drop Vce sat		
Max. output (reverse current)		
Voltage drop at output	≤ 2 V	
Test voltage input / output	2.5 kV eff.	
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	
Ambient operating temperature	-25 °C ... +40 °C	

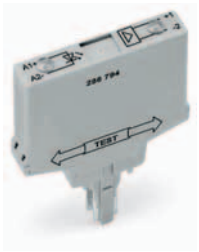
Accessories

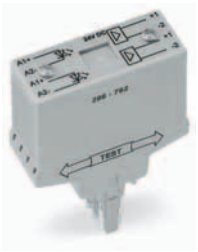
		Item No.	Pack. Unit	
Terminal block for pluggable modules,				
with 2-conductor terminal blocks, orange separator ❶	12 mm / 0.472 in	**280-618**	1	
with 4-conductor terminal blocks, orange separator ❷	12 mm / 0.472 in	**280-608**	1	
with 4-conductor terminal blocks, marker plate ❷	15 mm / 0.591 in	**280-762**	1	
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;				
stripped length 8 ... 9 mm / 0.33 in				

Pluggable Modules - Optocouplers

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

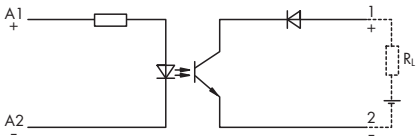


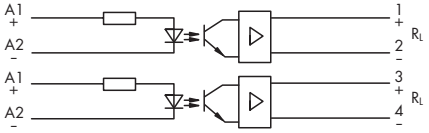




WSB marker cards
- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking A1, A2, A2, 1, 2, 2, A1, A2, A2; Item No.: 209-686
- Marking A1+, A1+, A2-, A2-, 1, RL1, Rl2, 2; Item No.: 209-955
- Marking A1+, A1+, A2-, A2-, 1+, 1+, A, 2-; Item No.: 249-651

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

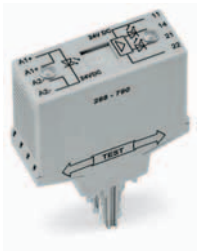
Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal input voltage (V_N)	24 V DC	24 V DC
Input voltage range	18 V ... 30 V DC	7.5 V ... 30 V DC
Input current range	2 mA ... 5 mA DC	4 mA ... 19 mA DC
Current at nominal voltage	4 mA DC	15 mA DC
Output nominal voltage	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	80 V DC
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 Vce sat		< 2.5 V
Voltage drop at output	≤ 2 V	
Test voltage input / output	2.5 kV eff.	2.5 kV eff.
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Ambient operating temperature	-25 °C ... +60 °C	-25 °C ... +40 °C

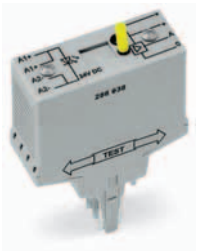
Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	12 mm / 0.472 in	**280-618**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	12 mm / 0.472 in	**280-608**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	15 mm / 0.591 in	**280-762**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

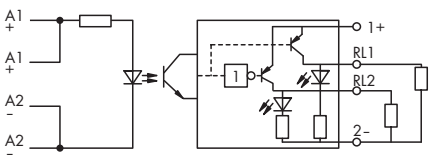
	Optocoupler with 2 inverted outputs Input 24 V DC Output 2 x 24 V DC/500 mA Module width 20 mm / 0.787 in	Optocoupler with bridge plug and programmable outputs Input 24 V DC Output 24 V DC, Short-circuit protected, positive switching Module width 20 mm/ 0.787 in

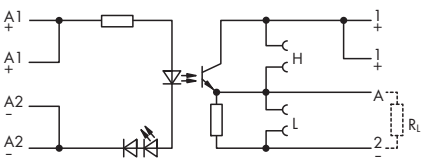
Optocoupler module with short-circuit protected, positive switching output.
Two sockets with plug for programming the output.
Independent of the input signal the output can be switched over to "H" (high) or "L" (low) by means of a bridge plug (supplied with the module).
The short-circuit protected output 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 150 ... 151	Accessories see pages 150 ... 151
Nominal input voltage (V_N)	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	50 V DC
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 at 80 R
Leakage current at nominal voltage	2.5 µA	< 1 µA
Collector / emitter voltage drop Vce sat	< 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 eff.	2.5 kV eff.
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
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 ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - S0 Optocouplers

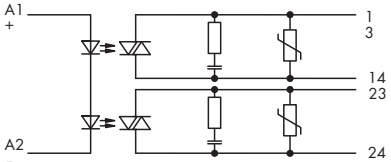
	Power optocoupler for S0 current meter interface with AC output Module width 20 mm / 0.787 in	Power optocoupler for S0 current meter interface with DC output Module width 20 mm / 0.787 in

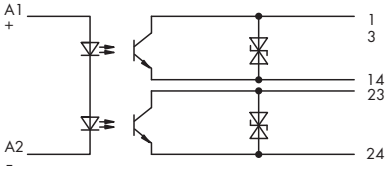






The optocoupler for the S0 current meter interface sends counter pulses from the supply lines.
Via this interface the user has the possibility to access data which is created by pulse generating current meters with a S0 current meter interface in accordance with DIN 43 864. The user can extract the data without affecting the S0 circuit and use them for their own evaluations, for example, optimizing energy consumption by reducing peak demands.



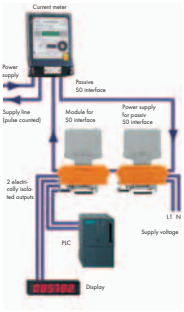


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
S0 interface	**286-740**	1	**286-741**	1
Terminal block for pluggable modules, with shunt resistance	22 mm / 0.866 in wide **286-740/001-000**	1	22 mm / 0.866 in wide **286-740/001-000**	1

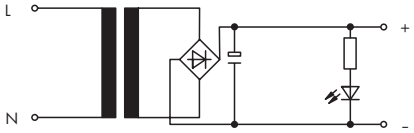
Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Input current 1-Signal (H)	> 10 mA ... < 27 mA	> 10 mA ... < 27 mA
Input current 0-Signal (L)	< 2 mA	< 2 mA
Switch-on treshold	> 8.5 mA	> 8.5 mA
Switch-off treshold	< 7 mA	< 7 mA
Transmission frequency		<100 Hz
Input wiring	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	DIN VDE 0110	DIN VDE 0110
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

Pluggable Modules - S0 Optocouplers

	Supply module **for passive S0 current meter interface** **acc. to DIN 43864** **Module width 25 mm / 0.984 in**	







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 150 ... 151

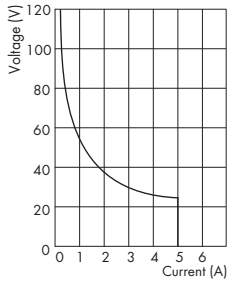
Nominal input voltage (V_N)	230 V AC
Frequency	50 Hz
Max. output voltage DC	27 V
Max. output current	27 mA
Test voltage input / output	2.5 kV eff.
Ambient operating temperature	0 °C ... +70 °C
Storage temperature	-40 °C ... +80 °C
Approvals	IEC 60664/ IEC 60664A/ DIN VDE 0110; IEC 60742/ EN 60742/ VDE 0551
Mounting position	any
Dimensions (mm) L x H x W incl. terminal block	25 x 82.5 x 73

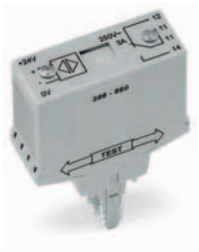
Accessories

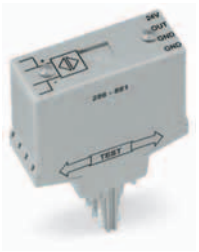
		Item No.	Pack. Unit
Terminal block for pluggable modules, **with 4-conductor terminal blocks, orange separator** **Wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;** **Stripped lengths 8 ... 9 mm / 0.33 in**	27 mm / 1.063 in wide	**280-629**	1
WSB marker card with marking: +/-		**209-552**	5

Pluggable Modules - NAMUR Switching Amplifiers

	NAMUR switching amplifier with relay output (the switching amplifier has got an isolated output, e.g. for the connection of a PLC) Module width 20 mm / 0.787 in	NAMUR switching amplifier with relay output (the electronic output VA provides the status of the NAMUR sensor) Module width 20 mm / 0.787 in

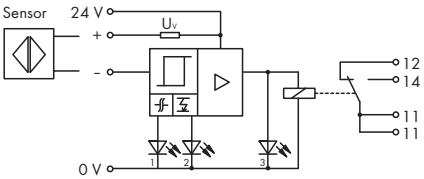


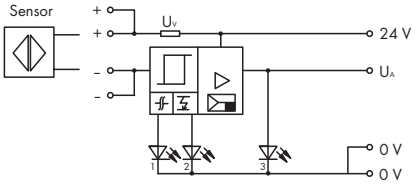




NAMUR switching amplifier for the supply of NAMUR sensors and the evaluation and amplification of the sensor signals in accordance with DIN 19234 and DIN 50 227. A line break or a sensor short circuit are monitored by the module and indicated via LEDs.

- LED 1 yellow: Line break
- LED 2 yellow: Short circuit
- LED 3 red: Output active



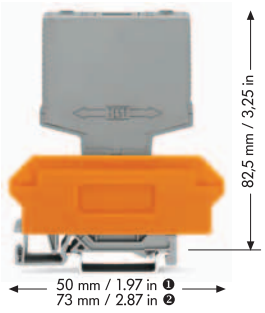


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
NAMUR switching amplifier	**286-880**	1	**286-881**	1

Technical Data	Accessories see pages 150 ... 151		Accessories see pages 150 ... 151	
Supply voltage V_B	24 V DC (± 10 %)		24 V DC (± 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)	≥ 2 mA		≥ 2 mA	
Signal current (0)	≤ 1.7 mA		≤ 1.7 mA	
Switching delay	10 ms		10 ms	
Max. operating frequency			50 Hz	
Short circuit monitoring	I ≥ 7 mA		I ≥ 7 mA	
Line break monitoring	I ≤ 0.2 mA		I ≤ 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 VA			22 V ± 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 x 10^8 switching operations			
Mechanical life at max. load (resistance)	3 x 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		DIN VDE 0160 and IEC 60255, DIN VDE 0435	
	(corresponding parts) DIN 19234, DIN 50227		(corresponding parts) DIN 19234, DIN 50227	

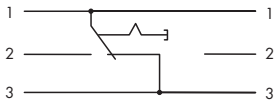
Pluggable Modules - Switches

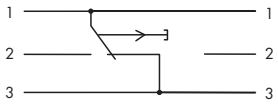
	1-pole changeover with changeover rocker switch Module width 15 mm / 0.591 in	1-pole changeover with momentary switch Module width 15 mm / 0.591 in











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

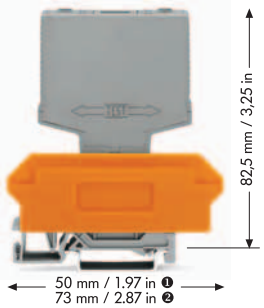
	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Max. switching voltage	24 V DC / 250 V AC	24 V DC / 250 V AC
Switching current, resistive	6 A AC	6 A AC
Switching current, inductive	4 A AC	4 A AC
Electrical life	≥ 50.000 switching operations	≥ 50.000 switching operations
Contact gap	≥ 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 ❶	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 ❷	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 ❷	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						

Pluggable Modules - Current Flow Monitoring

	AC/DC current flow monitoring module 15 mA DC/35 mA ... 300 mA AC Module width 20 mm / 0.787 in	AC current flow monitoring module 80 mA ... 6 A Module width 20 mm / 0.787 in

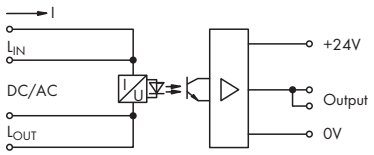


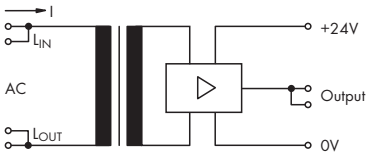




WSB marker card
- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking Lin, Lin, Lout, Lout, 24V, UA, UA, 0V; Item No.: 209-957

5 cards, each containing 10 strips with 10 markers



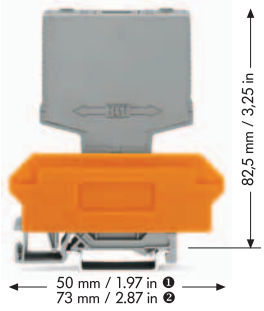


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Current flow monitoring module	**286-659**	1	**286-661**	1
Technical Data	Accessories see pages 150 ... 151		Accessories see pages 150 ... 151	
Current monitoring range	15 mA DC / 35 mA ... 300 mA AC		80 mA ... 6 A AC	
	Current < 15/35 mA Output 24 V DC		Current < 80 mA Output 24 V DC	
	Current > 15/35 mA Output 0 V		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 / 3		250 V / 4 kV / 3	
Ambient operating temperature	-25 °C ... +40 °C		-25 °C ... +40 °C	
Status indication	Operation: LED = green output LOW,		Operation: LED = green output LOW,	
	current interruption: LED = red output HIGH		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 ❶	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 ❷	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 ❷	25 mm / 0.984 in wide	**280-764**	1	25 mm / 0.984 in wide	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Current Flow Monitoring

	DC current flow monitoring module 0.4 A ... 3.5 A 1 make contact Module width 15 mm / 0.591 in	AC current flow monitoring module 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

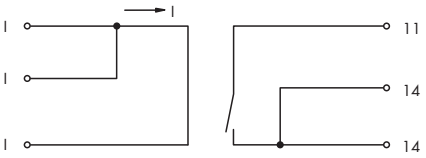


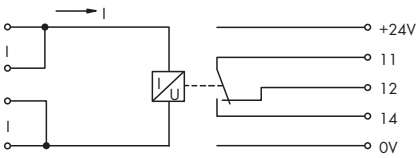




WSB marker card
- Marking U; Item No.: 209-789
- Marking 1 ... 10; Item No.: 209-702
- Marking Lin, Lin, Lout, 11, 14, 14, Lin, Lin, Lout; Item No.: 249-654
- Marking Lin, Lin, Lout, Lout, 24V, 11, 12, 14, 0V; Item No.: 209-997

5 cards, each containing 10 strips with 10 markers





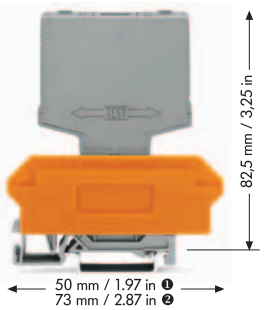
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Current flow monitoring module	**286-662**	1	**286-664**	1
			286-665	1

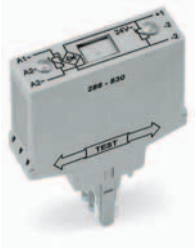
Technical Data		
	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Current monitoring range	0.4 A ... 3.5 A DC (-20 °C ... +40 °C);	0.2 A ... 3 A AC (286-664)
	0.4 A ... 3 A DC (-20 °C ... +60 °C);	1 A ... 10 A AC (286-665)
	0.4 A ... 2 A DC (-20 °C ... +70 °C)	
Voltage range	12 V ... 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 treshold		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 treshold LED red, Relay switched

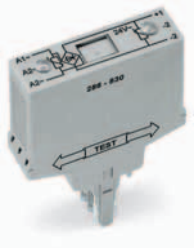
Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	17 mm / 0.669 in wide	**280-619**	1	27 mm / 1.063 in wide	**280-639**	1
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in wide	**280-609**	1	27 mm / 1.063 in wide	**280-629**	1
with 4-conductor terminal blocks, marker plate ❷	20 mm/ 0.787 in wide	**280-763**	1	30 mm / 1.181 in wide	**280-765**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

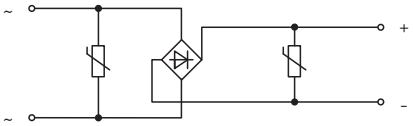
Pluggable Modules - Bridge Rectifiers

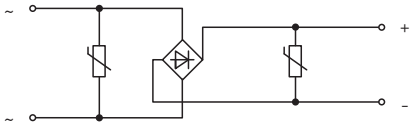
	Bridge with varistor protection for input voltage 24 V AC/1 A Module width 15 mm / 0.591 in	Bridge with varistor protection for input voltage 250 V AC/1 A Module width 15 mm / 0.591 in











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

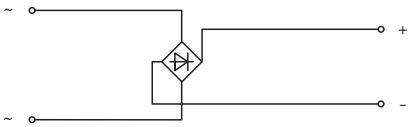
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Bridge rectifiers	**286-830**	1	**286-840**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
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 ❶	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 ❷	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 ❷	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						

	Bridge rectifier for input voltage 250 V AC/1 A **Module width 10 mm / 0.394 in**	





Description	Item No.	Pack. Unit	
Bridge rectifiers	**280-804/281-419**	1	

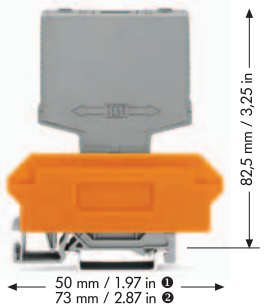
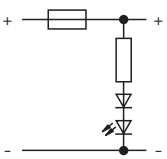
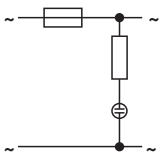
Technical Data

Accessories see pages 150 ... 151

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	**280-618**	1
with 4-conductor terminal blocks, orange separator ❷	12 mm / 0.472 in wide	**280-608**	1
with 4-conductor terminal blocks, marker plate ❷	15 mm / 0.591 in wide	**280-762**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;			
stripped length 8 ... 9 mm / 0.33 in			

Pluggable Modules - Fuses

	Fuse modules for replaceable microfuses 5 x 20 mm; max. 6.3 A with blown fuse indication LED green 24 V AC/DC Module width 10 mm / 0.394 in	Fuse modules for replaceable microfuses 5 x 20 mm; max. 6.3 A with blown fuse indication Neon lamp 230 V AC/DC Module width 10 mm / 0.394 in
		
		
		

WSB marker card
- Marking F1 ... F10; Item No.: 209-787
- Marking 1 ... 10; Item No.: 209-702
- Marking +/-; Item No.: 209-652

5 cards, each containing 10 strips with 10 markers

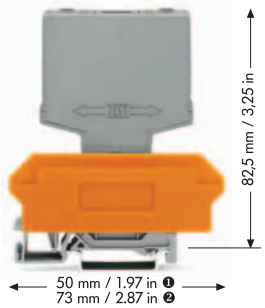
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Fuse module, with blown fuse indication	**286-890**	1	**286-891**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Operating voltage	24 V AC/DC	230 V AC/DC
Max. fuse capacity	6.3 A	6.3 A
Operating power	100 mW	100 mW
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Leakage current in case of blown fuse	5 mA	0.5 mA
Test voltage	2.5 kV	2.5 kV

Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	12 mm / 0.472 in wide	**280-618**	1	12 mm / 0.472 in wide	**280-618**	1
with 4-conductor terminal blocks, orange separator ❷	12 mm / 0.472 in wide	**280-608**	1	12 mm / 0.472 in wide	**280-608**	1
with 4-conductor terminal blocks, marker plate ❷	15 mm / 0.591 in wide	**280-762**	1	15 mm / 0.591 in wide	**280-762**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

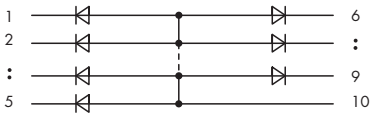
Pluggable Modules - Diode Gates

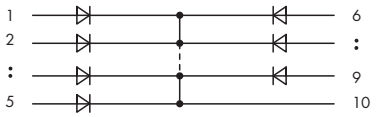
	Diode gate module with 3, 5, 7 or 9 diodes 1 N 4007, common anode Module width see Item No.	Diode gate module with 3, 5, 7 or 9 diodes 1 N 4007, common cathode Module width see Item No.











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

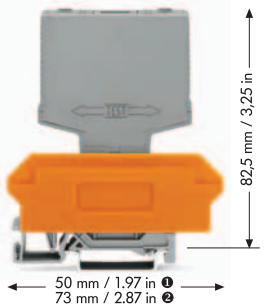
Description	Module width	Item No.	Pack. Unit	Module width	Item No.	Pack. Unit
Diode gate module with 3 diodes	10 mm / 0.394 in	**286-803**	1	10 mm / 0.394 in	**286-813**	1
with 5 diodes	15 mm / 0.591 in	**286-805**	1	15 mm / 0.591 in	**286-815**	1
with 7 diodes	20 mm / 0.787 in	**286-807**	1	20 mm / 0.787 in	**286-817**	1
with 9 diodes	25 mm / 0.984 in	**286-809**	1	25 mm / 0.984 in	**286-819**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
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 / 3	250 V / 4 kV / 3
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 ❶	12 mm / 0.472 in wide	**280-618**	1	12 mm / 0.472 in wide	**280-618**	1
with 4-conductor terminal blocks, orange separator ❷	12 mm / 0.472 in wide	**280-608**	1	12 mm / 0.472 in wide	**280-608**	1
with 4-conductor terminal blocks, marker plate ❷	15 mm / 0.591 in wide	**280-762**	1	15 mm / 0.591 in wide	**280-762**	1
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	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 ❷	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 ❷	20 mm / 0.787 in wide	**280-763**	1	20 mm/ 0.787 in wide	**280-763**	1
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	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 ❷	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 ❷	25 mm / 0.984 in wide	**280-764**	1	25 mm / 0.984 in wide	**280-764**	1
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	27 mm / 1.063 in wide	**280-639**	1	27 mm / 1.063 in wide	**280-639**	1
with 4-conductor terminal blocks, orange separator ❷	27 mm / 1.063 in wide	**280-629**	1	27 mm / 1.063 in wide	**280-629**	1
with 4-conductor terminal blocks, marker plate ❷	30 mm / 1.181 in wide	**280-765**	1	30 mm / 1.181 in wide	**280-765**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - AND Gate and LED Indicator

	AND gate module with 6 inputs Relay output with 1 make contact Module width 25 mm / 0.984 in	LED indicator module with 8 LED, common cathode Module width 25 mm / 0.984 in

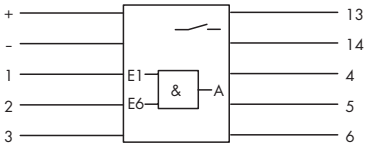


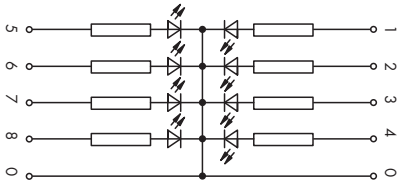




WSB marker card
- Marking D; Item No.: 209-783
- Marking 1 ... 10; Item No.: 209-702
- Marking +, -, 1, 2, 3, 13, 14, 4, 5, 6; Item No.: 249-608

5 cards, each containing 10 strips with 10 markers





Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Gate module	**286-826**	1	**286-822**	1

Technical Data

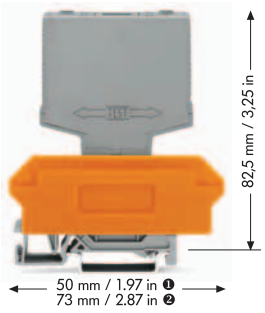
	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Operating voltage	24 V DC	24 V DC
Operating voltage range	24 V ... 27.5 V DC	20 V ... 26 V DC
Gate voltage - input	DC 24 V	
Power consumption at V_N	max. 34.6 mA	5.1 mA each LED
Relay output	make contact	
Max. switching voltage	250 V 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 / 3	
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C

Accessories

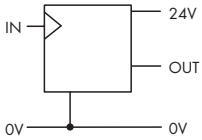
		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	27 mm / 1.063 in wide	**280-639**	1	27 mm / 1.063 in wide	**280-639**	1
with 4-conductor terminal blocks, orange separator ❷	27 mm / 1.063 in wide	**280-629**	1	27 mm / 1.063 in wide	**280-629**	1
with 4-conductor terminal blocks, marker plate ❷	30 mm / 1.181 in wide	**280-765**	1	30 mm / 1.181 in wide	**280-765**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Flip-Flop

	Flip-Flop **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 150 ... 151

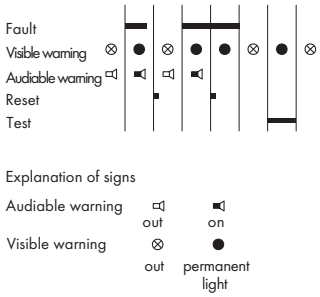
Input voltage	24 V DC (± 10 %)
Input current	0.25 mA
Input voltage (High Signal)	> 7 V
Input voltage (Low Signal)	< 3 V
Pulse frequency	5 kHz
Min. output voltage	V_B - 1.5 V
Max. output current	0.5 A
Operating voltage	24 V DC
Operating voltage range	20 V ... 30 V DC
Power consumption	7.5 mA
Reverse voltage 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 / 3
Ambient operating temperature	0 °C ... +55 °C

Accessories

		Item No.	Pack. Unit
Terminal block for pluggable modules,			
with 2-conductor terminal blocks, orange separator ❶	17 mm / 0.669 in wide	**280-619**	1
with 4-conductor terminal blocks, orange separator ❷	17 mm / 0.669 in wide	**280-609**	1
with 4-conductor terminal blocks, marker plate ❷	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			

Pluggable Modules - Fault Indication

	Fault indicator module with reset Alarm with continuous light with outputs for visible and audible warning Auxiliary and fault indication voltage 230 V AC Module width 20 mm / 0.787 in	Fault indicator module with reset Alarm with continuous light with outputs for visible and audible warning Extensible to collective fault indicator by means of diode gates Auxiliary and fault indication voltage 60 V DC Module width 20 mm / 0.787 in



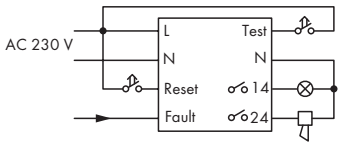


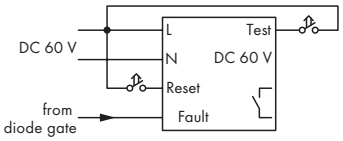


Accessories for collective fault indication (for 286-684)
- Diode gate 286-813 to 286-819
- Diode gate 289-111 with common cathode,

WSB marker card
- Marking D; Item No.: 209-783
- Marking 1 ... 10; Item No.: 209-702
- Marking L, N, Quitt, Stör, A1, A2, Test, N, 14, 24; Item No.: 249-606

5 cards, each containing 10 strips with 10 markers



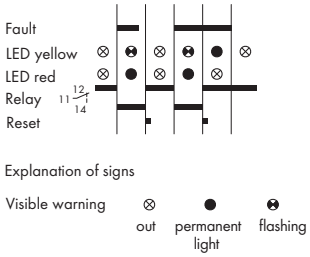


Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Fault indicator module with reset	**286-681**	1	**286-684**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal voltage	230 V AC	60 V DC / RW ≤ 6%
Tolerance	-10 % ... +5 %	± 10 %
Power consumption	15 mA	9 mA
Output for visible warning	230 V AC / 0.5 A	60 V DC / 0.5 A
Output for audible warning	230 V AC/2 A	electrically isolated make contact
Max. switching voltage		250 V AC
Max. switching current		2 A
Max. switching capacity		500 VA
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
		(RW = Restwelligkeit)

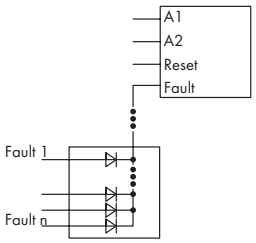
Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in wide	**280-638**	1	22 mm / 0.866 in wide	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in wide	**280-628**	1	22 mm / 0.866 in wide	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in wide	**280-764**	1	25 mm / 0.984 in wide	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Fault indicator module with reset
Indication of original fault with single flashing light
Output for audible warning
Visible warning by LED Extensible to collective fault indicator by means of diode gates
Module width 20 mm / 0.787 in





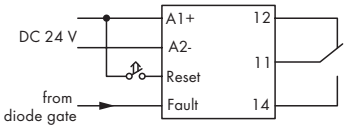
can be used with diode gate



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	
Fault indicator module with reset	**286-683**	1	

Technical Data

Accessories see pages 150 ... 151

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 / 3
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	22 mm / 0.866 in wide	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in wide	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in wide	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in			

Overview Pluggable Modules – Switching Relays

with an extended input voltage and operating temperature range V_N -30 % ... +25 % Ambient operating temperature -25 °C ... +70 °C Railway applications

Switching relay module



Description	Nominal Input Voltage (V_N)	Input Voltage Range	Max. Switching Voltage	Module Width	Item No.	Pack. Unit
Switching relay module,						
Relay with 1 changeover contact	24 V DC	V_N -30 % ...+25 %	250 V AC/DC	15 mm / 0.591 in	**286-304/004-000**	1
Relay with 1 changeover contact	110 V DC	V_N -30 % ...+25 %	250 V AC/DC	15 mm / 0.591 in	**286-307/004-000**	1
Relay with 2 changeover contacts	24 V DC	V_N -30 % ...+25 %	250 V AC / 200 V DC	20 mm / 0.787 in	**286-312/004-000**	1
Relay with 1 break contact						
and 1 make contact	24 V DC	V_N -30 % ...+25 %	250 V AC / 200 V DC	20 mm / 0.787 in	**286-320/004-000**	1
Relay with 2 make contacts	24 V DC	V_N -30 % ...+25 %	250 V AC / 200 V DC	20 mm / 0.787 in	**286-328/004-000**	1
Relais with 2 make contacts						
and 2 make contacts	24 V DC	V_N -30 % ...+25 %	250 V AC / 200 V DC	25 mm / 0.984 in	**286-336/001-000**	1
Relay with 3 make contacts						
and 1 break contact	24 V DC	V_N -30 % ...+25 %	250 V AC / 200 V DC	25 mm / 0.984 in	**286-344/004-000**	1
Relay with 4 make contacts	24 V DC	V_N -30 % ...+25 %	250 V AC / 30 V DC	25 mm / 0.984 in	**286-352/004-000**	1
Relay with 1 make contact	24 V DC	V_N -30 % ...+25 %	250 V AC	10 mm / 0.394 in	**286-364/004-000**	1
Relay with 1 changeover contact	24 V DC	V_N -30 % ...+25 %	36 V DC	15 mm / 0.591 in	**286-394/004-000**	1
Time relay (on-delay timing)						
with 1 changeover contact	24 V DC	V_N -30 % ...+25 %	250 V AC / 200 V DC	20 mm / 0.787 in	**286-604/004-000**	1
Multifunction timing relay						
with1 changeover contact	24 V DC	V_N -30 % ...+25 %	250 V AC / 120 V DC	20 mm / 0.787 in	**286-640/004-000**	1
Relay with 1 break contact						
and 1 make contact	24 V DC	V_N -30 % ...+25 %	250 V AC / 250 V DC	15 mm / 0.591 in	**286-906/004-000**	1

For additional technical data see: www.wago.com

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 mm² ... 2.5 mm² / AWG 28 ... 14; Stripped lengths 8 ... 9 mm / 0.33 in

WSB Marker Cards

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-, 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
	Iin, Iin, Iout, Iout, 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

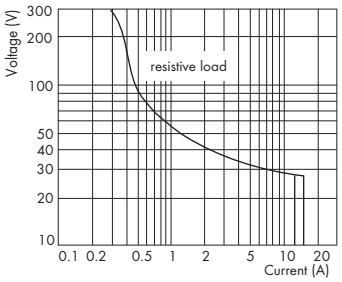


Description		Item No.	Pack. Unit
Marker cards and tags WSB 4 mm/0.157 in (plain)	white	209-701	5 cards
Marking software and printer/plotter see Section 8	yellow	209-701/000-002	5 cards
	red	209-701/000-005	5 cards
	blue	209-701/000-006	5 cards
	gray	209-701/000-007	5 cards
	orange	209-701/000-012	5 cards
	light green	209-701/000-017	5 cards
	green	209-701/000-023	5 cards
	violet	209-701/000-024	5 cards

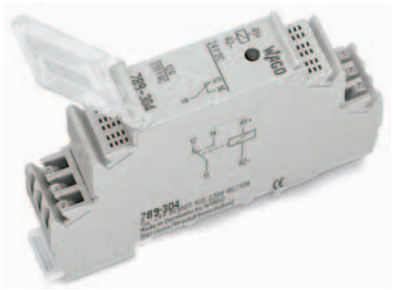
5 cards, each containing 10 strips with 10 markers

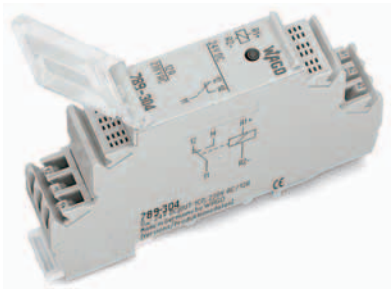
Relay Modules in DIN-Rail Mounted Enclosure

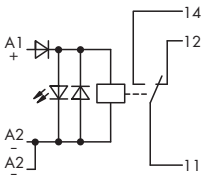
	Relay with 1 changeover contact (1 u) Nominal input voltage V_N 24 V DC	Relay with 1 changeover contact (1 u) Nominal input voltage V_N 24 V DC, 230 V AC/DC

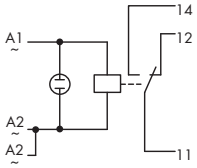


DC load limit curve







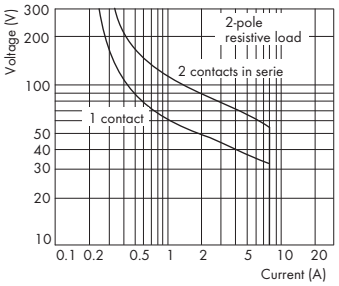


Other coil voltages contact factory

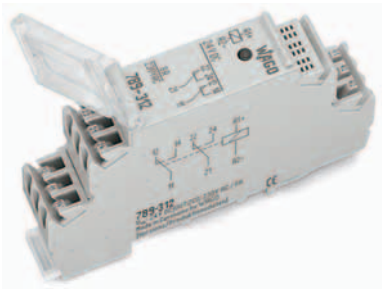
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Relay modules in DIN-rail mounted enclosure, for DIN 35 rail	24 V DC	19 mA	**789-304**	1	24 V AC/DC 230 V AC	20 mA 4.2 mA	**789-504** **789-508**	1 1

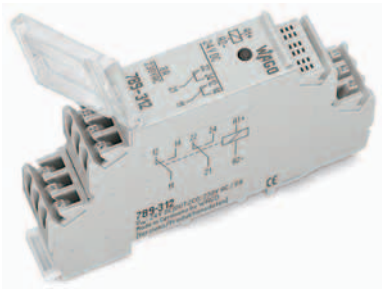
Technical Data	Accessories see page 162	Accessories see page 162
Contact material	AgNi 90/10	AgNi 90/10
Input voltage range	V_N -15 % ... +10 %	V_N -15 % ... +10 %
Max. switching voltage	250 VAC	250 VAC
Max. make current (resistive) at a 10 % duty cycle	4 s 25 A (AC)	4 s 25 A (AC)
Max. continuous current	12 A	12 A
Max. Switching power (resistive)	3000 VA AC, DC see load limit curve	3000 VA AC, DC see load limit curve
Recommended minimum load	> 100 mA / 12 V AC/DC	> 100 mA / 12 V AC/DC
Operating power	400 mW	0.96 VA
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / 3 ms	15 ms / 15 ms / 3 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil (AC, 1 min)	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life at 1000 W, AC 250 V	30 x 10^6 switching operations	30 x 10^6 switching operations
Service life at lamp load	1.2 x 10^3 switching operations	1.2 x 10^3 switching operations
Ambient operating temperature	-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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	DIN VDE 0160 and IEC 60255; DIN VDE 0435 (corresp. parts)	DIN VDE 0160 and IEC 60255; DIN VDE 0435 (corresp. parts)
		(OT = On-time)

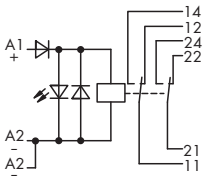
	Relay with 2 changeover contacts (2 u) Nominal input voltage V_N 24 V, 48 V, 110 V DC	Relay with 2 changeover contacts (2 u) Nominal input voltage V_N 24 V AC/DC, 115 V, 230 V AC

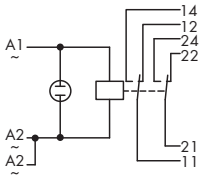


DC load limit curve









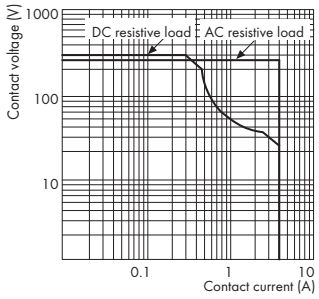
Other coil voltages contact factory

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

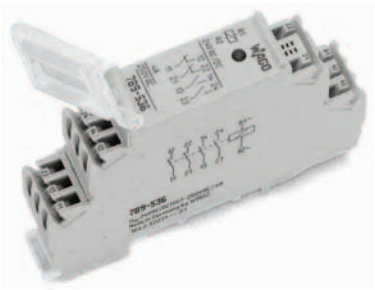
Technical Data	Accessories see page 162	Accessories see page 162
Contact material	AgNi 90/10	AgNi 90/10
Input voltage range	V_N -15 % ... +10 %	V_N -15 % ... +10 %
Max. switching voltage	250 VAC	250 VAC
Max. make current (resistive) at a 10 % duty cycle	4 s / 15 A	4 s / 15 A
Max. continuous current	8 A	8 A
Max. Switching power (resistive)	2000 VA AC, DC see load limit curve	2000 VA AC, DC see load limit curve
Recommended minimum load	> 100 mA / 12 V AC/DC	> 100 mA / 12 V AC/DC
Operating power	400 mW	0.96 VA
Pull-in/drop-out/bounce time typ.	7 ms / 2 ms / 3 ms	7 ms / 2 ms / 3 ms
Nominal operating mode	continuous duty	continuous duty
Dielectric strength contact-coil (AC, 1 min)	5 kV	5 kV
Dielectric strength open contact	1 kV	1 kV
Dielectric strength contact-contact	2.5 kV	1.5 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Mechanical life	3 x 10^7 switching operations	5 x 10^6 switching operation
Ambient operating temperature	-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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	DIN VDE 0160 and IEC 60255;	DIN VDE 0160 and IEC 60255;
	DIN VDE 0435 (corresp. parts)	DIN VDE 0435 (corresp. parts)
		(OT = On-time)

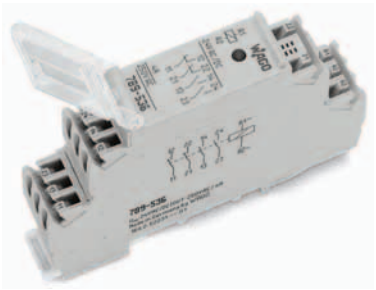
Relay Modules in DIN-Rail Mounted Enclosure

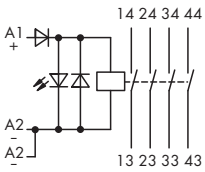
	Relay with 4 make contacts (4 a) Nominal input voltage V_N 24 V DC	Relay with 4 make contacts (4 a) Nominal input voltage V_N 12 V, 24 V AC/DC

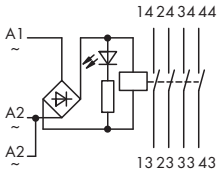


Load limit curve





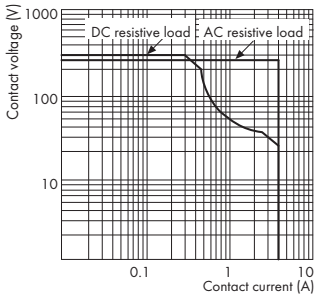




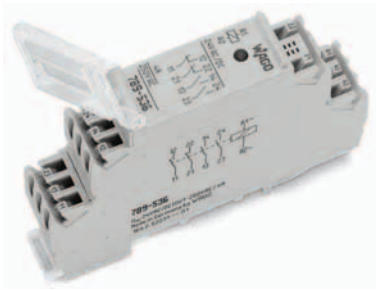
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Relay modules in DIN-rail mounted enclosure, for DIN 35 rail	24 V DC	12 mA	**789-352**	1	12 V AC/DC	21 mA	**789-551**	1
					24 V AC/DC	12 mA	**789-552**	1

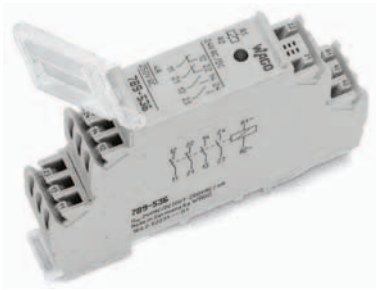
Technical Data	Accessories see page 162	Accessories see page 162
Contact material	AuAg10 over AgNi 15	AuAg10 over AgNi 15
Input voltage range	V_N -15 % ... +10 %	V_N -15 % ... +10 %
Max. switching voltage	250 VAC	250 VAC
Max. switching current	4 A AC	4 A AC
Max. Switching power (resistive)	1000 VA / 90 W, resistive see load limit curve	1000 VA / 90 W, resistive see load limit curve
Recommended minimum load	> 100 µA / 100 mV DC	> 100 µA / 100 mV DC
Pull-in/drop-out/bounce time typ.	15 ms / 10 ms / 1 ms	20 ms / 20 ms / 1 ms
Nominal operating mode	continuous duty	continuous duty
Max. switching frequency with load	6 min^{-1}	6 min^{-1}
Dielectric strength contact-coil (AC, 1 min)	1.5 kV	1.5 kV
Dielectric strength open contact	0.75 kV	0.75 kV
Dielectric strength contact-contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	230 V / 2.5 kV / 3	230 V / 2.5 kV / 3
Ambient operating temperature	-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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	DIN VDE 0110 Part1 / 4.97 IEC 60 664-1;	DIN VDE 0110 Part1 / 4.97 IEC 60 664-1;
	DIN VDE 0435 (corresp. parts), EN 61 810	DIN VDE 0435 (corresp. parts), EN 61 810
		(OT = On-time)

	Relay with 2 break and 2 make contacts (2 ar) Nominal input voltage V_N 24 V DC	Relay with 2 break and 2 make contacts (2 ar) Nominal input voltage V_N 12 V, 24 V AC/DC

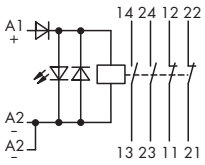


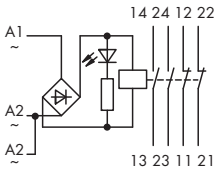
Load limit curve





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



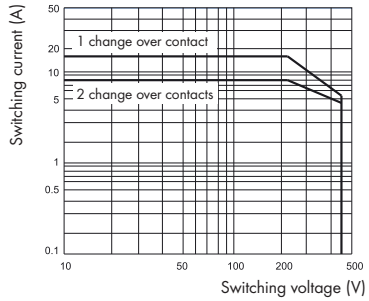


Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Relay modules in DIN-rail mounted enclosure, for DIN 35 rail	24 V DC	12 mA	**789-336**	1	12 V AC/DC	21 mA	**789-535**	1
					24 V AC/DC	12 mA	**789-536**	1

Technical Data	Accessories see page 162	Accessories see page 162
Contact material	AuAg10 over AgNi 15	AuAg10 over AgNi 15
Input voltage range	V_N -15 % ... +10 %	V_N -15 % ... +10 %
Max. switching voltage	250 VAC	250 VAC
Max. switching current	4 A AC	4 A AC
Max. Switching power (resistive)	1000 VA / 90 W, resistive see load limit curve	1000 VA / 90 W, resistive see load limit curve
Recommended minimum load	> 100 µA / 100 mV DC	> 100 µA / 100 mV DC
Pull-in/drop-out/bounce time typ.	15 ms / 10 ms / 1 ms	20 ms / 20 ms / 1 ms
Nominal operating mode	continuous duty	continuous duty
Max. switching frequency with load	6 min^{-1}	6 min^{-1}
Dielectric strength contact-coil (AC, 1 min)	1.5 kV	1.5 kV
Dielectric strength open contact	0.75 kV	0.75 kV
Dielectric strength contact-contact	1 kV	1 kV
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	230 V / 2.5 kV / 3	230 V / 2.5 kV / 3
Ambient operating temperature	-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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	DIN VDE 0110 Part1 / 4.97 IEC 60 664-1;	DIN VDE 0110 Part1 / 4.97 IEC 60 664-1;
	DIN VDE 0435 (corresp. parts), EN 61 810	DIN VDE 0435 (corresp. parts), EN 61 810
		(OT = On-time)

Relay Modules in DIN-Rail Mount Enclosure

	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



Load limit curve

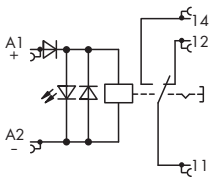


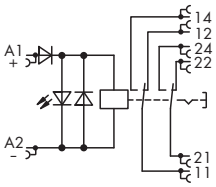
Similiar to picture



Similiar to picture

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





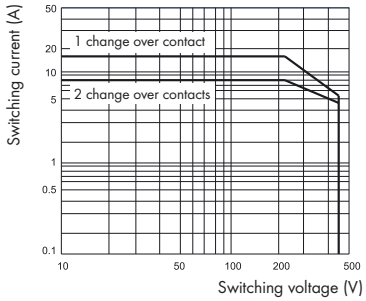
Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Relay module in DIN 35-rail mount enclosure	24 VDC		**789-1341**		24 VDC		**789-1346**	

Technical Data	Accessories see page 162	Accessories see page 162
Coil		
Input voltage range	U_N -10% ... +10 %	U_N -10% ... +10 %
Contacts		
Contact material	AgNi	AgNi
Max. continuous current	12 A	2 x 8 A
Max. make current (resistive) at a 10 % duty cycle	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.	15 ms / 8 ms / -	15 ms / 8 ms / -
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
General specifications:		
Nominal voltage to EN 60664	250 V / 4 kV / 3	250 V / 4 kV / 3
Dielectric strength contact-coil	3.5 kV_{rms}	3.5 kV_{rms}
Surge capacity open contact	1 kV_{eff}	1 kV_{eff}
Dielectric strength contact-contact (AC, 1 min.)	-	1.5 kV_{eff}
Ambient operating temperature (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	17.5 x 55 x 90	17.5 x 55 x 90
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Standards/Specifications	EN 60664-1	EN 60664-1

(OT = On-time)

Relay Modules in DIN-Rail Mount Enclosure

	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

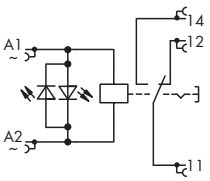


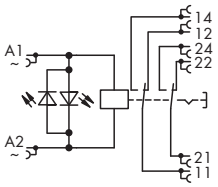
Load limit curve



Similiar to picture







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 35-rail mount enclosure	230		**789-1544**		230		**789-1549**	

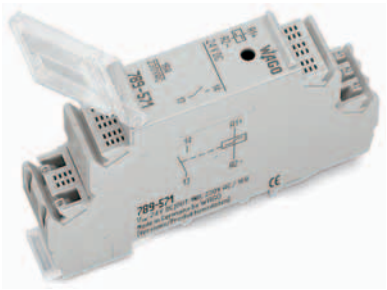
Technical Data	Accessories see page 162	Accessories see page 162
Coil		
Input voltage range	U_N -10% ... +10 %	U_N -10% ... +10 %
Contacts		
Contact material	AgNi	AgNi
Max. continuous current	12 A	2 x 8 A
Max. make current (resistive) at a 10 % duty cycle	16 A	8 A
Max. switching voltage	250 VAC	250 VAC
Max. Switching power (resistive)	3000 VA AC	2 x 2000 VA AC
Pull-in/drop-out/bounce time typ.	15 ms / 8 ms / -	15 ms / 8 ms / -
Mechanical life	5 x 10^6 switching operations	5 x 10^6 switching operations
General specifications:		
Nominal voltage to EN 60664	250 V / 4 kV / 3	250 V / 4 kV / 3
Dielectric strength contact-coil	3.5 kV_{rms}	3.5 kV_{rms}
Surge capacity open contact	1 kV_{eff}	1 kV_{eff}
Dielectric strength contact-contact (AC, 1 min.)	-	1.5 kV_{eff}
Ambient operating temperature (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	17.5 x 55 x 90	17.5 x 55 x 90
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Standards/Specifications	EN 60664-1	EN 60664-1

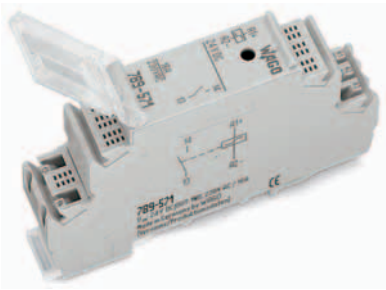
(OT = On-time)

Relay Modules in DIN-Rail Mounted Enclosure

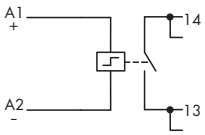
	Latching relay with 1 make contact (1 a) Nominal input voltage V_N 24 V DC	Latching relay with 1 make contact (1 a) Nominal input voltage V_N 230 V AC

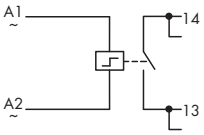






Lamp load: max. load 1500 W
Fluorescent lamp, dual circuit:
max. load 20 x 58 W series compensated
Electronic ballasts: 10 x 58 W

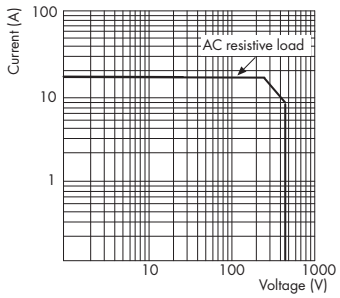




Description	V_N	I_N	Item No.	Pack. Unit	V_N	I_N	Item No.	Pack. Unit
Relay modules in DIN-rail mounted enclosure, for DIN 35 rail	24 V DC	42 mA	**789-571**	1	230 V AC	10 mA	**789-570**	1

Technical Data	Accessories see page 162	Accessories see page 162
Contact material	AgCdO	AgCdO
Input voltage range	V_N -15 % ... +10 %	V_N -15 % ... +10 %
Max. switching voltage	400 V AC	400 V AC
Min. switching current	0.1 A	0.1 A
Max. switching current	50 A (20 ms)	50 A (20 ms)
Max. continuous current	16 A	16 A
Max. Switching power (resistive)	4000 VA AC / 300 W DC	4000 VA AC / 300 W DC
Minimum switch-on time	40 ms	40 ms
Minimum break time	180 ms	180 ms
Coil control	Impuls	Impuls
Fuse protection	circuit breaker max. 16 A B-charakteristic	circuit breaker max. 16 A B-charakteristic
Nominal operating mode	continuous duty	continuous duty
Max. switching frequency with load	6 min^{-1}	6 min^{-1}
Max. switching frequency without load	4 s^{-1}	4 s^{-1}
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 / 3	250 V / 4 kV / 3
Mechanical life	1 x 10^5 switching operations	1 x 10^5 switching operations
Mechanical life at max. load (resistance)	5 x 10^4 switching operations	5 x 10^4 switching operations
Ambient operating temperature	-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
	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^2 ... 2.5 mm^2 / AWG 28 ... 14	0.08 mm^2 ... 2.5 mm^2 / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	DIN VDE 0160 and IEC 60255;	DIN VDE 0160 and IEC 60255;
	DIN VDE 0435 (corresp. parts); DIN VDE 0632	DIN VDE 0435 (corresp. parts); DIN VDE 0632
		(OT = On-time)

	Relay with 1 make contact (1a), manual-0-automatic switch	Capability of different lamp loads: (switching operations acc. to EN 60669)

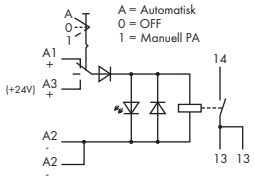


Load limit curve



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	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	Item No.	Pack. Unit	
Relay modules in DIN-rail mounted enclosure, for DIN 35 rail	24 V DC	**789-323**	1	

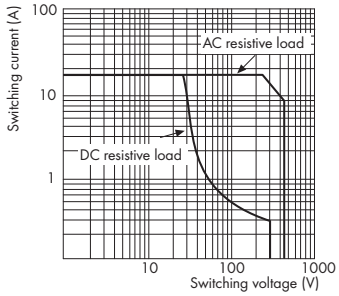
Technical Data

Accessories see page 162

Contact material	Ag-Legierung	
Input voltage range	V_N -15 % ... +20 %	
Current input at rated voltage (coil 20 °C)	19 mA	
Max. switching voltage	250 V AC	
Max. make current	120 A at 230 V AC (50 ms)	
Max. continuous current	16 A	
Max. Switching power (resistive)	4000 VA AC, resistance see load limit curve	
Recommended minimum load	> 100 mA / 12 V AC/DC	
Operating power	400 mW	
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms	
Nominal operating mode	continuous duty	
Dielectric strength contact-coil	4	
Surge capacity open contact	1	
Nominal voltage acc. to VDE 0110 Part 1/4.97,		
IEC 60664-1	250 V / 4 kV / 3	
Mechanical life	10 x 10^6 switching operations	
Mechanical life at max. load (resistance)	min. 100.000 switching operations	
Mechanical life at max. lamp load	see "Lamp loads" table	
Ambient operating temperature	-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 mm² ... 2.5 mm² / AWG 28 ... 14	
Stripped lengths	5 ... 6 mm / 0.22 in	
Approvals	DIN VDE 0140 part 1, DIN EN 61140;	
	DIN VDE 0160, EN 50178;	
	degree of protection II	
		(OT = On-time)

Relay Modules in DIN-Rail Mounted Enclosure

	Relay with 1 make contact (1 a), manual-0-automatic switch with monitoring contact	Capability of different lamp loads: (switching operations acc. to EN 60669)



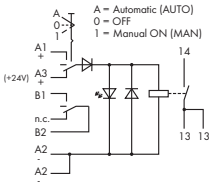
Load limit curve



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	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	Item No.	Pack. Unit	
Relay modules in DIN-rail mounted enclosure, for DIN 35 rail	24 V DC	**789-325**	1	

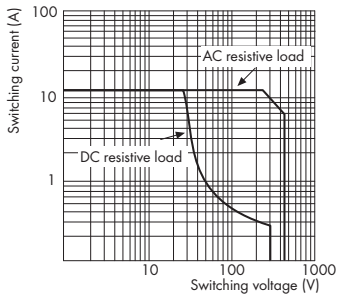
Technical Data

Accessories see page 162

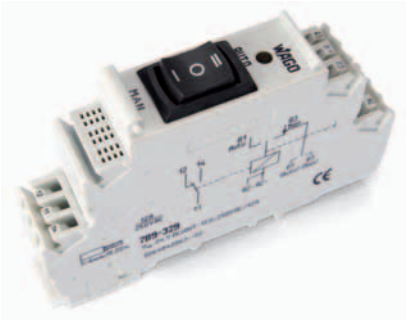
Contact material	Ag alloy
Input voltage range	V_N -15 % ... +20 %
Current input at rated voltage (coil 20 °C)	19mA
Max. switching voltage	250 V AC
Max. make current	120 A at 230 V AC (50 ms)
Max. continuous current	16 A
Max. Switching power (resistive)	4000 VA AC, resistance see load limit curve
Recommended minimum load	> 100 mA / 12 V AC/DC
Operating power	400 mW
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Nominal operating mode	continuous duty
Dielectric strength contact-coil	4 kV_{eff}
Surge capacity open contact	1 kV_{eff}
Nominal voltage acc. to IEC 60664-1	250 V / 4 kV / 3
Mechanical life	10 x 10^6 switching operations
Mechanical life at max. load (resistance)	min. 100.000 switching operations
Mechanical life at max. lamp load	see "Lamp loads" table
Signaling	Isolated monitoring contact
	(B1/B2 closed in automatic mode;
	max. 1 A, 250 V AC)
Ambient operating temperature	-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 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in
Standards/Specifications	DIN VDE 0160 EN 50178, degree of protection II

Relay Modules in DIN-Rail Mounted Enclosure

	Relay with 1 changeover contact (1 u), manual-0-automatic switch with switch position monitoring	Capability of different lamp loads: (switching operations acc. to EN 60669)



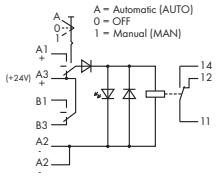
Load limit curve



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	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	Item No.	Pack. Unit	
Relay modules in DIN-rail mounted enclosure, for DIN 35 rail	24 V DC	**789-329**	1	

Technical Data

Accessories see page 162

Contact material	Ag alloy
Input voltage range	V_N -15 % ... +20 %
Current input at rated voltage (coil 20 °C)	19mA
Max. switching voltage	250 V AC
Max. make current	120 A at 230 V AC (50 ms)
Max. continuous current	12 A
Max. Switching power (resistive)	4000 VA AC, resistance see load limit curve
Recommended minimum load	> 100 mA / 12 V AC/DC
Operating power	400 mW
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Nominal operating mode	continuous duty
Dielectric strength contact-coil	4 kV_{eff}
Surge capacity open contact	1 kV_{eff}
Nominal voltage acc. to IEC 60664-1	250 V / 4 kV / 3
Mechanical life	10 x 10^6 switching operations
Mechanical life at max. load (resistance)	min. 100.000 switching operations
Mechanical life at max. lamp load	see "Lamp loads" table
Signaling	Switch position monitoring
	(B1 = automatic, B3 = manual;
	max. 1 A, 24 V DC)
Ambient operating temperature	-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 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in
Standards/Specifications	DIN VDE 0160 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



Wire connection



Marking pen with fibre tip

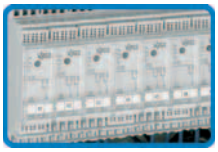


Description		Item No.	Pack. Unit
Marking pen	for permanent marking	**210-110**	1
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	**210-720**	1

Miniature quick marking card



Marking

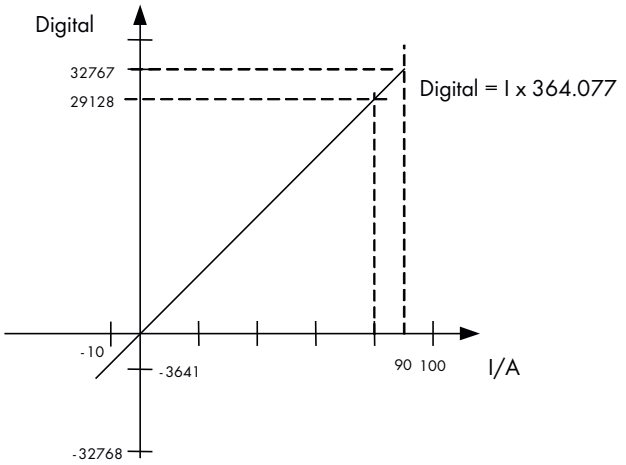


Description		Item No.	Pack. Unit
Miniature WSB Quick marking system	**plain**	**248-501**	5 cards
Marking software and printer/plotter see Section 8			
Marking	**1 ...10 (10 x)**	**248-502**	5 cards
	11 ... 20 (10x)	**248-503**	5 cards
	21 ... 30 (10x)	**248-504**	5 cards
	31 ... 40 (10x)	**248-505**	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			

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

Accessories	Item No.	Pack. Unit
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

Approvals

Conformity marking	CE
Standards/Specifications	DIN EN 50178; EN 61000-6-2 ; EN 61000-6-4

General Specifications

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

Electrical data:	
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
Mechanical data:	
Power cable feed-through	15 mm
Degree of protection	IP20
Communication:	
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	

RS-485

half duplex

Uart:

Communication settings requiredfor transducer:

Baud rate: 19200 bd

Data bits: 8

Parity: even

Stop bits: 1

Communication Description:

MODBUS Function	Read Holding Registers (0x03)	Data Type Measurement
Device Type	0x0000	Char
Firmware	0x0001	Char
Error Code	0x0002	Integer
Measurement	0x0004	Integer
Exception Code	0x0006	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	●	●	●	●	●

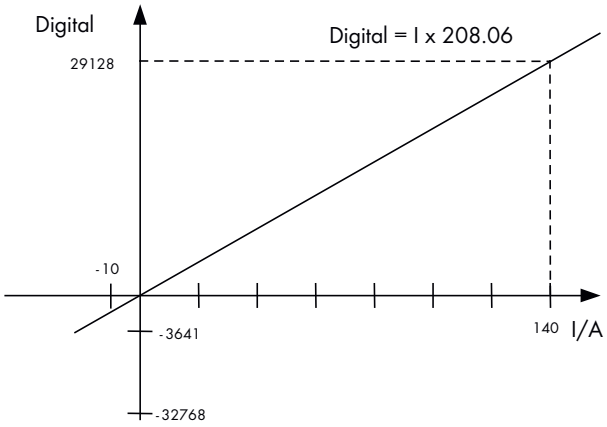
Terminating resistor	DIP Switch 1
-	
150 Ohm	●

NOTICE:
Only set the MODBUS address in the OFF state.

Current Sensor with Bus Connection in DIN-Rail Mountable Enclosure

Measuring range: 0 ... 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

Accessories	Item No.	Pack. Unit
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

Approvals

Conformity marking	CE
Standards/Specifications	DIN EN 50178; EN 61000-6-2 ; EN 61000-6-4

General Specifications

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

Electrical data:	
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
Mechanical data:	
Power cable feed-through	15 mm
Degree of protection	IP20
Communication:	
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

789-622

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	

RS-485

half duplex

Uart:

Communication settings requiredfor transducer:

Baud rate: 19200 bd

Data bits: 8

Parity: even

Stop bits: 1

Communication Description:

MODBUS Function	Read Holding Registers (0x03)
Address of Measured Value	0x0004
Data Type Measurement	Integer

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	●	●	●	●	●

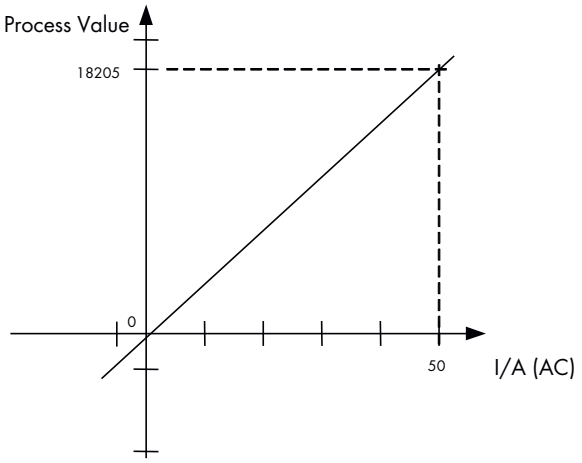
Terminating resistor	DIP Switch 1
-	
150 Ohm	●

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_{rms} $AC_{eff.}$





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

Accessories	Description	Item No.	Pack. Unit
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

Approvals

Conformity marking	CE
Standards/Specifications	DIN EN 50178; EN 61000-6-2 ; EN 61000-6-4

General Specifications

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

Electrical data:	
Measuring range	0 – 50 A $AC_{eff.}$
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 $A_{eff.}$
Mechanical data:	
Power cable feed-through	15 mm
Degree of protection	IP20
Communication:	
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	

RS-485

half duplex

Uart:

Communication settings requiredfor transducer:

Baud rate: 19200 bd

Data bits: 8

Parity: even

Stop bits: 1

Communication Description:

MODBUS Function	Read Holding Registers (0x03)
Address of Measured Value	0x0004
Data Type Measurement	Integer

DIP Switch Adjustability

● = ON

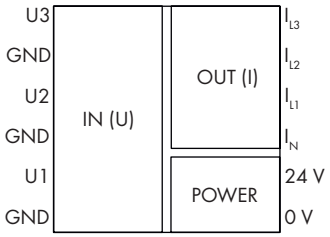
Adress	DIP Switch				
	2	3	4	5	6
1					
2					●
3				●	
4				●	●
5			●		
6			●		●
7			●	●	
8			●	●	●
9		●			
10		●			●
11		●		●	
12		●		●	●
13		●	●		
14		●	●		●
15		●	●	●	
16		●	●	●	●
17	●				
18	●				●
19	●			●	
20	●			●	●
21	●		●		
22	●		●		●
23	●		●	●	
24	●		●	●	●
25	●	●			
26	●	●			●
27	●	●		●	
28	●	●		●	●
29	●	●	●		
30	●	●	●		●
31	●	●	●	●	
32	●	●	●	●	●

Terminating resistor	DIP Switch 1
-	
150 Ohm	●

NOTICE:
Only set the MODBUS address in the OFF state.

Current Transducer for RT 500 Rogowski Coils





Short description:
The Rogowski Current Transducer 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 transducer 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

Accessories	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
3-Phase Power Measurement Module (R.C.)	**750-493/000-002**	1

Technical Data

Input:	
Input signal	3 x RT500 (500 A)
Sensitivity	10.05 mV
	50 Hz sinus
Outputs:	
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

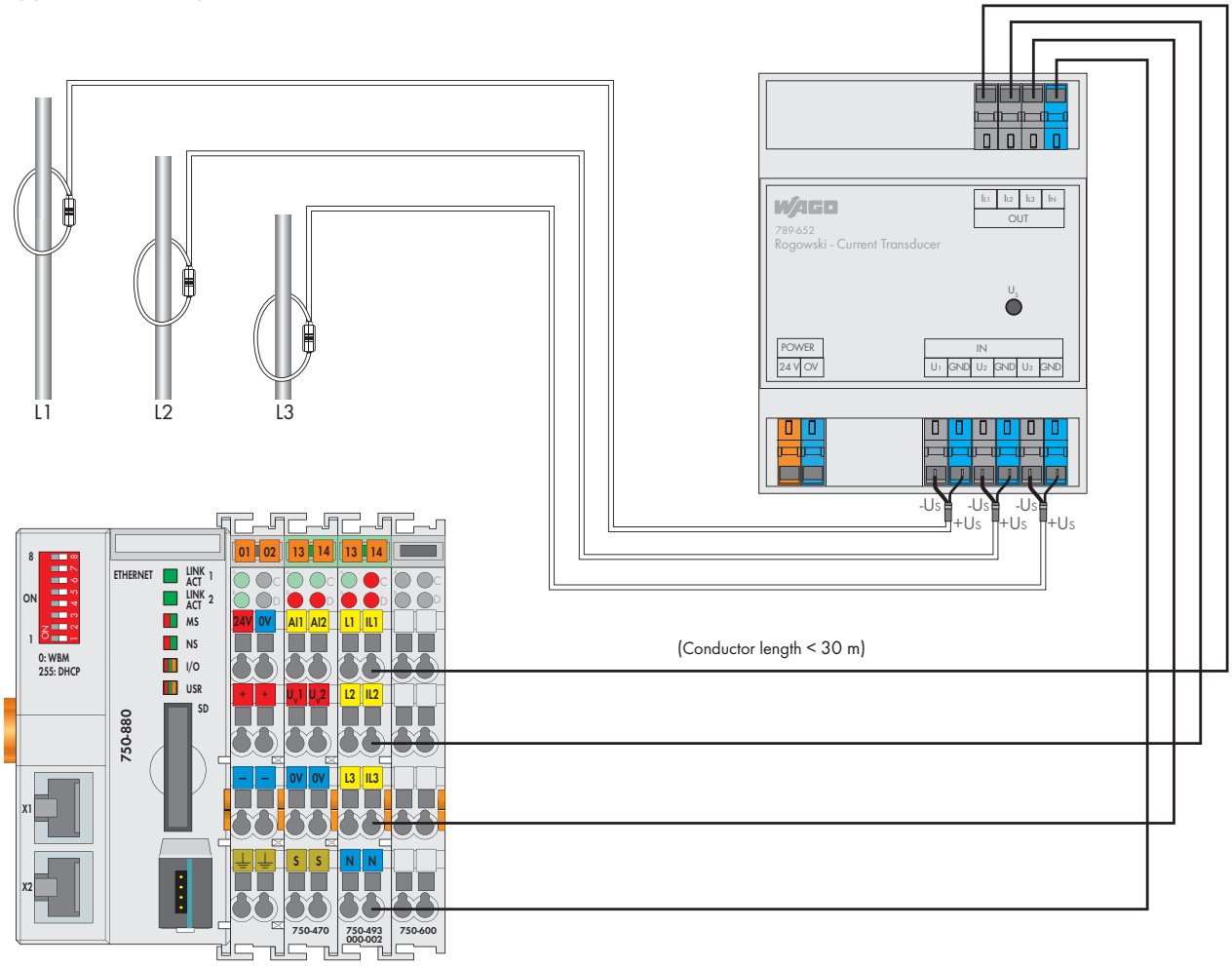
General specifications:	
Supply voltage range	16.8 ... 32 V
Max. power consumption	4000 mW
Operational indication	LED, green
Degree of protection	IP20
Phase error	< 1°
Max. operating frequency	300 Hz (phase accuracy at 50 Hz only)
Linearity	≤ 0.1 %
Temperature coefficient	≤ 0.1 %/K
Transmission error	< 1.1 %
Response threshold	2 A
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®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip lengths	5 ... 6 mm / 0.22 in
Dimensions and weight:	
Dimensions (mm) W x H x L	70 x 55 x 90
Weight	128.4 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	(pending)

Recommended conductor sizes and lengths: 789-652

Conductor size in mm²	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:



4-Channel EnOcean Radio Receivers in DIN-Rail Mount Enclosure

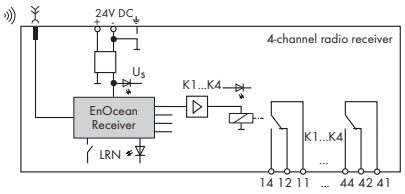
	4-channel EnOcean radio receiver with 4 changeover contacts, 8 A	4-channel EnOcean radio receiver with 4 make contacts, 16 A

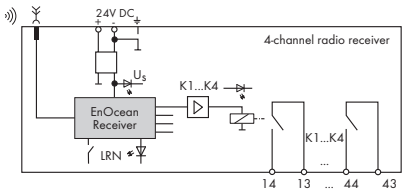
The 4-channel radio receiver in DIN-rail mount enclosure is used to switch 4 independent electrical devices or loads. The radio receiver processes telegrams transmitted by sensors (binary information) using EnOcean radio technology (PTM + STM modules).
The outputs are switched via relay contacts.

- Radio receiver for battery-less and wireless sensors
- LED indication of switch status
- External antenna for optimum transmission range (required)
- Frequency band 868 MHz
- Transmitter-to-receiver assignment via learn mode









Description	Item No.	Pack. unit	Item No.	Pack. unit
4-channel EnOcean radio receiver	**789-602**	1	**789-601**	1

Technical Data

Voltage supply	24 V DC	24 V DC
Voltage range	-15 % ... + 20 %	-15 % ... + 20 %
Current consumption (internal)	max. 90 mA	max. 90 mA
Number of receive channels	40 (10 per output)	40 (10 per output)
Number of channels	4 (relay outputs)	4 (relay outputs)
Output current (per channel)	max. 8 A, AC1	max. 16 A, AC1
Type of load	resistive / motor load	resistive / lamp load
Switching frequency	max. < 5 Hz	max. < 5 Hz
Delay time transmitter /output command	< 100 ms; 40 ms ... 70 ms typ.	< 100 ms; 40 ms ... 70 ms typ.
Switching voltage	230 V AC	230 V AC
Fuse protection	Loads: wire breaker, max.16 A	Loads: wire breaker, max.16 A
Isolation	potential free contacts	potential free contacts
Ambient operating temperature	0 °C ... +55 °C	0 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C	-25 °C ... +85 °C
Relative air humidity (no condensation)	85 %	85 %
Degree of pollution	2	2
Degree of protection	IP20	IP20
Mounting position	any	any
Dimensions (mm) W x H x L	70 x 55 x 90	70 x 55 x 90
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	CAGE CLAMP® (WAGO 236 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)
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	Vibration and shock resistance acc. to IEC 60068-2-6 and	Vibration and shock resistance acc. to IEC 60068-2-6 and
	IEC 60068-2-27	IEC 60068-2-27
Accessories: RF magnetic antenna incl. 3m connecting	758-910	758-910
cable with SMA connector		

Manual Control Modules

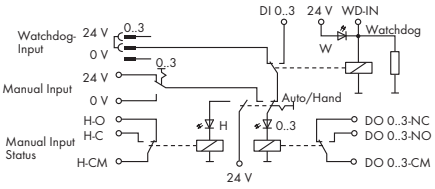
	Manual control module, digital, 4 outputs	Manual control module, analog, 4 outputs

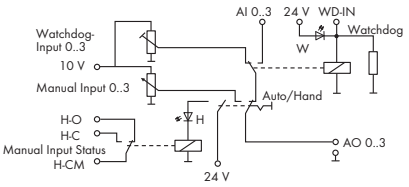
The digital manual control module 789-810 controls the different outputs 0 ... 3 and indicates their status via green LEDs and the changeover contact of the power relay. Depending on both the manual/automatic switch and watchdog input, the states 0 or 1 are transmitted in an electrically isolated from 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
Hand / Auto module	**789-810**	1	**789-811**	1

Technical Data

Voltage supply	24 V DC ± 20 %	24 V DC ± 20 %
Dielectric strength input / output	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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 734 and 231 Series)	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
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Stripped lengths	7 mm / 0.28 in	7 mm / 0.28 in
	8 ... 9 mm / 0.33 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	
Max. switching current channel nos. 12 ... 23	8 A AC / 8 A DC	





WAGO Application: Traffic Control System in Canton of Tessin (Gotthard Route), Switzerland

WAGO Products:
WAGO-I/O-SYSTEM (ETHERNET, CANopen),
WAGO X-COM®-SYSTEM,
MULTICONNECTION SYSTEM,
TOPJOB®S Rail-Mounted Terminal Blocks

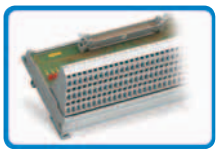
2



289 Series
Interface Modules with D-Subminiature Male and Female Connector 176 – 183



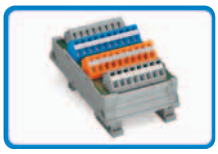
289 Series
Interface Modules for Ribbon Cable Connectors 184 – 189
Interface Module with High Density D-Sub Header for 19" Racks 190



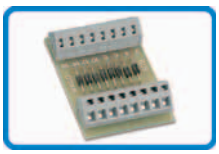
289, 704, 706 Series
Interface Modules for System Wiring
- Interface Modules for Siemes-SIMATIC 191 – 194
- Relay Output Module with Miniature Switching Relay 196 – 202
WAGO Ribbon Cables 203



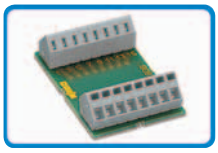
289 Series
RJ-45 Interface Modules 204 – 206



289 Series
Connection Modules for Sensors and Actuators 208 – 209



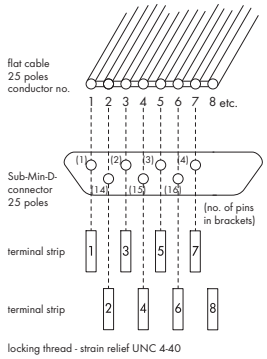
289 Series
Rail-Mounted Modules - Diode Gates 210 – 213
Rail-Mounted Modules - Resistor Gates 214

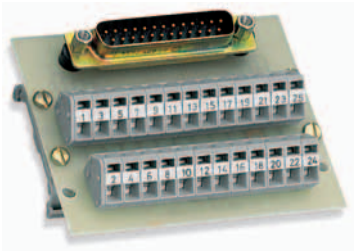


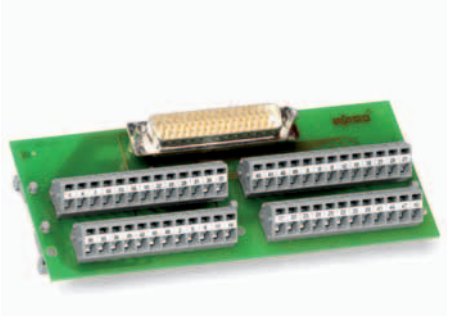
289 Series
Rail-Mounted Modules for Building Custom Circuits 215

Interface Modules

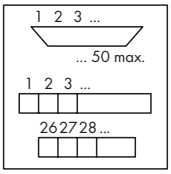
	Interface module with D-subminiature male connector, for mating connectors with solder connection, mating direction vertical Mounting carrier for DIN 35 rail	Interface module with D-subminiature male connector, for mating connectors with IDC, mating direction vertical Mounting carrier for DIN 35 rail

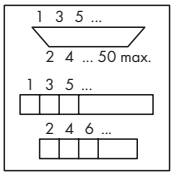






289-440 to 289-444



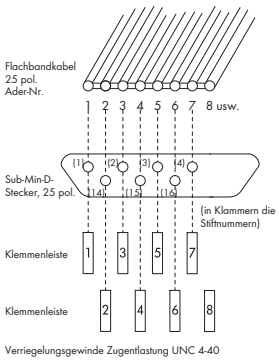


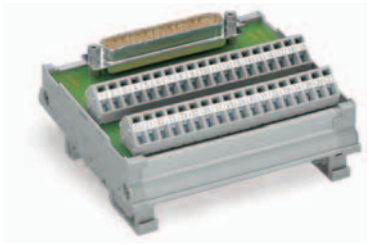
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	38	**289-445**	1	9	38	**289-440**	1
	15	53.5	**289-446**	1	15	53.5	**289-441**	1
	25	79	**289-447**	1	25	79	**289-442**	1
	37	120	**289-448**	1	37	120	**289-443**	1
	50	157	**289-449**	1	50	157	**289-444**	1

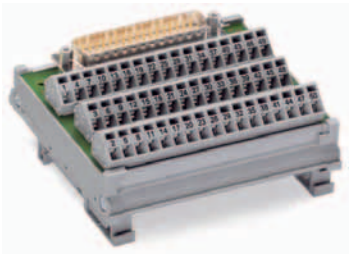
Technical Data

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni
Contact resistance	≤ 3 mΩ	≤ 3 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
IEC 60664-1		
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.	W x 19 x 63,5	W x 19 x 63,5
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

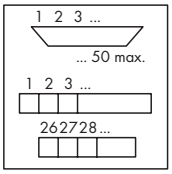
	Interface module with D-subminiature male connector, for mating connectors with solder connection, mating direction vertical Mounting carrier for DIN 35 rail	Interface module with D-subminiature male connector, for mating connectors with IDC, mating direction vertical Mounting carrier for DIN 35 rail

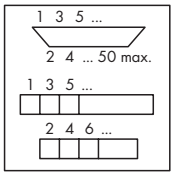






289-540 to 289-544





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

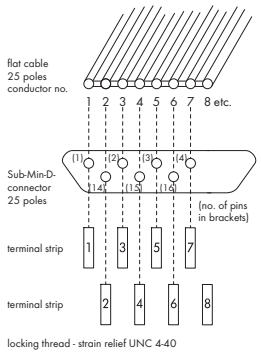
Technical Data

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni
Contact resistance	≤ 3 mΩ	≤ 3 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
IEC 60664-1		
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.	W x 34 x 85	W x 34 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

Interface Modules

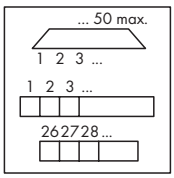
	Interface module with D-subminiature female connector, for mating connectors with solder connection, mating direction vertical Mounting carrier for DIN 35 rail	Interface module with D-subminiature female connector, for mating connectors with IDC, mating direction vertical Mounting carrier for DIN 35 rail

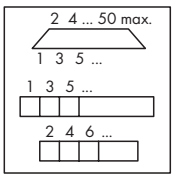






289-450 to 289-454



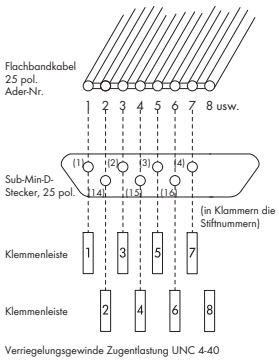


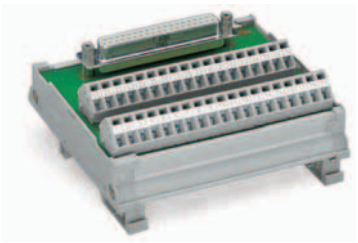
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	38	**289-455**	1	9	38	**289-450**	1
	15	53.5	**289-456**	1	15	53.5	**289-451**	1
	25	79	**289-457**	1	25	79	**289-452**	1
	37	120	**289-458**	1	37	120	**289-453**	1
	50	157	**289-459**	1	50	157	**289-454**	1

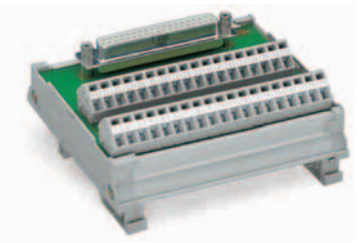
Technical Data

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni
Contact resistance	≤ 10 mΩ	≤ 10 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
IEC 60664-1		
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.	W x 19 x 63,5	W x 19 x 63,5
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

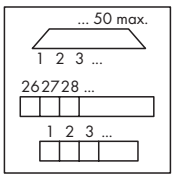
	Interface module with D-subminiature female connector, for mating connectors with solder connection, mating direction vertical Mounting carrier for DIN 35 rail	Interface module with D-Subminiature female connector, for mating connectors with IDC, mating direction vertical Mounting carrier for DIN 35 rail

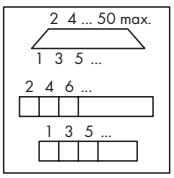






289-550 to 289-554





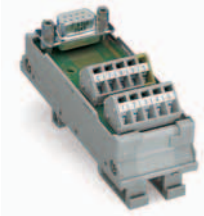
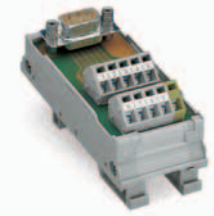
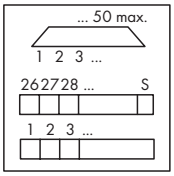
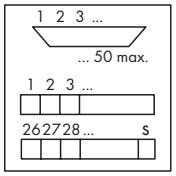
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	38	**289-555**	1	9	38	**289-550**	1
	15	46	**289-556**	1	15	46	**289-551**	1
	25	72	**289-557**	1	25	72	**289-552**	1
	37	102	**289-558**	1	37	102	**289-553**	1
	50	94	**289-559**	1	50	94	**289-554**	1

Technical Data

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni
Contact resistance	≤ 10 mΩ	≤ 10 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
IEC 60664-1		
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.	W x 34 x 85	W x 34 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

Interface Modules

	Interface module with D-subminiature female connector, for mating connectors with solder connection, mating direction vertical, shield (screen) connection Mounting carrier for DIN 35 rail	Interface module with D-subminiature male connector, for mating connectors with solder connection, mating direction vertical, shield (screen) connection Mounting carrier for DIN 35 rail
		
		

Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	9	33	**289-575**	1	9	38.5	**289-585**	1
	15	43	**289-576**	1	15	46	**289-586**	1
	25	68.5	**289-577**	1	25	71.5	**289-587**	1
	37	99	**289-578**	1	37	102	**289-588**	1

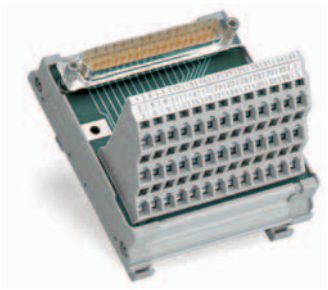
Technical Data

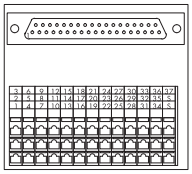
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni
Contact resistance	≤ 10 mΩ	≤ 10 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
IEC 60664-1		
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.	W x 34 x 85	W x 34 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

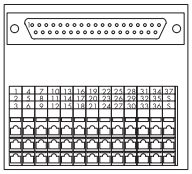
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

	Interface module with D-subminiature female connector, for mating connectors with solder connection, mating direction vertical, shield (screen) connection Mounting carrier for DIN 35 rail	Interface module with D-subminiature male connector, for mating connectors with solder connection, mating direction vertical, shield (screen) connection Mounting carrier for DIN 35 rail









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

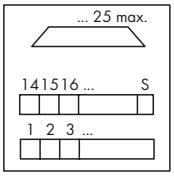
Technical Data

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni
Contact resistance	≤ 10 mΩ	≤ 10 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
IEC 60664-1		
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.	W x 62 x 85	W x 62 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 737 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
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	**289-650**	1	
	25	68.5	**289-652**	1	

Technical Data

Operating voltage	125 V AC / DC	
Nominal current	2 A	
Connector contact	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni	
Contact resistance	< 10 mΩ	
Performance level	2 / 200 mating cycles	
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	
IEC 60664-1		
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.	W x 48 x 85	
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 736 Series)	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in	

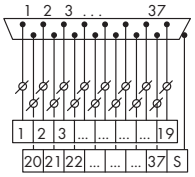
Accessories

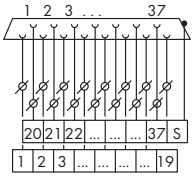
WMB Multi marking system for mounting carrier	see page 408	
Marker strips for mounting carrier	white 709-198 / transparent 709-197	

	Interface module with D-subminiature male connector Mounting carrier for DIN 35 rail	Interface module with D-subminiature female connector Mounting carrier for DIN 35 rail









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
Interface module	9	33.5	**289-720**	1	9	33.5	**289-725**	1
	15	43.5	**289-721**	1	15	43.5	**289-726**	1
	25	69	**289-722**	1	25	69	**289-727**	1
	37	99.5	**289-723**	1	37	99.5	**289-728**	1

Technical Data

Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	2 A	2 A
Connector contact	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni	plating, 0.5 µm ... 0.8 µm Au over 2 µm Ni
Contact resistance	≤ 10 mΩ	≤ 10 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
IEC 60664-1		
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.	W x 48 x 85	W x 48 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 736 Series)	CAGE CLAMP® (WAGO 736 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

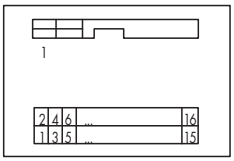
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

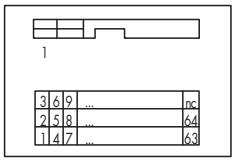
Interface Modules

	Interface module for ribbon cable connectors acc. to DIN 41651 Mounting carrier for DIN 35 rail	Interface module for ribbon cable connectors acc. to DIN 41651 Mounting carrier for DIN 35 rail









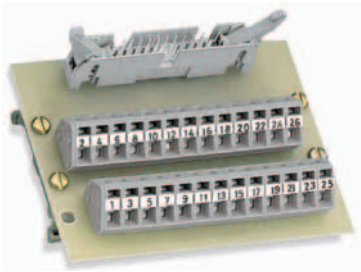
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	10	35	**289-611**	1	20	47	**289-614**	1
	14	40	**289-612**	1	26	55	**289-615**	1
	16	45	**289-613**	1	34	65	**289-616**	1
					40	74	**289-617**	1
					50	88	**289-618**	1
					64	114	**289-619**	1

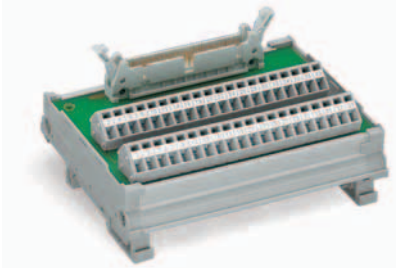
Technical Data

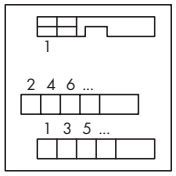
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni
Performance level	3	3
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
IEC 60664-1		
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.	W x 48 x 85	W x 62 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 736 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	IEC 60603-1 / DIN 41651 Part 1 and 2	IEC 60603-1 / DIN 41651 Part 1 and 2

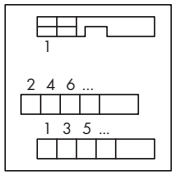
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

	Interface module with header acc. to DIN 41 651 Mounting carrier for DIN 35 rail	Interface module with header acc. to DIN 41 651 Mounting carrier for DIN 35 rail









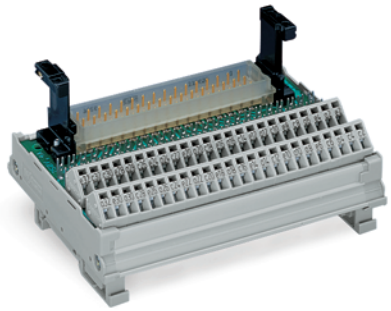
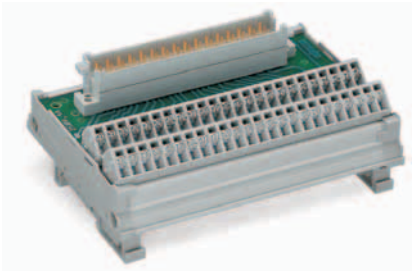
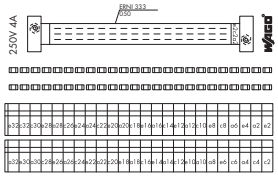
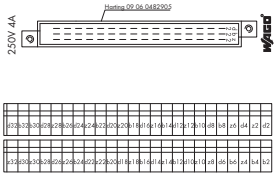
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	10	41	**289-401**	1	10	38	**289-501**	1
	14	51.5	**289-402**	1	14	43	**289-502**	1
	16	56.5	**289-403**	1	16	46	**289-503**	1
	20	66.5	**289-404**	1	20	53.5	**289-504**	1
	26	81	**289-405**	1	26	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	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni
Performance level	3	3
Nominal voltage acc. to VDE 0110 Part 1/4.97,	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
IEC 60664-1		
Dimensions (mm) W x H x L incl.	W x 28 x 63,5	W x 36 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

Accessories		
WMB Multi marking system for mounting carrier		see page 408
Marker strips for mounting carrier		white 709-198 / transparent 709-197

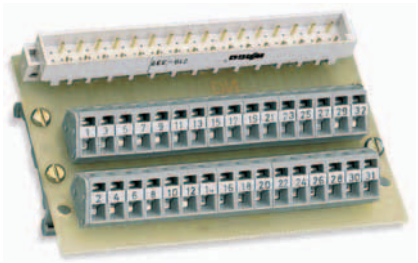
Interface Modules

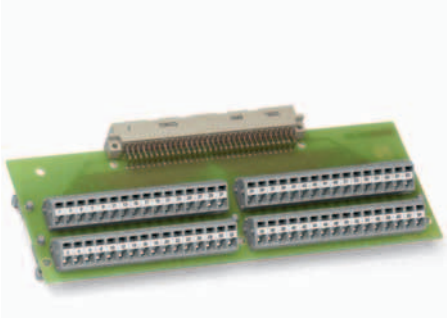
	Interface module for connectors acc. to DIN 41 612, with male connector, type E, with strain relief device for ERNI mating connector Mounting carrier for DIN 35 rail	Interface module for connectors acc. to DIN 41 612, with male connector, type F, with strain relief device for Harting mating connector Mounting carrier for DIN 35 rail
		
		

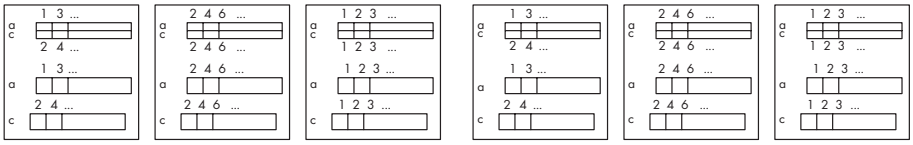
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	48	128	**289-434**	1	48	128	**289-436**	1

Technical Data		
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 acc. to VDE 0110 Part 1/4.97,	250 V / 1.5 kV / 2	250 V / 1.5 kV / 2
IEC 60664-1		
Dimensions (mm) W x H x L incl.	W x 55 x 85	W x 39 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

	Interface module for connectors acc. to DIN 41 612, with male connector, type C, mating direction vertical Mounting carrier for DIN 35 rail	Interface module for connectors acc. to DIN 41 612, with male connector, type C, mating direction horizontal Mounting carrier for DIN 35 rail







289-422 289-424 289-426 289-423 289-425 289-427

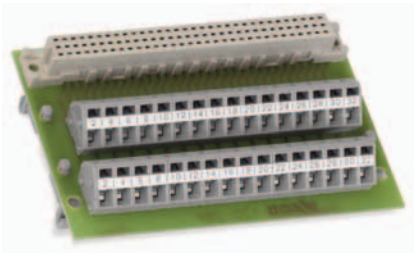
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module, for female connector								
with IDC	64	187	**289-422**	1	64	187	**289-423**	1
Interface module, for female connector								
with solder contact	32	97	**289-424**	1	32	97	**289-425**	1
Interface module, for female connector								
with solder contact	64	187	**289-426**	1	64	187	**289-427**	1

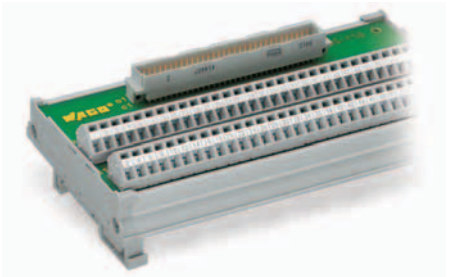
Technical Data

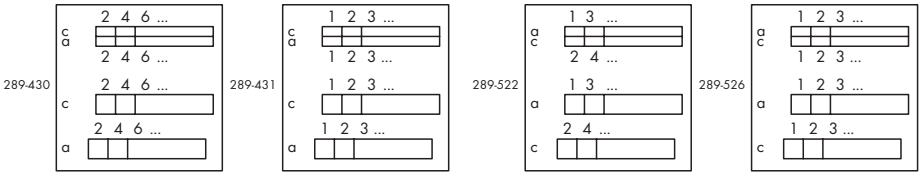
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	Copper alloy, gold plated	Copper alloy, gold plated
Contact resistance	≤ 20 mΩ	≤ 20 mΩ
Performance level	2 / 400 mating cycles	2 / 400 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	50 V / 0.8 kV / 2	50 V / 0.8 kV / 2
IEC 60664-1		
Dimensions (mm) W x H x L incl.	W x 21 x 63,5	W x 21 x 63,5
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

Interface Modules

	Interface module 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	Interface module 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





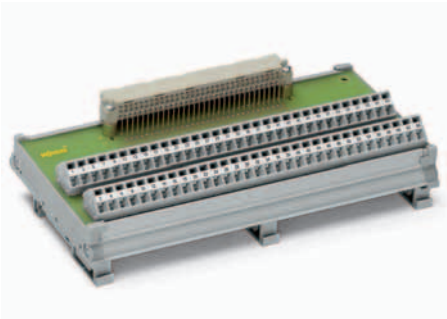


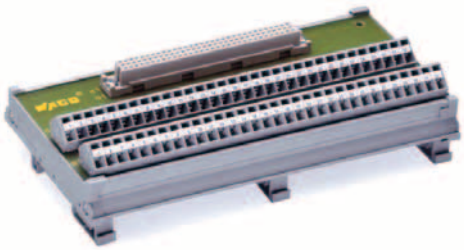
Description	No. of Poles	Width	Item No.	Pack. Unit	No. of Poles	Width	Item No.	Pack. Unit
Interface module	32	97	**289-430**	1	64	171	**289-522**	1
	64	187	**289-431**	1	64	171	**289-526**	1

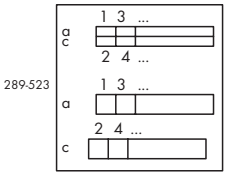
Technical Data

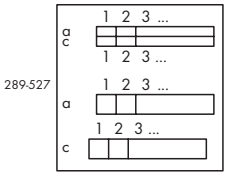
Operating voltage	125 V AC / DC	125 V AC / DC
Nominal current	1 A	1 A
Connector contact	Copper alloy, gold plated	Copper alloy, gold plated
Contact resistance	≤ 20 mΩ	≤ 20 mΩ
Performance level	2 / 400 mating cycles	2 / 400 mating cycles
Nominal voltage acc. to VDE 0110 Part 1/4.97,	50 V / 0.8 kV / 2	125 V / 0.8 kV / 2
IEC 60664-1		
Dimensions (mm) W x H x L incl.	W x 21 x 63,5	W x 34 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

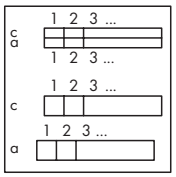
	Interface module for connectors acc. to DIN 41 612, with female connector, type C, mating direction horizontal, for female connector with IDC connection or with solder contact	Interface module for connectors acc. to DIN 41 612, with female connector, type C, mating direction vertical, for male connector with solder contact Mounting carrier for DIN 35 rail











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				

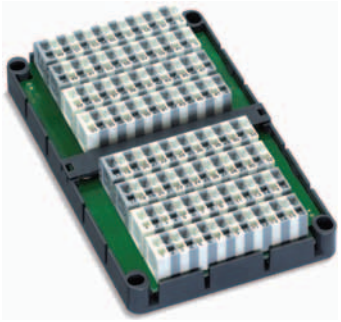
Technical Data

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 acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	125 V / 0.8 kV / 2
IEC 60664-1		
Dimensions (mm) W x H x L incl.	W x 34 x 85	W x 34 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

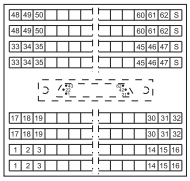
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

Interface Modules

	Interface module with high density D-sub header for 19" racks	







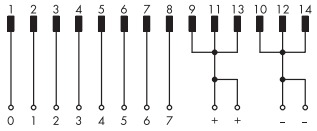
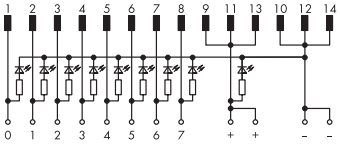
Description	**No. of Poles**	**Width**	**Item No.**	**Pack. Unit**	
Interface module for 19" racks	62	80	**289-822**	1	

Technical Data

Operating voltage	125 V AC / DC	
Nominal current	1 A	
Connector contact	Copper alloy, gold-plated 0.8 µm	
Contact resistance	≤ 10 mΩ	
Performance level	2 to DIN 41652 400 mating cycles, without corrosion	
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	
IEC 60664-1		
Touch-proof terminal strip	IP20	
Touch-proof HD D-sub header	IP00	
Dimensions (mm) W x H x L incl.	W x 27 x 132	
mounting feet or mounting carrier		
Wire connection	CAGE CLAMP® (WAGO 739 Series)	
Cross sections	0.08 mm² ... 1.5 mm² / AWG 28 ... 14 *	
	* (AWG14: THHN, THWN)	
Stripped lengths	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	
Approvals	EN 60664	

Interface Modules

for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M and S7-400

SIMATIC® is a registered trademark of the Siemens AG	Interface module, 8-pole, for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M und S7-400 Single-wire connection, without LED Mounting carrier for DIN 35 rail	Interface module, 8-pole, for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M und S7-400 Single-wire connection, with LED Mounting carrier for DIN 35 rail
		
		

Description	Width	Item No.	Pack. Unit	Width	Item No.	Pack. Unit
Interface module	44	**289-680**	1	44	**289-681**	1

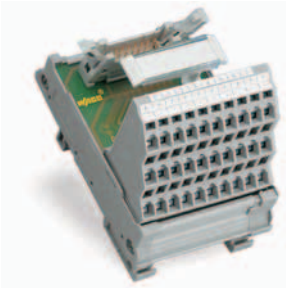
Technical Data

Operating voltage	125 V AC/DC	24 V DC
Nominal current per signal wire	1 A	1 A
Max. total current (supply)	2 A	2 A
Connector contact	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni
Performance level	3	3
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	
IEC 60664-1		
Dimensions (mm) W x H x L incl.	W x 48 x 85	W x 48 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 736 Series)	CAGE CLAMP® (WAGO 736 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

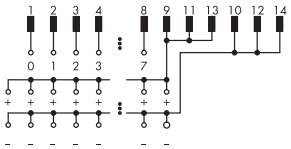
Accessories

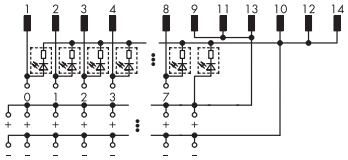
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

SIMATIC® is a registered trademark of the Siemens AG	Interface module, 8-pole, for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M und S7-400 3-wire sensors, without LED Mounting carrier for DIN 35 rail	Interface module, 8-pole, for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M und S7-400 3-wire sensors, with LED Mounting carrier for DIN 35 rail









Description	Width	Item No.	Pack. Unit	Width	Item No.	Pack. Unit
Interface module	54	**289-682**	1	54	**289-683**	1

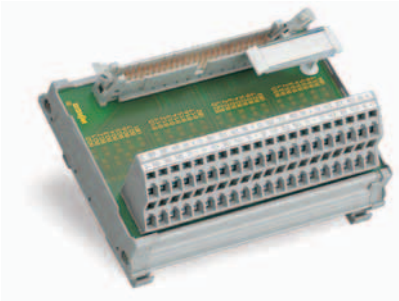
Technical Data

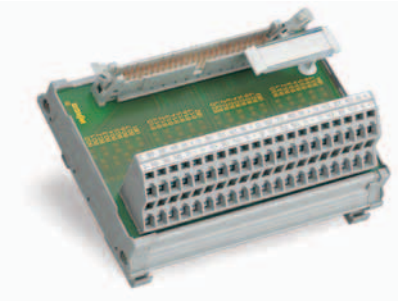
Operating voltage	125 V AC/DC	24 V DC
Nominal current per signal wire	1 A	1 A
Max. total current (supply)	2 A	2 A
Connector contact	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni
Performance level	3	3
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	
IEC 60664-1		
Dimensions (mm) W x H x L incl.	W x 62 x 85	W x 62 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 737 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

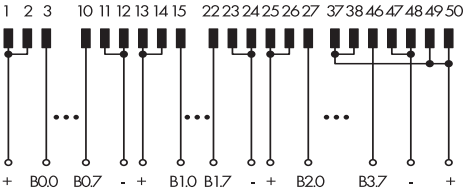
Interface Modules

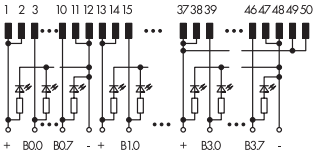
for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M and S7-400

SIMATIC® is a registered trademark of the Siemens AG	Interface module, 32-pole, for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M und S7-400 Single-wire connection, without LED Mounting carrier for DIN 35 rail	Interface module, 32-pole, for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M und S7-400 Single-wire connection, with LED Mounting carrier for DIN 35 rail









Description	Width	Item No.	Pack. Unit	Width	Item No.	Pack. Unit
Interface module	112	**289-684**	1	112	**289-685**	1

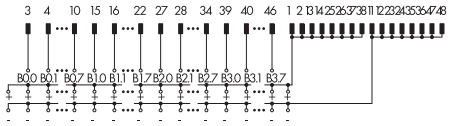
Technical Data

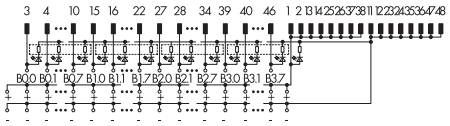
Operating voltage	125 V AC/DC	24 V DC
Nominal current per signal wire	1 A	1 A
Max. total current (supply)	2 A / byte	2 A / byte
Connector contact	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni
Performance level	3	3
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2	
IEC 60664-1		
Dimensions (mm) W x H x L incl.	W x 48 x 85	W x 48 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 736 Series)	CAGE CLAMP® (WAGO 736 Series)
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

SIMATIC® is a registered trademark of the Siemens AG	Interface module, 32-pole, for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M und S7-400 3-wire sensors, without LED Mounting carrier for DIN 35 rail	Interface module, 32-pole, for Siemens-SIMATIC® S5-95 U to 155 U, S7-300/ET 200 M und S7-400 3-wire sensors, with LED Mounting carrier for DIN 35 rail







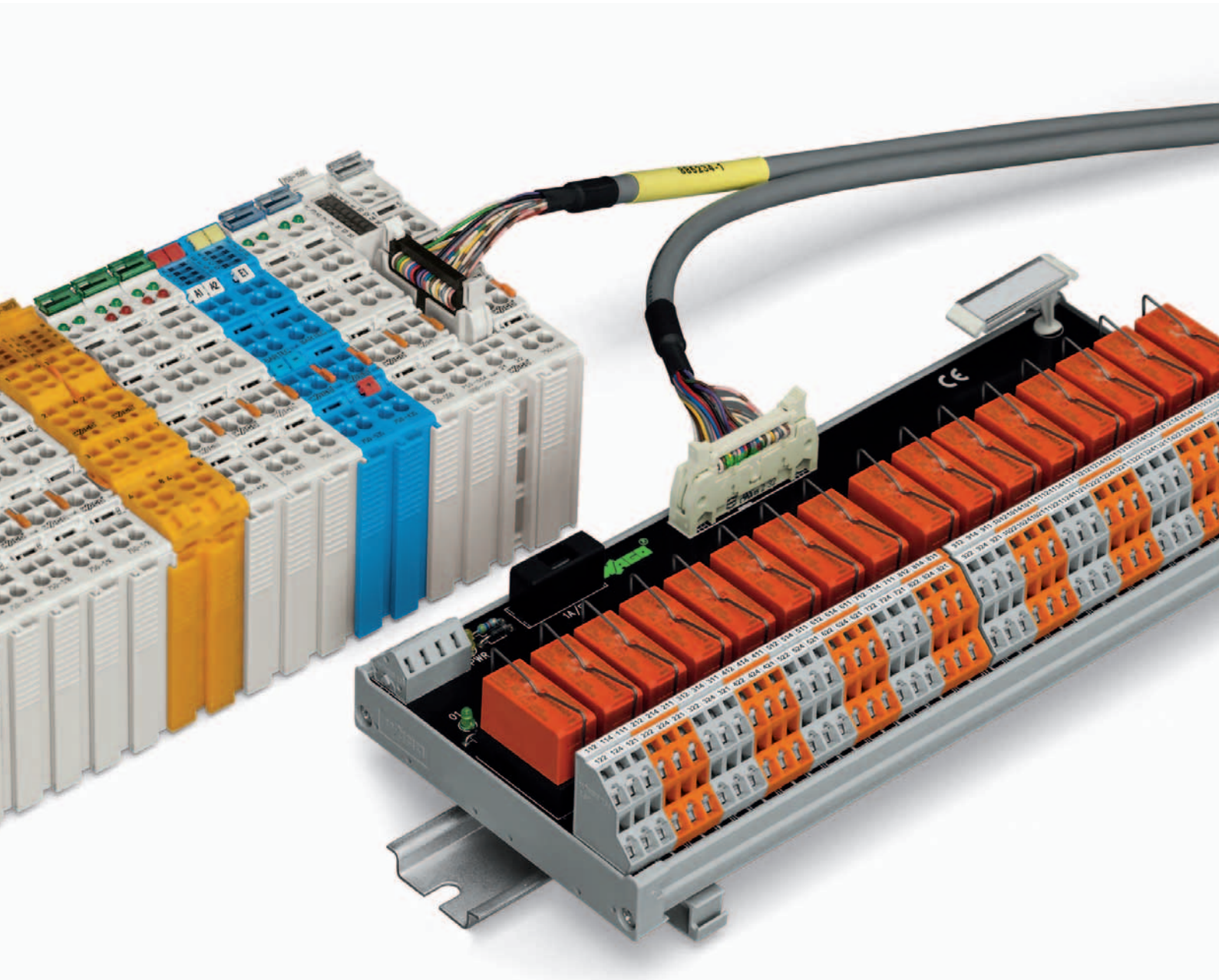


Description	Width	Item No.	Pack. Unit	Width	Item No.	Pack. Unit
Interface module	176	**289-686**	1	176	**289-687**	1
Technical Data						
Operating voltage	125 V AC/DC			24 V DC		
Nominal current per signal wire	1 A			1 A		
Max. total current (supply)	2 A / byte			2 A / byte		
Connector contact	phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni			phosphor-bronze, 0.38 µm Au selectively over 1.3 µm Ni		
Performance level	3			3		
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 0.8 kV / 2					
IEC 60664-1						
Dimensions (mm) W x H x L incl.	W x 62 x 85			W x 62 x 85		
mounting feet or mounting carrier						
	Height from upper-edge of DIN 35 rail			Height from upper-edge of DIN 35 rail		
Wire connection	CAGE CLAMP® (WAGO 737 Series)			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		
Stripped lengths	5 ... 6 mm / 0.22 in			5 ... 6 mm / 0.22 in		
Accessories						
WMB Multi marking system for mounting carrier	see page 408			see page 408		
Marker strips for mounting carrier	white 709-198 / transparent 709-197			white 709-198 / transparent 709-197		

16-Channel I/O Module with Interface Module

The new 750-14xx and 750-15xx Series I/O Modules with flat ribbon cable connection 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.

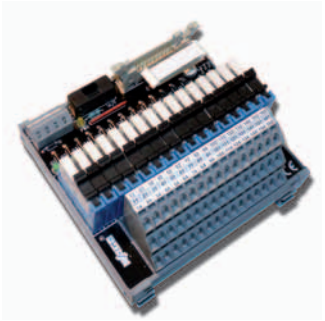
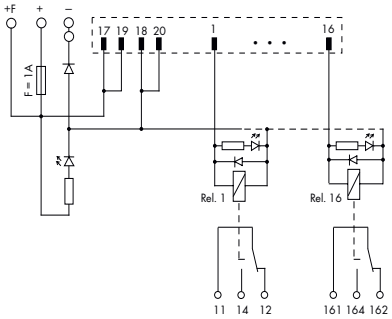
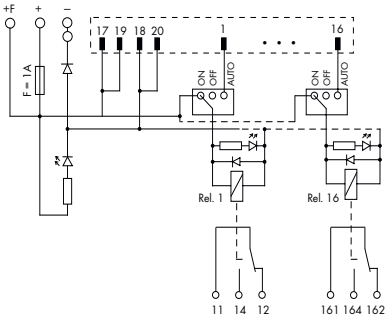
Five variants are available: two 16-channel input or output modules (one high-side and one low-side switching variant), as well as a version combining 8 inputs and 8 outputs.



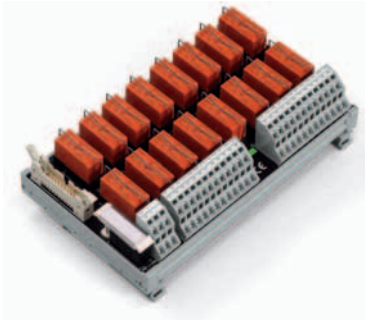
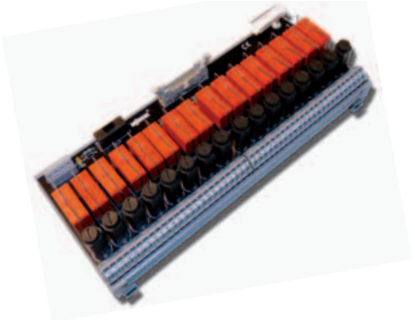
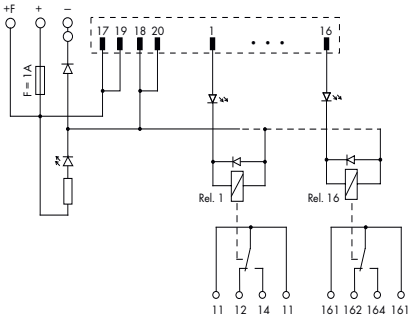
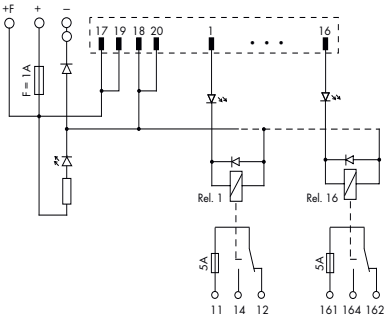
Application Examples

Item. No.	Designation	PLC	Card	
704-5024 704-5044 704-5004 704-5014 704-5034 704-5054 704-5074 704-5064	T16S	Siemens S7-300	6ES7 313-5BE01-0AB0	6ES7 314-6CG03-0AB0
			6ES7 313-5BF03-0AB0	6ES7 322-1BH01-0AA0
			6ES7 313-6BE01-0AB0	6ES7 322-1BH10-0AA0
			6ES7 313-6BF03-0AB0	6ES7 322-1BH80-0AA0
			6ES7 313-6CE01-0AB0	6ES7 322-1BL00-0AA0
			6ES7 313-6CF03-0AB0	6ES7 322-1BP00-0AA0
			6ES7 314-6BF01-0AB0	6ES7 322-1EH01-0AA0
			6ES7 314-6BG03-0AB0	6ES7 323-1BL00-0AA0
			6ES7 314-6CF01-0AB0	
		GEFANUC 90-30 / ALSPA 80-35	IC693 MDL740	IC693 MDL753
			IC693 MDL742	
		SCHNEIDER TSX 37 (Micro)	TSX DMZ 28DT	TSX DMZ 64DTK
			TSX DMZ 28DTK	
		SCHNEIDER TSX 57 (Premium)	TSX DSY 16T2	TSX DMY 28FK
			TSX DSY 32T2K	TSX DMY 28RFK
			TSX DSY 64T2K	
		SCHNEIDER M340	BMX DDO 1602	BMX DDO 6402K
			BMX DDO 3202K	BMX DDM 3202K
		SCHNEIDER QUANTUM	140 DDO 353 00	140 DDO 843 00
			140 DDO 353 01	140 DVO 853 00
			140 DDO 364 00	
		ROCKWELL COMPACT-LOGIX (1769)	1769 - OB16	1769 - OB32
			1769 - OB16P	1769 - OB32T
		ROCKWELL CONTROL-LOGIX (1756)	1756 - OB16D	1756 - OB32
			1756 - OB16E	
		WAGO-I/O-SYSTEM 750/753	753-530 (x2)	
			750-1500	
704-5003 704-5013	T8S	SIEMENS S7-300	6ES7 312-5BD01-0AB0	6ES7 322-8BF00-0AB0
			6ES7 312-5BE03-0AB0	6ES7 323-1BH01-0AA0
			6ES7 322-1BF01-0AA0	6ES7 327-1BH00-0AB0
		GEFANUC 90-30 / ALSPA 80-35	IC693 MDL730	TSX DSZ 08T2
			IC693 MDL732	TSX DSZ 08T2K
			TSX DSZ 04T22	TSX DMZ 16DTK
		SCHNEIDER TSX 57 (Premium)	TSX DSY 08T2	
		SCHNEIDER M340	BMX DDM 16022	
		SCHNEIDER QUANTUM	140 DDM 390 00	
		ROCKWELL COMPACT LOGIX (1769)	1769 - OB8	
		ROCKWELL CONTROL LOGIX (1756)	1756 - OB8	1756 - OB8I
			1756 - OB8EI	
		WAGO-I/O-SYSTEM 750/753	753-530	
			750-1502, -1500	

Interface Modules for System Wiring

	Relay output module with miniature switching relay for 16 channels, 1 changeover contact each (1 u) with integrated status indication, 20-pole ribbon cable connector 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 ribbon cable connector 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)	1250 VA / 50 W		1250 VA / 50 W	
Status indication	LED green : Channel		LED green : Channel	
	LED yellow : Power supply		LED yellow : Power supply	
Mechanical life	10 x 10^6 switching operations		10 x 10^6 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		Supply: 1 A	
	Relay output: –		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		121 x 65 x 105	
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	Input: 20-pole ribbon cable connector to DIN 41651		Input: 20-pole ribbon cable connector to DIN 41651	
	Output: CAGE CLAMP®		Output: CAGE CLAMP®	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12		0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
Application examples	see page 197		see page 197	
Accessories	Spare relay 857-152		Spare relay 857-152	

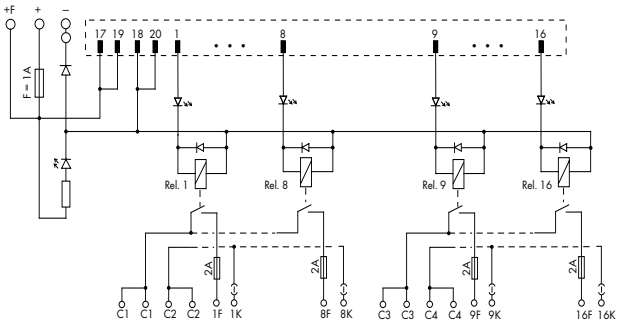
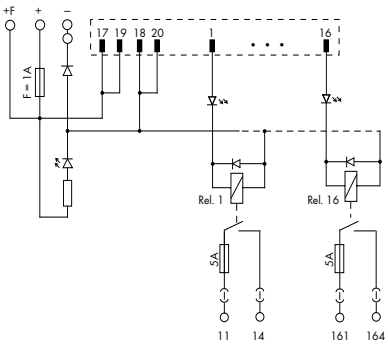
	Relay output module with miniature switching relay for 16 channels, 1 changeover contact each (1 u) with integrated status indication, 20-pole ribbon cable connector to DIN 41651	Relay output module with miniature switching relay for 16 channels, 1 changeover contact each (1 u) with integrated status indication and output fuse, 20-pole ribbon cable connector to DIN 41651
		
		

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

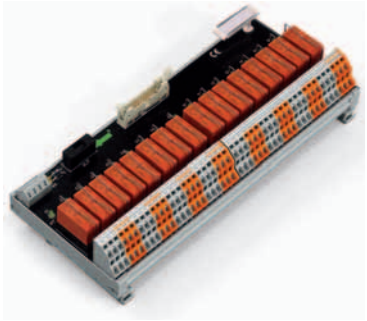
Contact material	AgNi 90/10	AgNi 90/10
Contact type	1 changeover contact	1 changeover contact
Operating voltage	24 V DC (± 10 %)	24 V DC (± 10 %)
Max. switching voltage	250 V AC / 48 V DC	250 V AC / 48 V DC
Max. continuous current	5 A	5 A
Inrush current	2 s 16 A	2 s 16 A
Max. switching power (resistive)	1250 VA / 50 W	1250 VA / 50 W
Status indication	LED green : Channel	LED green : Channel
	LED yellow : Power supply	LED yellow : Power supply
Mechanical life	30 x 10^6 switching operations	30 x 10^6 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	Supply: 1 A
	Relay output: –	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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	Input: 20-pole ribbon cable connector to DIN 41651	Input: 20-pole ribbon cable connector to DIN 41651
	Output: CAGE CLAMP®	Output: CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Application examples	see page 197	see page 197
Accessories	Spare relay 788-154	Spare relay 788-154

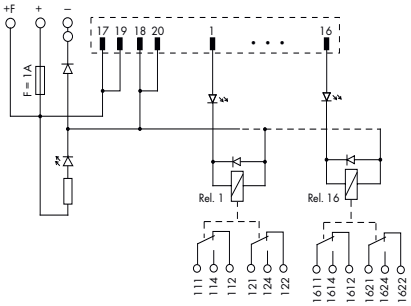
Interface Modules for System Wiring

	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 ribbon cable connector 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 ribbon cable connector 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)	500 VA / 50 W		1250 VA / 50 W	
Status indication	LED green : Channel		LED green : Channel	
	LED yellow : Power supply		LED yellow : Power supply	
Mechanical life	30 x 10^6 switching operations		30 x 10^6 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		Supply: 1 A	
	Relay output: 2 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	
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	Input: 20-pole ribbon cable connector to DIN 41651		Input: 20-pole ribbon cable connector to DIN 41651	
	Output: CAGE CLAMP®		Output: CAGE CLAMP®	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12		0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
Application examples	see page 197		see page 197	
Accessories	Spare relay 788-154		Spare relay 788-154	

	Relay output module with miniature switching relay for 16 channels, 2 changeover contacts each (2 u) with integrated status indication, 20-pole ribbon cable connector to DIN 41651	



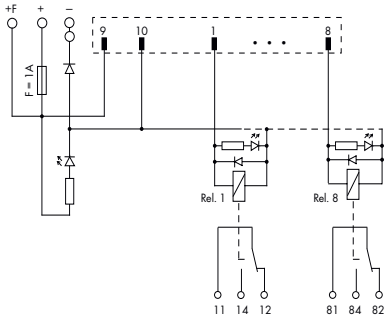
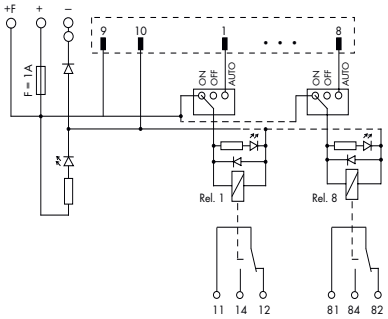


Description	Item No.	Pack. Unit	
Switching relay module, for DIN 35 rail	**704-5064**	1	

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	2 s 8 A	
Max. switching power (resistive)	1000 VA / 50 W	
Status indication	LED green : Channel	
	LED yellow : Power supply	
Mechanical life	30 x 10^6 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	
	Height from upper-edge of DIN 35 rail	
Wire connection	Input: 20-pole ribbon cable connector to DIN 41651	
	Output: CAGE CLAMP®	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in	
Application examples	see page 197	
Accessories	Spare relay 788-156	

Interface Modules for System Wiring

	Relay output module with miniature switching relay for 8 channels, 1 changeover contact each (1 u) with integrated status indication, 10-pole ribbon cable connector to DIN 41651	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 ribbon cable connector to DIN 41651
		
		

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)	1250 VA / 50 W		1250 VA / 50 W	
Status indication	LED green : Channel		LED green : Channel	
	LED yellow : Power supply		LED yellow : Power supply	
Mechanical life	10 x 10^6 switching operations		10 x 10^6 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		Supply: 1 A	
	Relay output: –		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	70 x 65 x 105		75 x 65 x 105	
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	Input: 10-pole ribbon cable connector to DIN 41651		Input: 10-pole ribbon cable connector to DIN 41651	
	Output: CAGE CLAMP®		Output: CAGE CLAMP®	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12		0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
Application examples	see page 197		see page 197	
Accessories	Spare relay 857-152		Spare relay 857-152	

WAGO Ribbon Cables



WAGO ribbon cables provide fast and easy connection of WAGO I/O modules equipped with a ribbon cable connector (750-1400, -1402, -1500, -1501, 1502) to appropriate interface or relay modules (16-channel) featuring a 20-pole female connector. The cables are available in 1-, 2- and 3-meter lengths; each has one 20-pole female connector at both ends.

Description	Item No.	Pack. Unit
WAGO ribbon cable 20/20, lenght 1 m	**706-3057/300-100**	1
WAGO ribbon cable 20/20, lenght 2 m	**706-3057/300-200**	1
WAGO ribbon cable 20/20, lenght 3 m	**706-3057/300-300**	1

Technical Data

Connections	2 x 20-pole female connector acc. to DIN 41651
Wire cross-section	0.14 mm² 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 (706-3057/300-100) 2 m (706-3057/300-200) 3 m (706-3057/300-300)



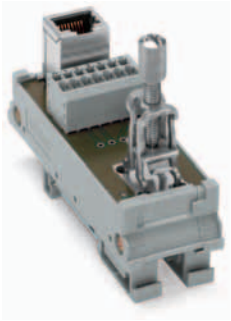
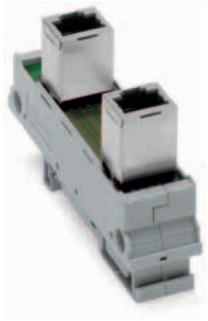
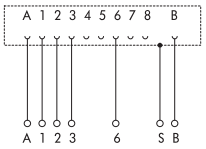
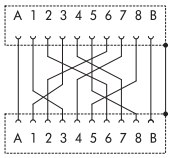
WAGO ribbon cables provide fast and easy connection of WAGO I/O modules equipped with a ribbon cable connector (750-1400, -1402, -1500, -1501, 1502) to appropriate interface or relay modules featuring a 10-pole female connector. For example, this cable connects 2 relay modules (8-channel) to a WAGO I/O module. The cables are available in 1- and 2-meter lengths; each has one 20-pole and two 10-pole female connectors on the ends.

Description	Item No.	Pack. Unit
WAGO ribbon cable 20/2x10, lenght 1 m	**706-7753/302-100**	1
WAGO ribbon cable 20/2x10, lenght 2 m	**706-7753/302-200**	1

Technical Data

Connections	1 x 20-pole / 2 x 10-pole female connector
Wire cross-section	0.14 mm² 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 (706-7753/302-100) 2 m (706-7753/302-200)

Interface Modules

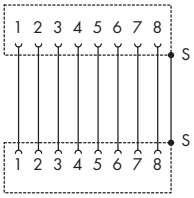
	RJ-45 interface module with shield clamping unit for WAGO shield (screen) clamping saddle Mounting carrier for DIN 35 rail	RJ-45 interface module cross-over connection Mounting carrier for DIN 35 rail
		
		

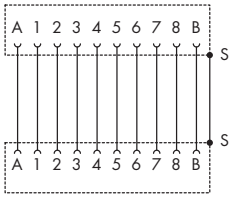
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Interface module	**289-178**	1	**289-177**	1
Technical Data				
Connecting cable	min. CAT5		min. CAT5	
Max. transmission length	100 m		100 m	
Connector	RJ-45 shielded		RJ-45 shielded	
Min. mating cycles	1000		1000	
Current load	≤ 2.1 A		≤ 2.1 A	
Voltage 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 eff.		1 kV eff.	
Contact resistance	typ. 40 mΩ		typ. < 40 mΩ	
WAGO shield (screen) clamping saddle	11 mm wide; cable diameter up to 8 mm			
Ambient operating temperature	-20 °C ... +85 °C		-20 °C ... +85 °C	
Dimensions (mm) W x H x L incl.	30 x 67 x 85		30 x 51 x 85	
mounting feet or mounting carrier				
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 739 Series)			
Cross sections	0.08 mm² ... 1.5 mm² / AWG 28 ... 14			
Stripped lengths	5 ... 6 mm / 0.22 in			
Approvals	ISO/IEC 11801: 2002-09; EN 55022		ISO/IEC 11801: 2002-09; EN 55022	
Accessories				
WMB Multi marking system for mounting carrier	see page 408		see page 408	
Marker strips for mounting carrier	white 709-198 / transparent 709-197		white 709-198 / transparent 709-197	

	RJ-45 interface module Mounting carrier for DIN 35 rail	RJ-45 interface module Mounting carrier for DIN 35 rail









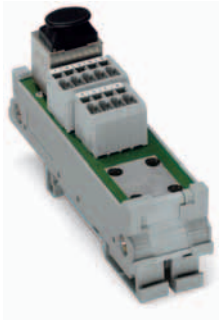
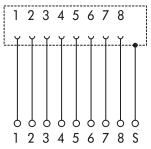
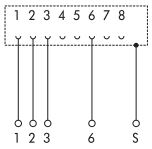
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Interface module	**289-172**	1	**289-176**	1

Technical Data

Connecting cable	min. CAT5	min. CAT5
Max. transmission length	100 m	100 m
Connector	RJ-45 shielded	RJ-45 shielded
Min. mating cycles	500	1000
Current load	≤ 1.5 A	≤ 2.1 A
Voltage load	30V AC / 42 V DC	35 V AC / 50 V DC
Insulation resistance	> 500 MΩ	> 500 MΩ
Dielectric strength contact-contact	1 kV eff.	1 kV eff.
Contact resistance typ.	< 20 mΩ	< 40 mΩ
Ambient operating temperature	-20 °C ... +85 °C	-20 °C ... +85 °C
Dimensions (mm) W x H x L incl.	20,5 x 51 x 85	30 x 51 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Approvals	ISO/IEC 11801: 2002-09; EN 55022	ISO/IEC 11801: 2002-09; EN 55022

Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

Interface Modules

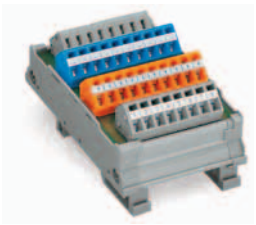
	RJ-45 interface module with shield clamping unit for WAGO shield (screen) clamping saddle Mounting carrier for DIN 35 rail	RJ-45 interface module with shield clamping unit for WAGO shield (screen) clamping saddle Mounting carrier for DIN 35 rail
		
		

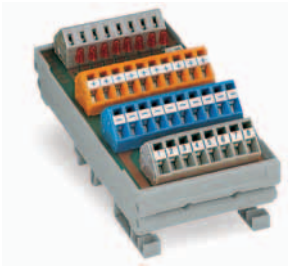
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Interface module	**289-175**	1	**289-174**	1
Technical Data				
Connecting cable	min. CAT5		min. CAT5	
Max. transmission length	100 m		100 m	
Connector	RJ-45 shielded		RJ-45 shielded	
Min. mating cycles	500		500	
Current load	≤ 1.5 A		≤ 1.5 A	
Insulation resistance	> 500 MΩ		> 500 MΩ	
Dielectric strength contact-contact	1 kV eff.		1 kV eff.	
Contact resistance	typ. < 20 mΩ		typ. < 20 mΩ	
Ambient operating temperature	-20 °C ... +85 °C		-20 °C ... +85 °C	
Dimensions (mm) W x H x L incl.	24 x 40 x 85		24 x 40 x 85	
mounting feet or mounting carrier				
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 739 Series)		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	
Stripped lengths	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
Approvals	ISO/IEC 11801: 2002-09; EN 55022		ISO/IEC 11801: 2002-09; EN 55022	
Accessories				
WMB Multi marking system for mounting carrier	see page 408		see page 408	
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)	

Connection Modules for Sensors and Actuators

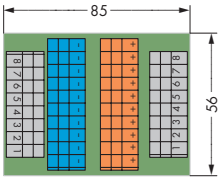
Front-entry

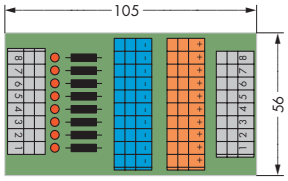
	Connection module for 8 x 3-conductor sensors	Connection module for 8 x 3-conductor sensors LED indicator for positive or negative switching





Graphic 289-665

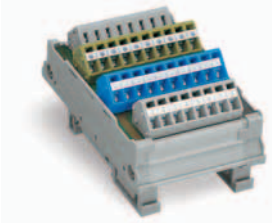


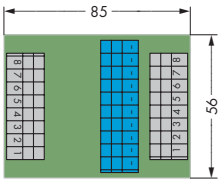


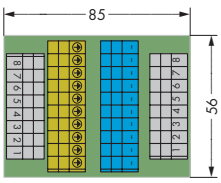
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Connection module	**289-664**	1	**289-665**	1
			289-666	1
Technical Data				
Operating voltage	125 V AC/DC		24 V DC (± 10 %)	
Max. current per connection	1 A		1 A	
Max. total current	8 A		8 A	
Power consumption LED			5.2 mA	
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 1.5 kV / 2			
IEC 60664-1				
Dimensions (mm) W x H x L incl.	56 x 34 x 85		56 x 34 x 105	
mounting feet or mounting carrier				
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 236 Series)		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	
Stripped lengths	5 ... 6 mm / 0.22 in		5 ... 6 mm / 0.22 in	
Accessories				
WMB Multi marking system for mounting carrier	see page 408		see page 408	
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 ground (earth) contact









Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Connection module	**289-667**	1	**289-671**	1

Technical Data

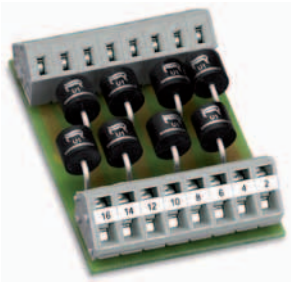
Operating voltage	125 V AC/DC	125 V AC/DC
Max. current per connection	1 A	1 A
Max. total current	8 A	8 A
Nominal voltage acc. to VDE 0110 Part 1/4.97,	125 V / 1.5 kV / 2	125 V / 1.5 kV / 2
IEC 60664-1		
Dimensions (mm) W x H x L incl.	56 x 34 x 85	56 x 34 x 85
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

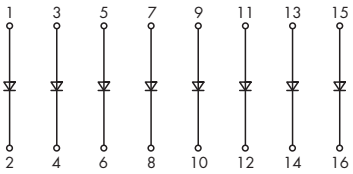
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / transparent 709-197	white 709-198 / transparent 709-197

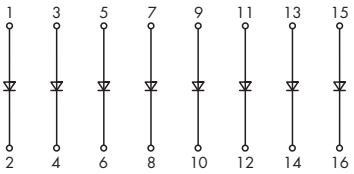
Rail-Mounted Modules - Diode Gates

	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







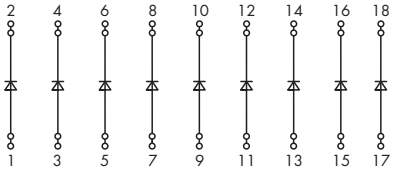


* Max. admissible current acc. to the manufacter's data sheet. With all diodes loaded, the continuous current must be reduced.

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	250 V / 4 kV / 3		250 V / 4 kV / 3	
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	47 x 31.5 x 65.5		47 x 31.5 x 65.5	
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 236 Series)		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	
Stripped lengths	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 (also see page 386)	**288-002**	10	**288-002**	10

	Open diode gate with 9 diodes 1 N 5408 can be connected individually 2 inputs/2 outputs per diode including Mounting carrier for DIN 35 rail	





* Max. admissible current acc. to the manufacter's data sheet. With all diodes loaded, the continuous current must be reduced.

Description	Item No.	Pack. Unit	
Open diode gate	**289-105**	1	

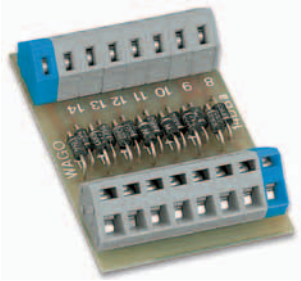
Technical Data

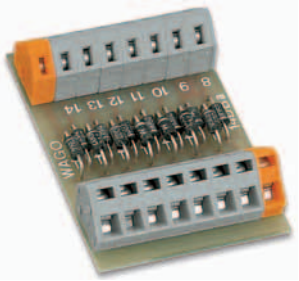
Operating voltage	250 V AC/DC	
Peak reverse voltage	1000 V	
Rectified current for each diode *	3 A	
Rectified current for each diode	10 µA	
Forward voltage for each Diode	1.3 V	
Forward current (resistent) for each diode	3 A	
Nominal voltage acc. to VDE 0110 Part 1/4.97,	250 V / 4 kV / 3	
IEC 60664-1		
Ambient operating temperature	-25 °C ... +40 °C	
Dimensions (mm) L x W x H incl. mounting carrier and	51 x 48 x 85	
universal mounting feet		
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 736 Series)	
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 12	
Stripped lengths	5 ... 6 mm / 0.22 in	

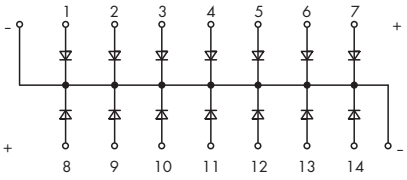
Accessories		
WMB Multi marking system for mounting carrier	see page 408	
Marker strips for mounting carrier	white 709-198 / transparent 709-197	

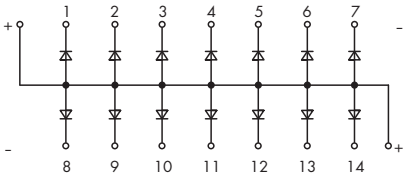
Rail-Mounted Modules - Diode Gates

	Polarized diode gate with 14 diodes 1 N 4007 common cathode	Polarized diode gate with 14 diodes 1 N 4007 common anode









* Max. admissible current acc. to the manufacter's data sheet. With all diodes loaded, the continuous current must be reduced.

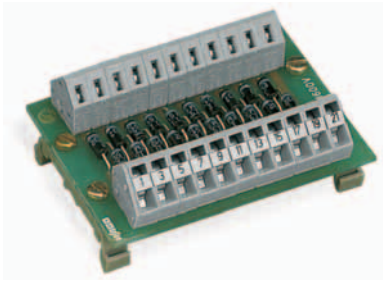
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Polarized diode gate	**289-111**	1	**289-121**	1

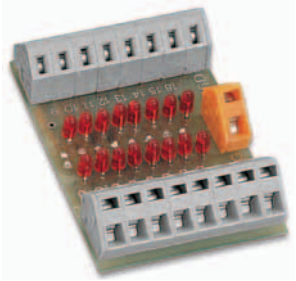
Technical Data

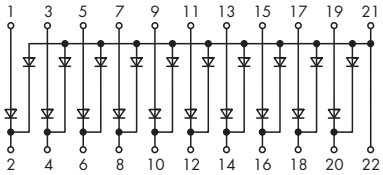
Operating voltage	250 V AC/DC	250 V AC/DC
Peak reverse voltage	1000 V	1000 V
Rectified current for each diode *	1 A	1 A
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Dimensions (mm) L x W x H incl. mounting carrier and universal mounting feet	47 x 31.5 x 65.5	47 x 31.5 x 65.5
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

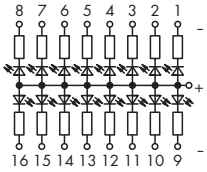
Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Mounting carrier, for screw-fixing or DIN-rail mounting (with snap-fit type universal mounting feet to be ordered separately)	**288-001**	1	**288-001**	1
Universal mounting foot; snap-fit type; suitable for DIN 15, 32 and 35 rails (also see page 386)	**288-002**	10	**288-002**	10

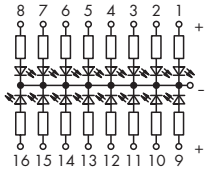
	Lamp test circuit module with 20 diodes for testing 10 lamps with Mounting feet for DIN 35 rail	LED gate module with 16 LEDs, common anode or cathode











Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Gate module	**289-151**	1	**289-202**	1
			289-201	1

Technical Data

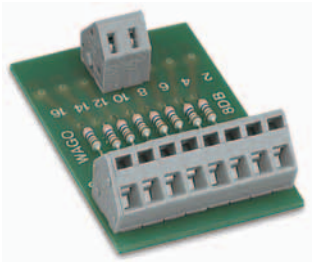
Operating voltage	250 V AC/DC	24 V DC
Operating voltage range	0 V ... 250 V AC/DC	20 V ... 26 V DC
Power consumption at V_N		5.6 mA each LED
Peak reverse voltage	1600 V	
Rectified current for each diode, resistive	1 A	
Nominal voltage acc. to VDE 0110 Part 1/4.97,	250 V / 4 kV / 3	
IEC 60664-1		
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Dimensions (mm) W x H x L incl.	69 x 21 x 50	47 x 31.5 x 65.5
mounting feet or mounting carrier		
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

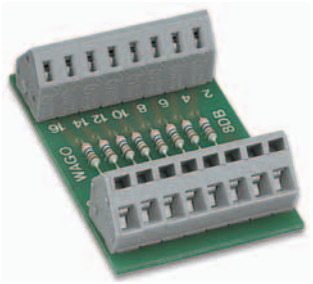
Accessories

	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
Universal mounting foot; snap-fit type; suitable for DIN 15, 32 and 35 rails (also see page 386)	**288-002**	10

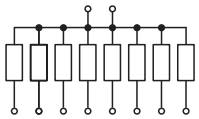
Rail-Mounted Modules - Resistor Gates

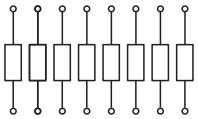
	Resistor gate with 1 end commoned, 8 resistors 2 k 2; 1 W	Open resistor gate with 8 resistors 2 k 7; 0.6 W individual connection possible





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
Resistor gate	**289-113**	1	**289-114**	1

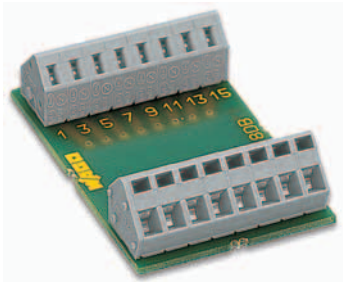
Technical Data

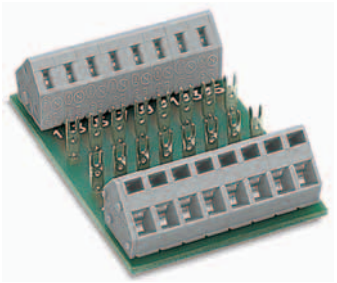
Operating voltage	40 V AC/DC	40 V AC/DC
Resistor type	DIN 0414	DIN 0207
Temperature coefficient	50 ppm	50 ppm
Tolerance	± 1%	± 1%
Power dissipation *	1 W	0.6 W
Ambient operating temperature	-25 °C ... +40 °C	-25 °C ... +40 °C
Dimensions (mm) L x W x H incl. mounting carrier and universal mounting feet	47 x 31.5 x 65.5	47 x 31.5 x 65.5
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (WAGO 236 Series)	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
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

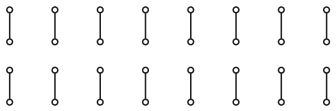
Accessories	Item No.	Pack. Unit	Item No.	Pack. Unit
Mounting carrier, for screw-fixing or DIN-rail mounting (with snap-fit type universal mounting feet to be ordered separately)	**288-001**	1	**288-001**	1
Universal mounting foot; snap-fit type; suitable for DIN 15, 32 and 35 rails (also see page 386)	**288-002**	10	**288-002**	10

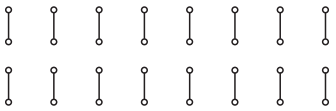
Rail-Mounted Modules for Building Custom Circuits

	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









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	42.5 x 32 x 62.5		42.5 x 32 x 62.5	
	Height from upper-edge of DIN 35 rail		Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (WAGO 236 Series)		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	
Stripped lengths	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 (also see page 386)	**288-002**	10	**288-002**	10

WAGO Application: Danone Group, Ochsenfurt Plant, Germany
Producer of yogurt and other dairy-based products

WAGO Products:
WAGO-I/O-SYSTEM with PROFIBUS Couplers





3



857 Series

JUMPFLEX®– Transducers 218 – 267
JUMPFLEX®– Configuration 268
WAGO USB Service Cable 269
JUMPFLEX®– Interface-Adapters, WAGO Ribbon Cables 270
Accessories, 857 Series 271



286 Series

Pluggable Modules - Temperature Transducers 272 – 276

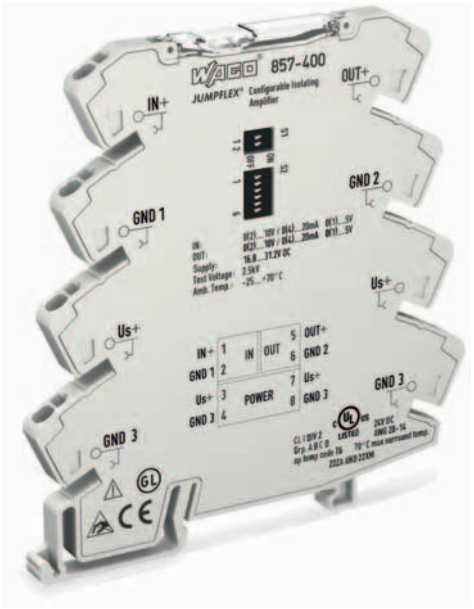


786 Series

Pluggable Modules - Analog Signal Conditioning 278 – 280
Accessories 281

JUMPFLEX® Transducers

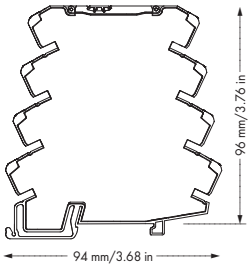
Isolation amplifier, with zero/span adjustment

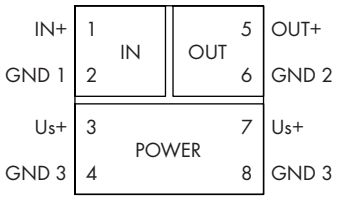


Configuration via:



DIP Switches





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
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-400**	1
Isolation amplifier, with zero/span adjustment		

Technical Data

Configuration:	
Configuration	DIP switches
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	≤ 50 Ω (In = mA)
	≥ 100 kΩ (In = V)
Output:	
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)
General specifications:	
Voltage supply 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})	< 3.5 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

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	36.8 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

DIP Switch Adjustability

● = ON

857-400

Dip Switch S1 (2-fold) Dip Switch S2 (6-fold)

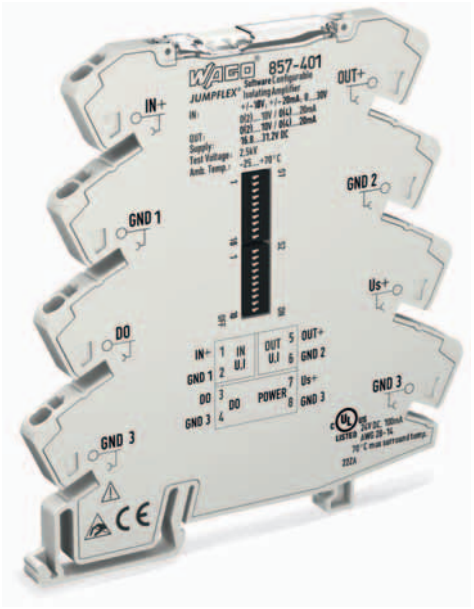
Input Signal			Output Signal						Max. Operating Frequency	
1	2		1	2	3	4	5		6	
●		0 ... 20 mA						0 ... 20 mA		100 Hz
						●		4 ... 20 mA	●	> 5 kHz
			●	●				0 ... 10 V		
			●	●		●		2 ... 10 V		
			●	●	●			0 ... 5 V		
			●	●	●	●		1 ... 5 V		
●		4 ... 20 mA					●	0 ... 20 mA		
								4 ... 20 mA		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

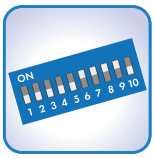
Input	0 ... 20 mA
Output	0 ... 20 mA
Max. Operating Frequency	100 Hz

JUMPFLEX® Transducers

Isolation amplifier, configurable with digital output



Configuration via:



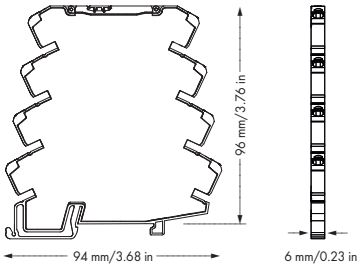
DIP Switches

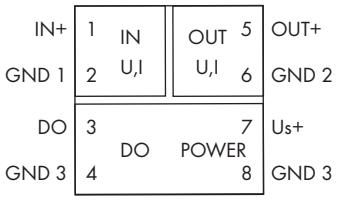


PC Configura-tion Software



Smartphone 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
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-401**	1
Isolation amplifier, configurable		
with digital output		

Technical Data

Configuration:	
Configuration	DIP switches, PC configuration software,
	smartphone app
Input:	
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_{IN}) 100 mA (I_{IN})
Output:	
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
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:	
Voltage supply V_S	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

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
cULus UL 508	
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

(* Additional setting options via PC configuration software or smartphone app)

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	
			0 ... 20 mA			Lower limit of output range - 5 % *	Upper limit of output range + 2,5 % *			DO not active
	●		4 ... 20 mA							
		●	0 ... 10 mA	●		Lower limit of output range	Upper limit of output range + 2,5 %		●	GND → U_N (switching)
	●	●	2 ... 10 mA							
●			0 ... 10 V		●	Lower limit of output range	Upper limit of output range	●	●	U_N → GND (switching)
●	●		2 ... 10 V							
●		●	0 ... 5 V	●	●	Lower limit of output range	Upper limit of output range			
●	●	●	1 ... 5 V							

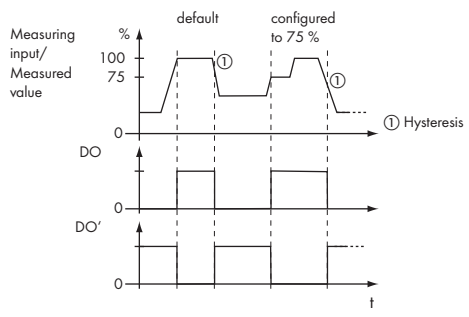
*acc. to NAMUR NE 43

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)

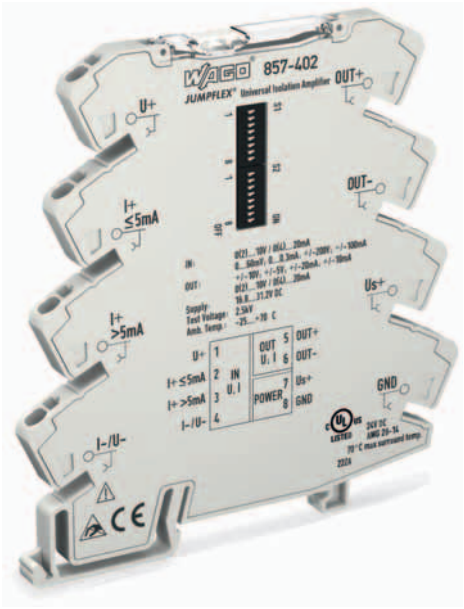


Default Settings

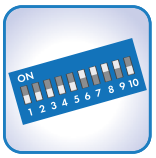
All DIP switches are in „OFF" position for delivery. This is the position used to parameterize the device via PC configuration software.	
Input	
Input signal	Voltage
Start value	0 V
End value	10 V
Output	
Output signal	Current
Start value	0 mA
End value	20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Digital output DO	not active

JUMPFLEX® Transducers

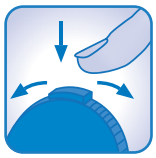
Universal Isolation Amplifier



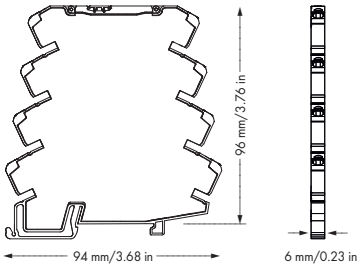
Configuration via:

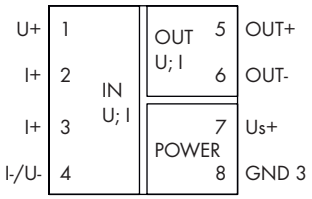


DIP Switches



Push/Slide Switch





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

Description	Item No.	Pack. Unit
***JUMPFLEX*® Transducer, for DIN 35 rail**	**857-402**	1
Universal isolation amplifier		

Technical Data

Configuration:	
Configuration	DIP switches, push/slide switch
Input:	
Input signal	**Voltage:**
	± 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
	Current:
	± 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	**Voltage:**
	± 5 V, 0 ... 5 V, 1 ... 5 V,
	± 10 V, 0 ... 10 V, 2 ... 10 V
	Current:
	± 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)

Technical Data

General specifications:	
Voltage supply 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 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	54.3 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	(pending)
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL (pending)
Accessories	see pages 268 ... 271

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		< 100 Hz
				●		0 ... 60 mV	●	Active	●	≥ 5 kHz
				●	●	± 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	
	●	●				0 ... 0.3 mA
	●	●			●	± 0.3 mA
	●	●		●		0 ... 1 mA
	●	●		●	●	± 1 mA
	●	●	●			0 ... 5 mA
	●	●	●		●	± 5mA
	●	●	●	●		0 ... 10 mA
	●	●	●	●	●	± 10 mA
●						0 ... 20 mA
●					●	± 20 mA
●				●		0 ... 50 mA
●				●	●	± 50 mA
●			●			0 ... 100 mA
●			●		●	± 100 mA
●		●				1 ... 5 V
●		●		●		2 ... 10 V
●		●	●			2 ... 10 mA
●		●	●	●		4 ... 20 mA

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

DIP Switch S2

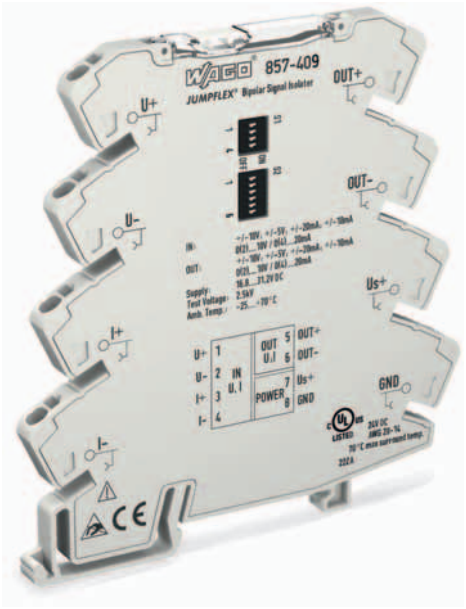
Output Signal Ranges						Reserve	Clipping		Rocker Switch Lock	
1	2	3	4	5		6	7		8	
					Default setting*			inactive (analog response)		switched off
		●			0 ... 10 V		●	active (limiting response)	●	switched on
		●		●	± 10 V					
		●	●		2 ... 10 V					
	●				0 ... 5 V					
	●			●	± 5 V					
	●		●		1 ...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

JUMPFLEX® Transducers

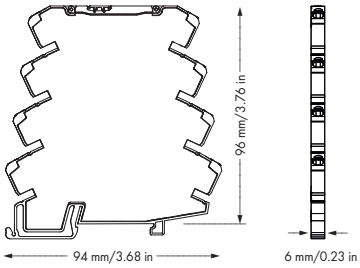
Bipolar isolation amplifier

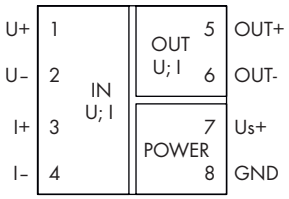


Configuration via:



DIP Switches





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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-409**	1
Bipolar isolation amplifier		

Technical Data

Configuration:	
Configuration	DIP switches
Input:	
Input signal	**Voltage:**
	± 5V, 0 - 5V, 1 - 5V,
	± 10V, 0 - 10V, 2 - 10V
	Current:
	± 10mA, 0 - 10mA, 2 - 10mA,
	± 20mA, 0 - 20mA, 4 - 20mA
Input resistance	approx. 1MΩ (U input)
	approx. 50Ω (I input)
Output:	
Output signal	**Voltage:**
	± 5V, 0 - 5V, 1 - 5V,
	± 10V, 0 - 10V, 2 - 10V,
	Current:
	± 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
General specifications:	
Voltage supply 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)

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
cULus UL 508	
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

DIP Switch Adjustability

● = ON

857-409

Dip Switch S1 (4-fold) **Dip Switch S2 (6-fold)**

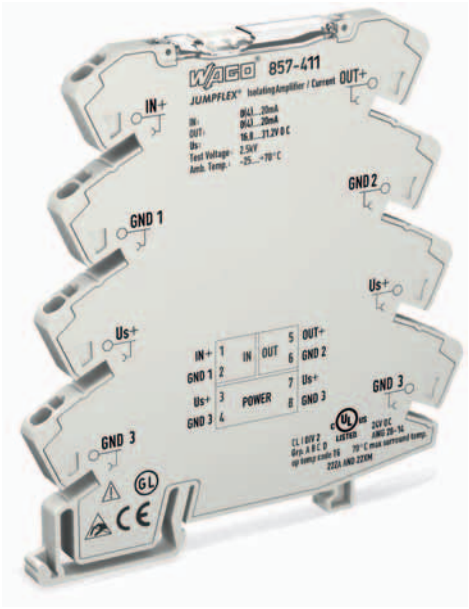
Input Signal					Output Signal						Max. Operating Frequency	
1	2	3	4		1	2	3	4	5		6	
●				± 20 mA				●		± 20 mA	●	100 Hz
●	●			± 10 mA			●	●		± 10 mA		> 5 kHz
●				± 10 V	●	●		●		± 10 V		
●	●			± 5 V	●	●	●	●		± 5 V		
				0 ... 20 mA						0 ... 20 mA		
		●		4 ... 20 mA					●	4 ... 20 mA		
	●			0 ... 10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

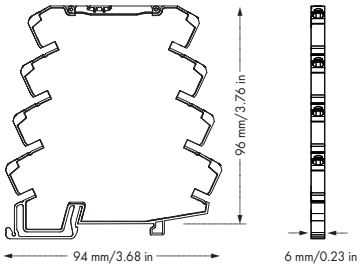
Default Settings

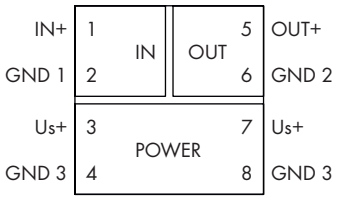
Input	± 10 V
Output	± 10 V
Max. Operating Frequency	> 5 kHz

JUMPFLEX® Transducers

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
***JUMPFLEX*® Transducer, for DIN 35 rail**				
Isolation amplifier	0(4) ... 20 mA	0(4) ... 20 mA	**857-411**	1
Isolation amplifier	0(2) ... 10 V	0(2) ... 10 V	**857-412**	1
Isolation amplifier	0 ... 10 V	0 ... 20 mA	**857-413**	1
Isolation amplifier	0 ... 10 V	4 ... 20 mA	**857-414**	1
Isolation amplifier	0 ... 20 mA	0 ... 10 V	**857-415**	1
Isolation amplifier	4 ... 20 mA	0 ... 10 V	**857-416**	1

Technical Data

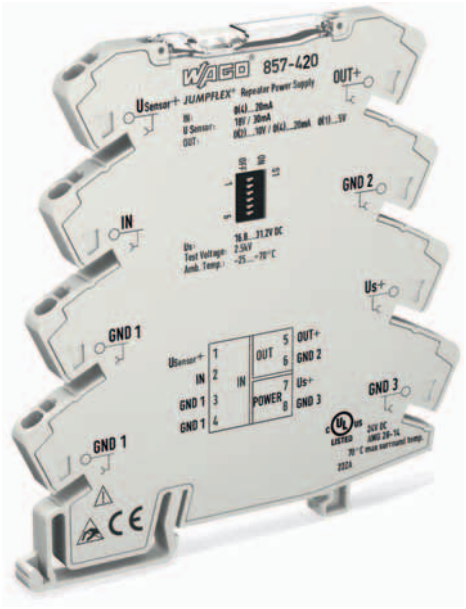
Input:	
Input signal	**857-411:** 0(4) ... 20 mA
	857-412: 0(2) ... 10 V
	857-413: 0 ... 10 V
	857-414: 0 ... 10 V
	857-415: 0 ... 20 mA
	857-416: 4 ... 20 mA
Input resistance	≤ 50 Ω (I input)
	≥ 100 kΩ (U input)
Output:	
Output signal	**857-411:** 0(4) ... 20 mA
	857-412: 0(2) ... 10 V
	857-413: 0 ... 20 mA
	857-414: 4 ... 20 mA
	857-415: 0 ... 10 V
	857-416: 0 ... 10 V
Load impedance	≤ 600 Ω (I output)
	≥ 2 kΩ (U output)
General specifications:	
Voltage supply 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

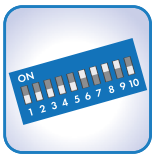
Environmental requirements:	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Safety and protection:	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min
Connection and type of mounting:	
Wire connection	CAGE CLAMP® S
Cross sections	solid:
	0.08 mm² ... 2.5 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	49.2 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

JUMPFLEX® Transducers

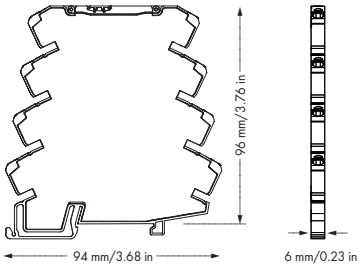
Repeater power supply, configurable with current and voltage output

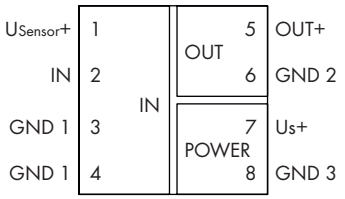


Configuration via:



DIP Switches





Short description:
The 857-420 Repeater Power Supply links 2- or 3-wire transmitters located in the field. It provides the power required and transmits the analog signals in an electrically isolated way.

Characteristics:
- Power supply to SMART transmitters
- Calibrated scale switching
- Safe 3-way isolation with 2.5kV test voltage to EN 61140

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-420**	1
Repeater power supply, configurable with current and voltage output		

Technical Data

Configuration:	
Configuration	DIP switches
Input:	
Input signal	0 ... 20 mA, 4 ... 20 mA
	(calibrated switchable)
Input resistance	≤ 50 Ω
Max. input current	50 mA
Transmitter supply	V_v = 18 V at 30 mA
Output:	
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)
Offset	< 20 µA / < 10 mV
Residual ripple	< 10mV eff
General specifications:	
Voltage supply V_S	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 45 mA
Max. operating frequency	100 Hz
Response time (T_{10-90})	< 3.5 ms
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % /K

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	46.7 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL (pending)
Accessories	see pages 268 ... 271

DIP Switch Adjustability

● = ON

857-420

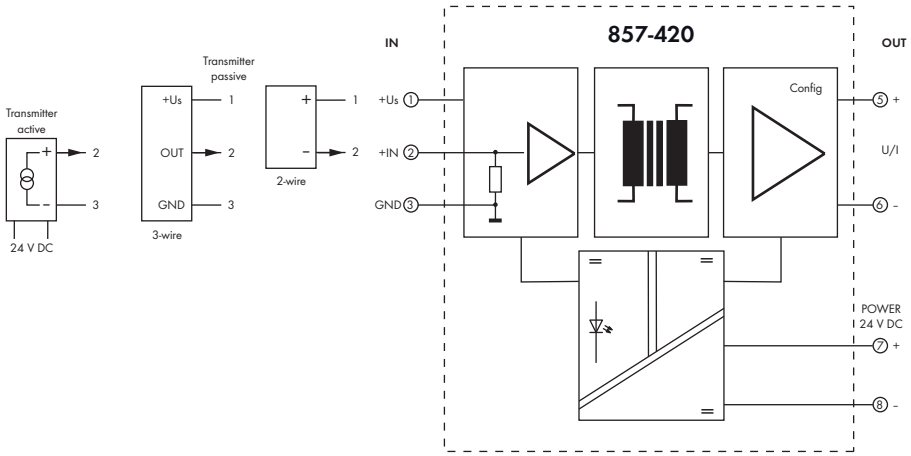
Dip Switch S1 (6-fold)

						Input Signal	Output Signal
1	2	3	4	5	6		
					n.c.	0 ... 20 mA	0 ... 20 mA
			●		n.c.	0 ... 20 mA	4 ... 20 mA
●	●				n.c.	0 ... 20 mA	0 ... 10 V
●	●		●		n.c.	0 ... 20 mA	2 ... 10 V
●	●	●			n.c.	0 ... 20 mA	0 ... 5 V
●	●	●	●		n.c.	0 ... 20 mA	1 ... 5 V
				●	n.c.	4 ... 20 mA	0 ... 20 mA
					n.c.	4 ... 20 mA	4 ... 20 mA
●	●			●	n.c.	4 ... 20 mA	0 ... 10 V
●	●				n.c.	4 ... 20 mA	2 ... 10 V
●	●	●		●	n.c.	4 ... 20 mA	0 ... 5 V
●	●	●			n.c.	4 ... 20 mA	1 ... 5 V

Default Settings

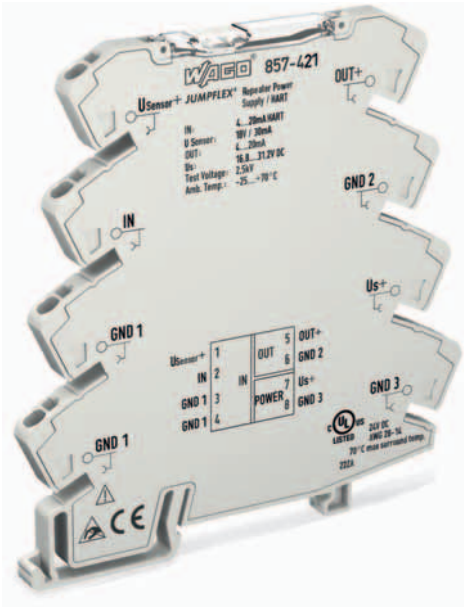
Input	0 ... 20 mA
Output	0 ... 20 mA
DIP 6	n.c.

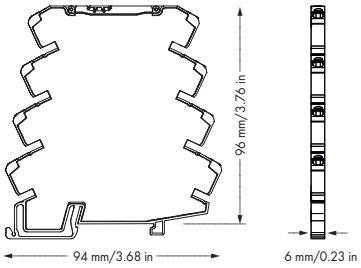
Connection assignment

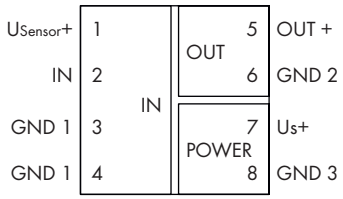


JUMPFLEX® Transducers

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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-421**	1
Repeater power supply, HART		

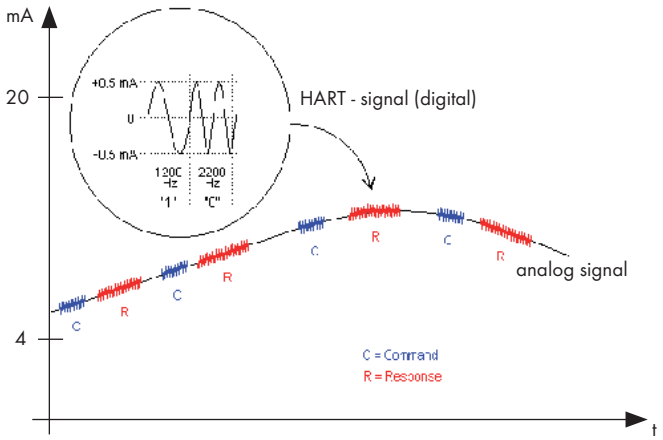
Technical Data

Input:	
Input signal	4 ... 20 mA
Input resistance	≤ 50 Ω
Transmitter supply	V_v = 18 V at 30 mA
Max. Eingangsstrom	Max. Speisestrom
Output:	
Output signal	4 ... 20 mA
Load impedance	230 - 600Ω
Offset	< 20 µA
Residual ripple	< 10mV eff
General specifications:	
Voltage supply V_S	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_{10-90})	< 3.5 ms signal
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % /K

Technical Data

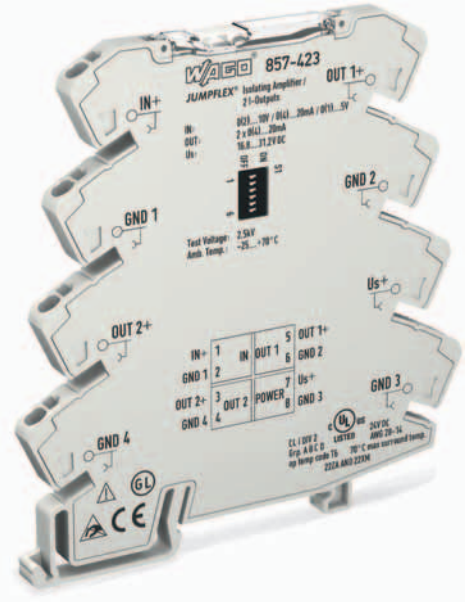
Environmental requirements:	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Safety and protection:	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min
Connection and type of mounting:	
Wire connection	CAGE CLAMP® S
Cross sections	solid:
	0.08 mm² ... 2.5 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	47.8 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL (pending)
Accessories	see pages 268 ... 271

Simultaneous transmission of analog and digital signals **857-421**



JUMPFLEX® Transducers

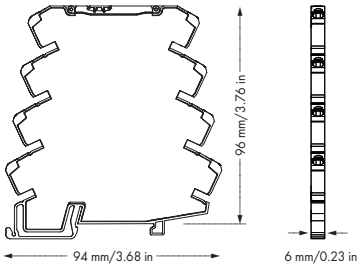
Signal splitter with 2 configurable current outputs

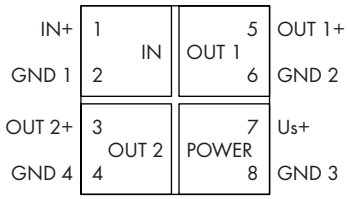


Configuration via:



DIP Switches





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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-423**	1
Signal splitter with 2 configurable current outputs		

Technical Data

Configuration:	
Configuration	DIP switches
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	≤ 50 Ω (In = mA)
	≥ 100 kΩ (In = V)
Output:	
Output signal	2 x 0(4) ... 20 mA
	(calibrated switchable)
Load impedance	2 x 300Ω
General specifications:	
Voltage supply V_S	24V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 35 mA
Max. operating frequency	100 Hz / 1 kHz
	(switchable via DIP switch)
Response time (T_{10-90})	< 3.5 ms / < 300 µs
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % /K

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	40.6 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL (pending)
Accessories	see pages 268 ... 271

DIP Switch Adjustability

● = ON

857-423

Dip Switch S1 (6-fold)

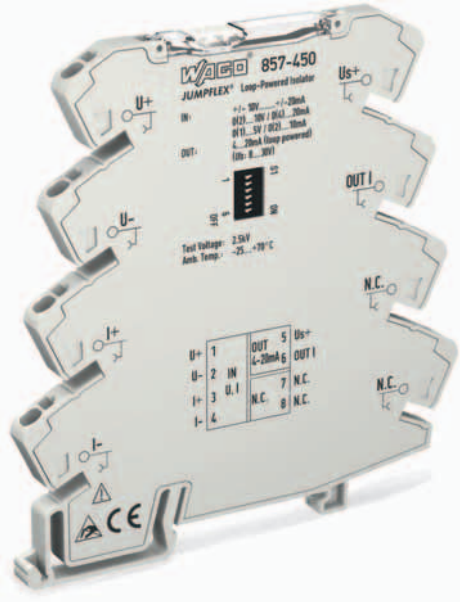
Input Signal				Max. Operating Frequency		Output Signal 1		Output Signal 2	
1	2	3		4		5		6	
●			0 ... 20 mA		> 1 kHz		0 ... 20 mA		0 ... 20 mA
●		●	4 ... 20 mA	●	100 Hz	●	4 ... 20 mA	●	4 ... 20 mA
	●		0 ... 10 V						
	●	●	2 ... 10 V						
			0 ... 5 V						
		●	1 ... 5 V						

Default Settings

Input	0 ... 20 mA
Output 1	0 ... 20 mA
Output 2	0 ... 20 mA
Max. Operating Frequency	> 1 kHz

JUMPFLEX® Transducers

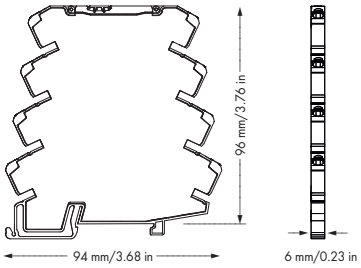
Loop-Powered Isolation Amplifier

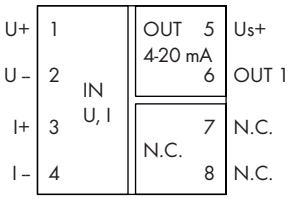


Configuration via:



DIP Switches





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

Description	Item No.	Pack. Unit
***JUMPFLEX*® Transducer, for DIN 35 rail**	**857-450**	1
Loop-Powered Isolation Amplifier		

Technical Data

Configuration:	
Configuration	DIP switches
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

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 ... 12
	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	37 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL (pending)
Accessories	see pages 268 ... 271

DIP Switch Adjustability

● = ON

857-450

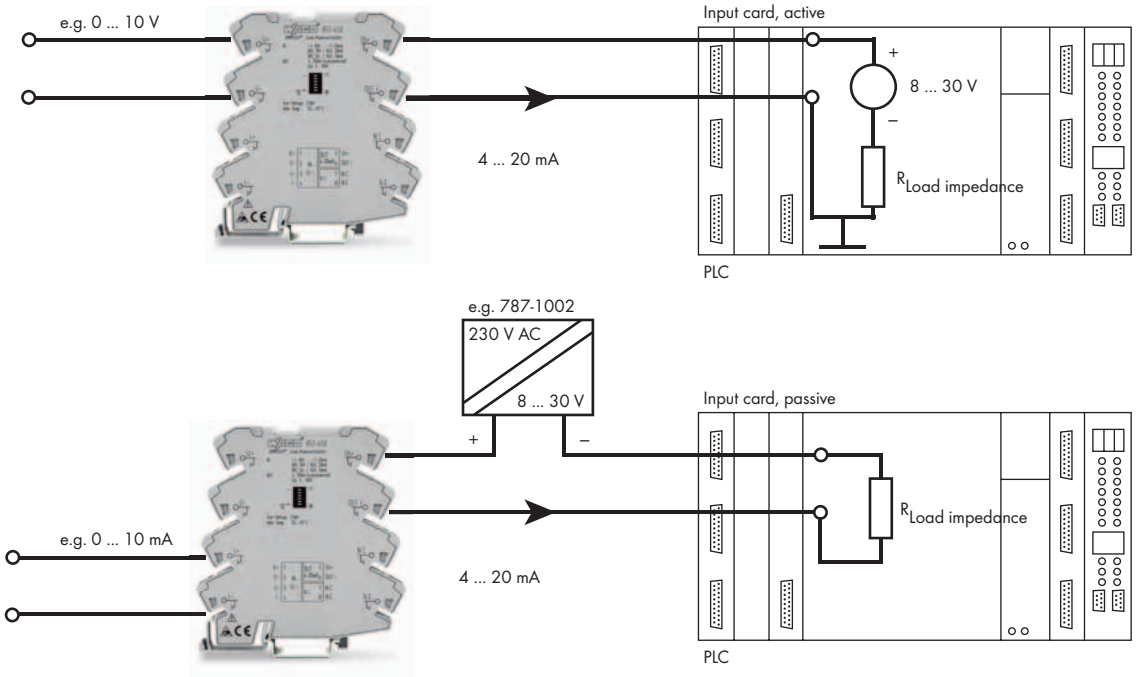
DIP switch (6 positions)

Input Signal							Output Signal	Max. Operating Frequency	
1	2	3	4	5				6	
					4 ... 20 mA	Current	4 ... 20 mA		100 Hz
●		●	●		0 ... 20 mA			●	30 Hz
●		●	●	●	± 20 mA				
●		●			2 ... 10 mA				
●			●		0 ... 10 mA				
●			●	●	± 10 mA				
●					0 ... 5 mA				
●				●	± 5 mA				
	●	●	●		0 ... 20 V	Voltage			
	●	●	●	●	± 20 V				
	●	●			2 ... 10 V				
	●		●		0 ... 10 V				
	●		●	●	± 10 V				
	●				1 ... 5 V				
		●	●		0 ... 5 V				
		●	●	●	± 5 V				
		●			0 ... 2 V				
		●		●	± 2 V				
			●		0 ... 1 V				
			●	●	± 1 V				

Default setting

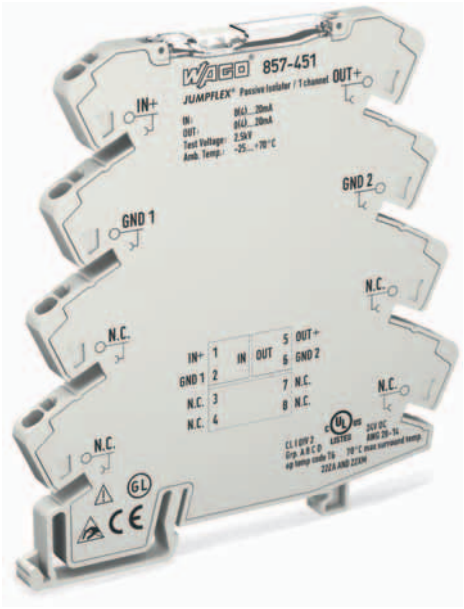
Input	4 ... 20 mA
Output	4 ... 20 mA
Max. operating frequency	100 Hz

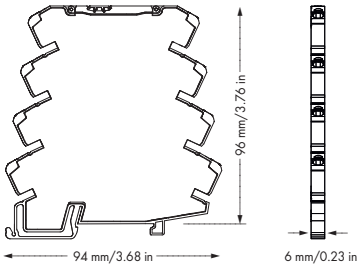
Wiring Material

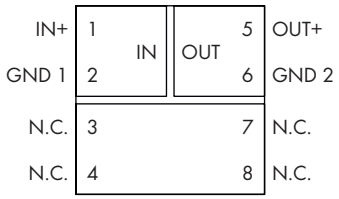


JUMPFLEX® Transducers

Passive isolator, 1 channel







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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-451**	1
Passive isolator, 1 channel		

Technical Data

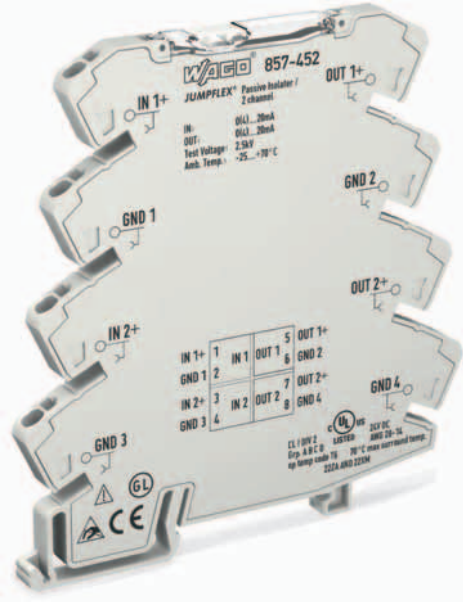
Input:	
Input signal	0(4) ... 20 mA
Responce current	< 200 µA
Voltage drop intput	< 2.0 V at 20 mA (output)
Max. input voltage	< 20 V
Max. input signal	40mA
Output:	
Output signal	0(4) ... 20 mA
Load impedance	≤ 600 Ω
	(Temperature range restrictions may occur)
General specifications:	
Max. operating frequency	100 Hz
Response time (T_{10-90})	< 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

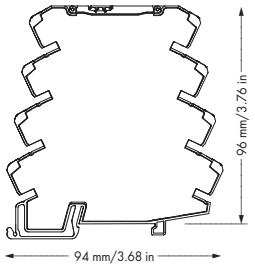
Technical Data

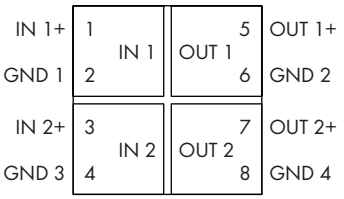
Environmental requirements:	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Connection and type of mounting:	
Wire connection	CAGE CLAMP® S
Cross sections	solid:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
	fine-stranded:
	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Strip lengths	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	33.8 g
Standards and approvals:	
Conformity marking	CE
UL 508	
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

JUMPFLEX® Transducers

Passive isolator, 2 channels







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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-452**	1
Passive isolator, 2 channels		

Technical Data

Input: *	
Input signal	0(4) ... 20 mA
Responce current	< 200 µA
Voltage drop intput	< 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_{10-90})	< 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

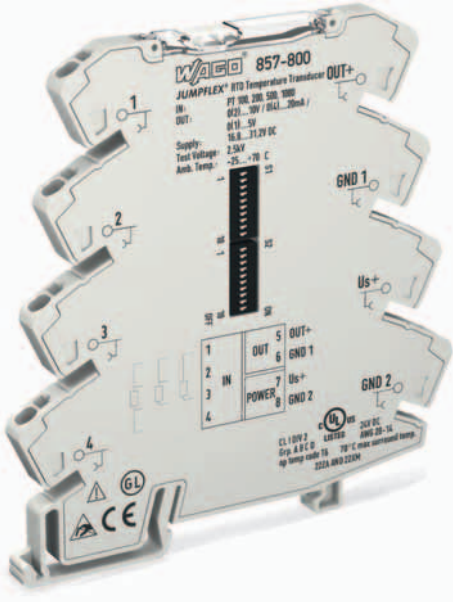
(* per channel)

Technical Data

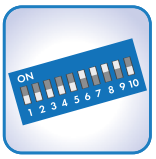
Environmental requirements:	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Connection and type of mounting:	
Wire connection	CAGE CLAMP® S
Cross sections	solid:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
	fine-stranded:
	0.34 mm² ... 2.5 mm² / AWG 22 ... 14
Strip lengths	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	37.8 g
Standards and approvals:	
Conformity marking	CE
UL 508	
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

JUMPFLEX® Transducers

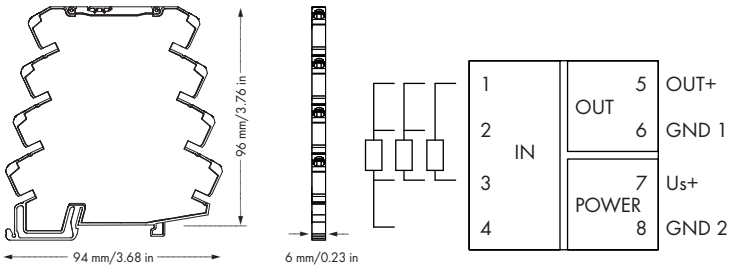
Temperature transducer for Pt 00, Pt200, Pt500 and Pt1000 as well as resistors 0 ... 1 kΩ; 0 ... 4.5 kΩ



Configuration via:



DIP Switches



Short description:
The 857-800 Temperature Transducer records Pt100, Pt200, Pt500 and Pt1000 sensors, as well as resistors up to 4.5 kOhm, 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 kOhm
- 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-800**	1
Temperature transducer for Pt 100, Pt 200, Pt 500 und Pt 1000 as well as resistors 0 ... 1 kΩ; 0 ... 4.5 kΩ		

Technical Data

Configuration:	
Configuration	DIP switches
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:	
Voltage supply V_S	24 V 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

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
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

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	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	1022
	●	●		-90	-130		●	●				25	77		●	●		●		110	230		●	●			●	270	518		●	●		●	●	625	1112
●	●	●		-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

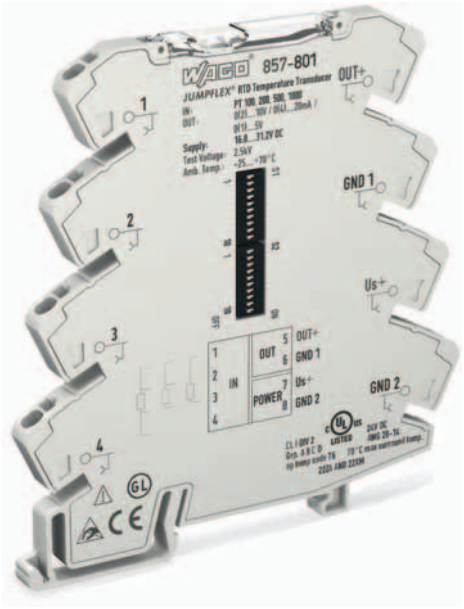
The minimum distance from the start temperature to the end temperature may not fall short of 50K degrees on the Celsius (C) scale or 122K degrees on the Fahrenheit (F) scale.

Default Settings

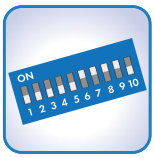
All DIP switches are in „OFF" position for delivery.	
Sensor connection	2-wire
Sensor type	Pt 100
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA

JUMPFLEX® Transducers

Temperature transducer for Pt100, Pt200, Pt500 and Pt1000 * as well as resistors 0 ... 1 kΩ; 0 ... 4.5 kΩ



Configuration via:



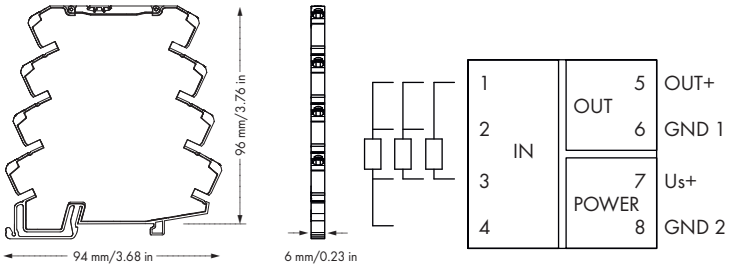
DIP Switches



PC Configura-tion Software



Smartphone App



Short description:
The 857-801 Temperature Transducer records Pt100, Pt200, Pt500 and Pt1000 sensors, as well as resistors up to 4.5 kOhm, 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 kOhm
- 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-801**	1
Temperature transducer for		
Pt 100, Pt 200, Pt 500 und Pt 1000		
as well as resistors *		

Technical Data

Configuration:	
Configuration	DIP switches, PC configuration software,
	smartphone app
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:	
Voltage supply V_S	24 V 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

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	49.2 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

(* 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	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	1022
	●	●		-90	-130		●	●				25	77		●	●		●		110	230		●	●			●	270	518		●	●		●	●	625	1112
●	●	●		-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

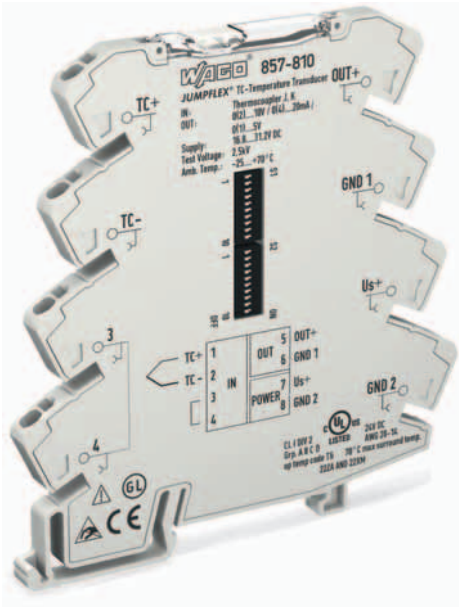
The minimum distance from the start temperature to the end temperature may not fall short of 50K degrees on the Celsius (C) scale or 122K degrees on the Fahrenheit (F) scale.

Default Settings

All DIP switches are in „OFF" position for delivery. 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® Transducers

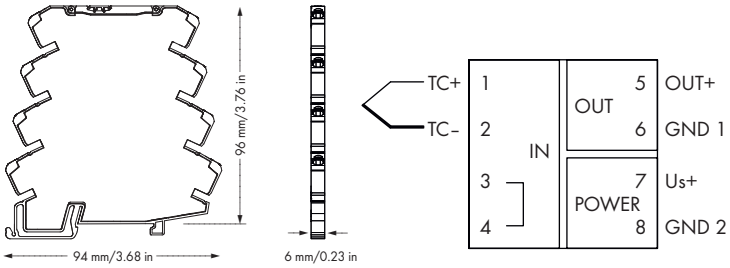
Temperature transducer for thermocouples of types J and K



Configuration via:



DIP Switches



Short description:
The 857-810 Thermocouple Temperature Transducer is suitable for the connection of type J and K thermocouples. On the output side, the thermocouple temperature transducer 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-810**	1
Temperature transducer for thermocouples of types J and K		

Technical Data

Configuration:	
Configuration	DIP switches
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	≤ 600 Ω (Out = mA)
	≥ 2 kΩ (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:	
Voltage supply V_S	24 V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Min. measuring span	100 K (configurable)
Transmission error	≤ 0.1 % at max. measuring span (Typ J, K)
Transmission error of set	
measuring span	(150 K / set measuring span [K]) %
Temperature coefficient	≤ 0.04 % /K

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 24 ... 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	44.7 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

DIP Switch Adjustability

● = ON

857-810

DIP Switch S1

Cold junction compensation		Sensor type			Output signal						Measuring range underflow	Measuring range overflow	Wire break
1		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					
						●		0 ... 10 mA	●		Lower limit of output range	Upper limit of output range + 2,5 %	Upper limit of output range + 5 %
					●	●		2 ... 10 mA					
							●	0 ... 10 V		●	Lower limit of output range	Upper limit of output range	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
					●	●	●	1 ... 5 V					

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

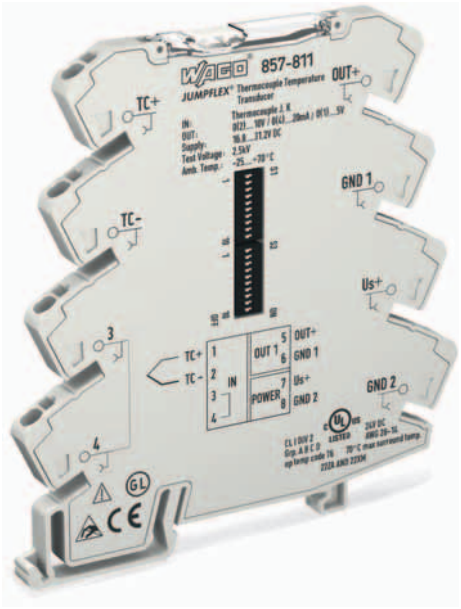
The minimum distance from the start temperature to the end temperature may not fall short of 100K degrees on the Celsius (C) scale or 212K degrees on the Fahrenheit (F) scale.

Default Settings

All DIP switches are in „OFF" position for delivery.	
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

JUMPFLEX® Transducers

Temperature transducer for thermocouples of types J and K



Configuration via:



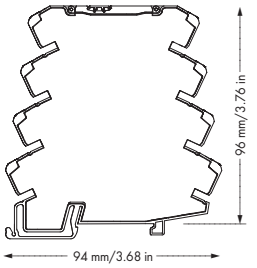
DIP Switches

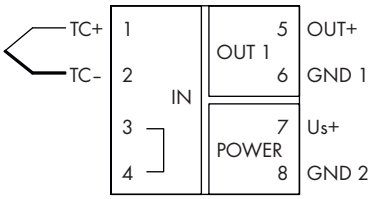


PC Configura-tion Software



Smartphone App





Short description:
The 857-811 Thermocouple Temperature Transducer is suitable for the connection of type J and K thermocouples. On the output side, the thermocouple temperature transducer 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-811**	1
Temperature transducer for thermocouples of types J and K *		

Technical Data

Configuration:	
Configuration	DIP switches, PC configuration software, smartphone 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	≤ 600 Ω (Out = mA)
	≥ 2 kΩ (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:	
Voltage supply V_S	24 V DC
Supply voltage range	16.8 V ... 31.2 V
Current consumption at 24 V DC	≤ 40 mA
Min. measuring span	100 K (configurable)
Transmission error	≤ 0.1 % at max. measuring span (Typ J, K)
Transmission error of set	
measuring span	(150 K / set measuring span [K]) %
Temperature coefficient	≤ 0.04 % /K

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	49.2 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4
Shipbuilding	GL
Accessories	see pages 268 ... 271

(* 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

Cold junction compensation		Sensor type			Output signal						Measuring range underflow	Measuring range overflow	Wire break
1		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					
						●		0 ... 10 mA	●		Lower limit of output range	Upper limit of output range + 2,5 %	Upper limit of output range + 5 %
					●	●		2 ... 10 mA					
							●	0 ... 10 V		●	Lower limit of output range	Upper limit of output range	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
					●	●	●	1 ... 5 V					

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

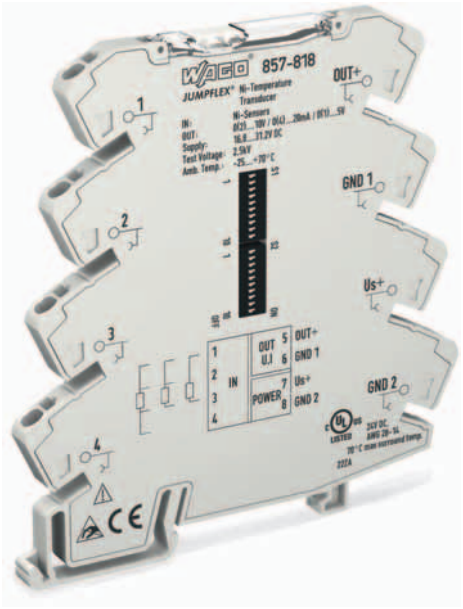
The minimum distance from the start temperature to the end temperature may not fall short of 100K degrees on the Celsius (C) scale or 212K degrees on the Fahrenheit (F) scale.

Default Settings

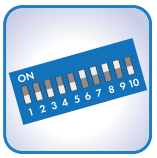
All DIP switches are in „OFF" position for delivery. This is the position used to parameterize the device via PC configuration software.	
Cold junction compensation	on
Thermocouple	Type J
Start temperature	0 °C
End temperature	1000 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA

JUMPFLEX® Transducers

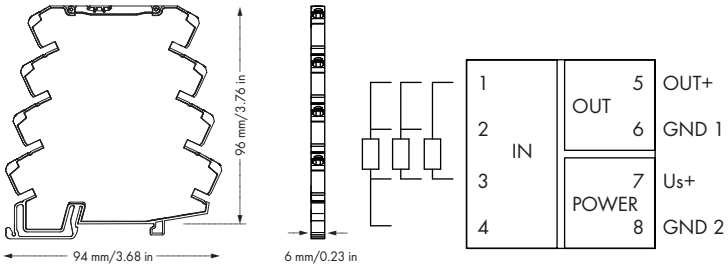
Ni Transducer for Ni 100, Ni 120, Ni 200, Ni 500, Ni 1000



Configuration via:



DIP Switches



Short description:
The 857-818 Ni Transducer (Ni = nickel) records signals from Ni sensors featuring all standard characteristics. On the output side, the NI temperature transducer 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® Transducer, for DIN 35 rail**	**857-818**	1
Ni transducer for Ni100, Ni120, Ni200, Ni500, Ni1000 with temperature coefficients: 6178 ppm/K (DIN 43760) 5000 ppm/K; 6720 ppm/K; 6370 ppm/K		

Technical Data

Configuration:	
Configuration	DIP switches
Input:	
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)
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	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
Step response	< 60 ms at 2- and 4-conductor measurement < 120 ms at 3-conductor measurement
General specifications:	
Voltage supply V_S	24 V 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

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	50 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	(pending)
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

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

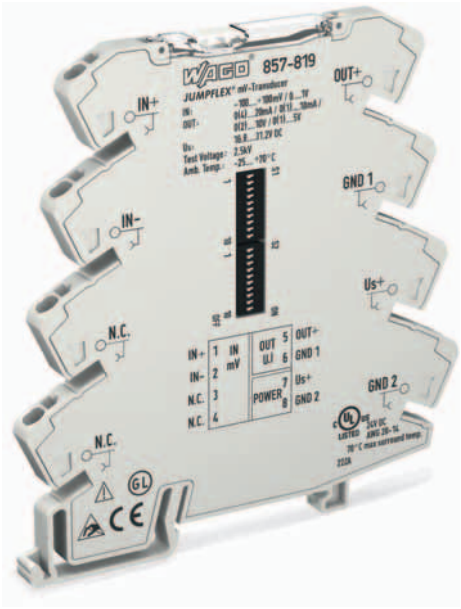
*2 acc. to NAMUR NE 43

Default Setting

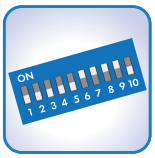
All DIP switches are in “OFF” position for delivery.	
Sensor connection	2-conductor
Sensor type	NI 100
Temperature coefficient	6178 ppm/K
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA

JUMPFLEX® Transducers

Millivolt transducer; Records all mV signals ranging from -100 mV to +100 mV; 0 mV ... 1000 mV. Application: Recording of lambda probes



Configuration via:



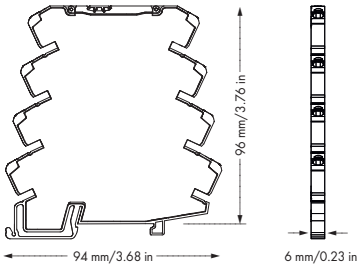
DIP Switches

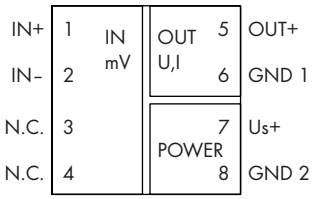


PC Configura-tion Software



Smartphone App





Short description:
The 857-819 Millivolt Transducer 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-819**	1
Millivolt transducer, with millivolt input as well as current and voltage output		

Technical Data

Configuration:	
Configuration	DIP switches, PC configuration software, smartphone app
Input:	
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
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	≤ 600 Ω (I output) ≥ 2 kΩ (U output)
Step response	50ms
General specifications:	
Voltage supply V_S	24 V 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

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	50 g
Standards and approvals:	
Conformity marking	CE
UL 508	
ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

(* Additional setting options via PC configuration software or smartphone app)

DIP Switch Adjustability

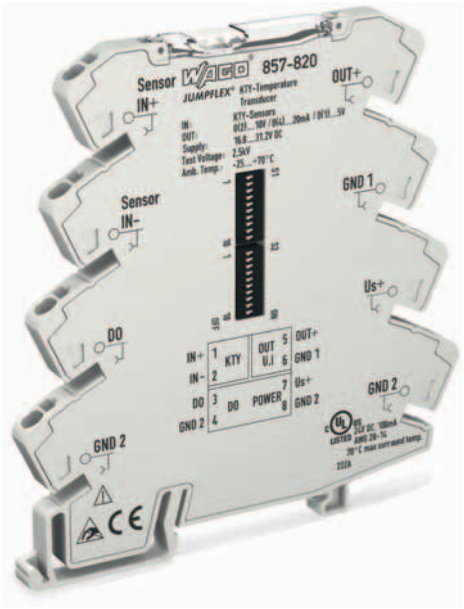
● = ON

857-819

| Input Start value | | |

JUMPFLEX® Transducers

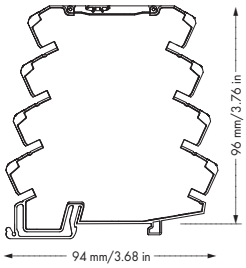
KTY Transducer

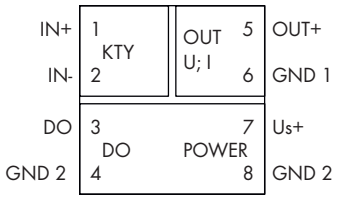


Configuration via:



DIP Switches





Short description:
The 857-820 KTY Transducer records signals from KTY sensors featuring all standard characteristics. On the output side, the KTY temperature transducer 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® Transducer, for DIN 35 rail**	**857-820**	1
KTY Transducer		

Technical Data

Configuration:	
Configuration	DIP switches
Input:	
Input signal	KTY sensors
Max. input signal	± 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	≤ 600 Ω (I output)
	≥ 2 kΩ (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)

Technical Data

General specifications:	
Voltage supply V_S	24 V 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
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	50 g
Standards and approvals:	
Conformity marking	CE
UL 508	(pending)
ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

DIP Switch Adjustability

● = ON

857-820

DIP Switch S1

Sensor Type				
1	2	3	4	
				KTY81-110, KTY81-120, KTY82-110, KTY82-120
●				KTY81-121, KTY82-121
	●			KTY81-122, KTY82-122
●	●			KTY81-150, KTY82-150
		●		KTY81-210, KTY81-220, KTY82-210, KTY82-220
●		●		KTY81-221, KTY82-221
	●	●		KTY81-222, KTY82-222
●	●	●		KTY81-250, KTY82-250
			●	KTY83-110, KTY83-120,
●			●	KTY83-121
	●		●	KTY83-122
●	●		●	KTY83-150
		●	●	KTY83-151
●		●	●	KTY84-130, KTY84-150
	●	●	●	KTY84-151
●	●	●	●	KTY16, KTY19, ST13, ST20

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						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

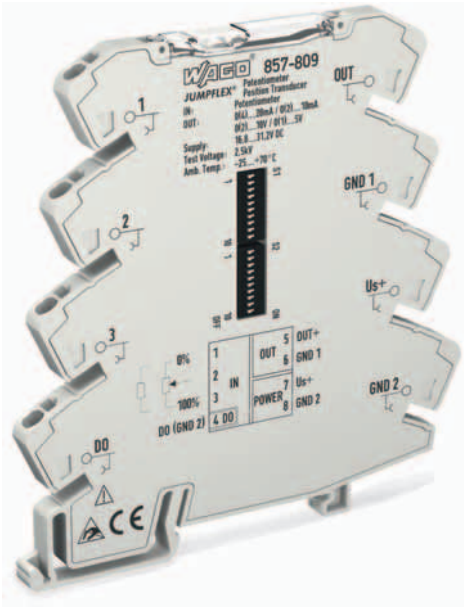
All DIP switches are in „OFF" position for delivery.	
Sensor type	KTY81-110, KTY81-120, KTY82-110, KTY82-120
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA
Digital output	not active

DIP Switch S2

		Digital Output DO Signaling
9	10	
		DO not active
	●	DO Us+ switching
●	●	DO GND switching

JUMPFLEX® Transducers

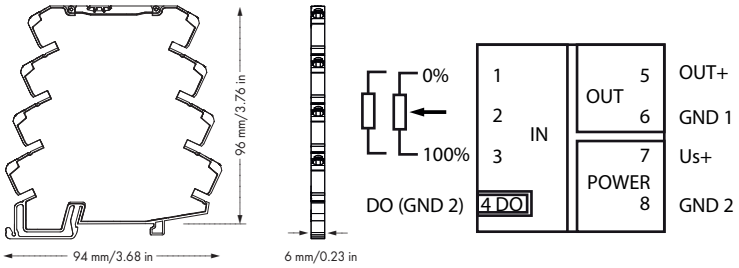
Potentiometer Position Transducer



Configuration via:



DIP Switches | PC Configuration Software | Smartphone App | Push/Slide Switch



Short description:
The 857-809 Potentiometer Position Transducer 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® Transducer, for DIN 35 rail**	**857-809**	1
Potentiometer Position Transducer		

Technical Data

Configuration:	
Configuration	DIP switches, push/slide switch,
	PC configuration software, smartphone app
Input:	
Input signal	Potentiometers and resistors *
Input range	
Potentiometer	100 Ω ... 100 kΩ *
Resistors	10 Ω - 100 kΩ *
Max. potentiometer supply voltage	2.5 V
Min. measuring range	100 Ω
Output:	
Output signal	**Voltage:**
	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:	
Voltage supply V_S	24 V 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

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	49.2 g
Standards and approvals:	
cULus UL 508	(pending)
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

(* 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					
DIP S1					Resistor Ω
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					
DIP S1				DIP S2	Resistor Ω
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*			0 – 10 V/0 – 20 mA*
●		x10	●		x10	●	Voltage	●		2 – 10 V/4 – 20 mA
	●	x100		●	x100				●	0 – 5 V/0 – 10 mA
●	●	x1000	●	●	x1000			●	●	1 – 5 V/2 – 10 mA

*Default setting

9	10	Measuring Range Underflow	Measuring Range Overflow	Wire Break
		Upper limit of output range*1 +2.5 %	Lower limit of output range*1 -5 %	Upper limit of output range*1 +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

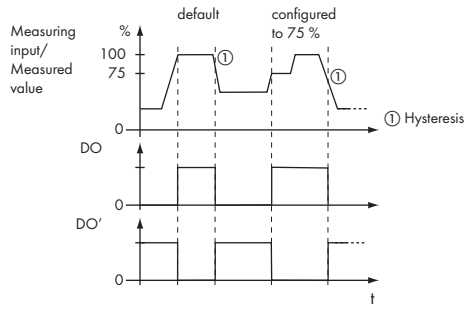
*1acc. to NAMUR NE 45

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).

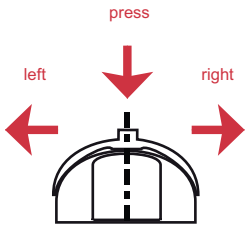
Switching Behavior, Digital Output (DO)



Push/Slide Switch Operation:

857-809





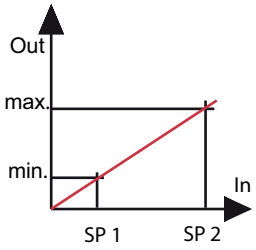
Operating push/slide switch:

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.

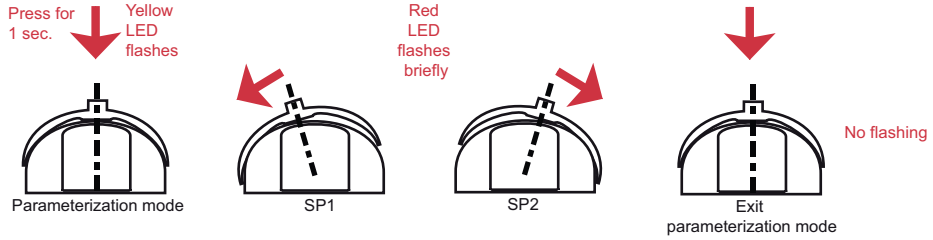
- Press PSS down until the yellow LED is flashing
- Set potentiometer to the minimum value
- Briefly push PSS to the left
- Red LED flashes briefly
- Set potentiometer to the maximum value
- Briefly push PSS to the right
- Red LED flashes briefly
- Briefly press PSS downward
- The yellow LED stops flashing

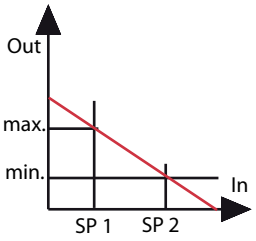
PSS = Push/slide switch

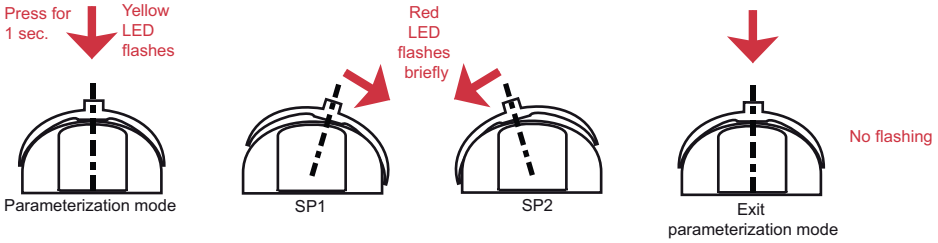
Transmission function



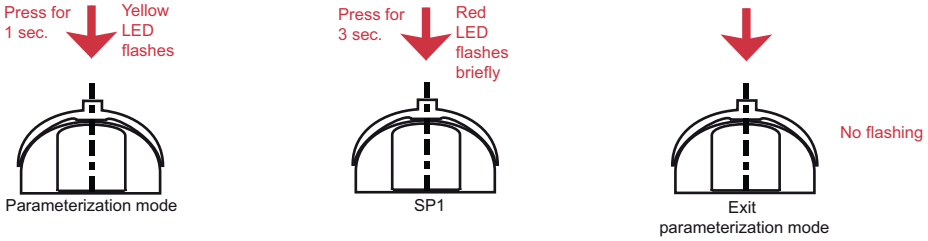
Configuration instructions





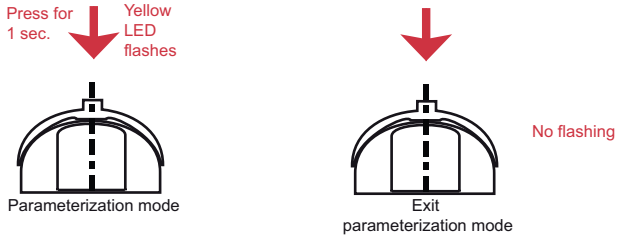


Delete set switching points

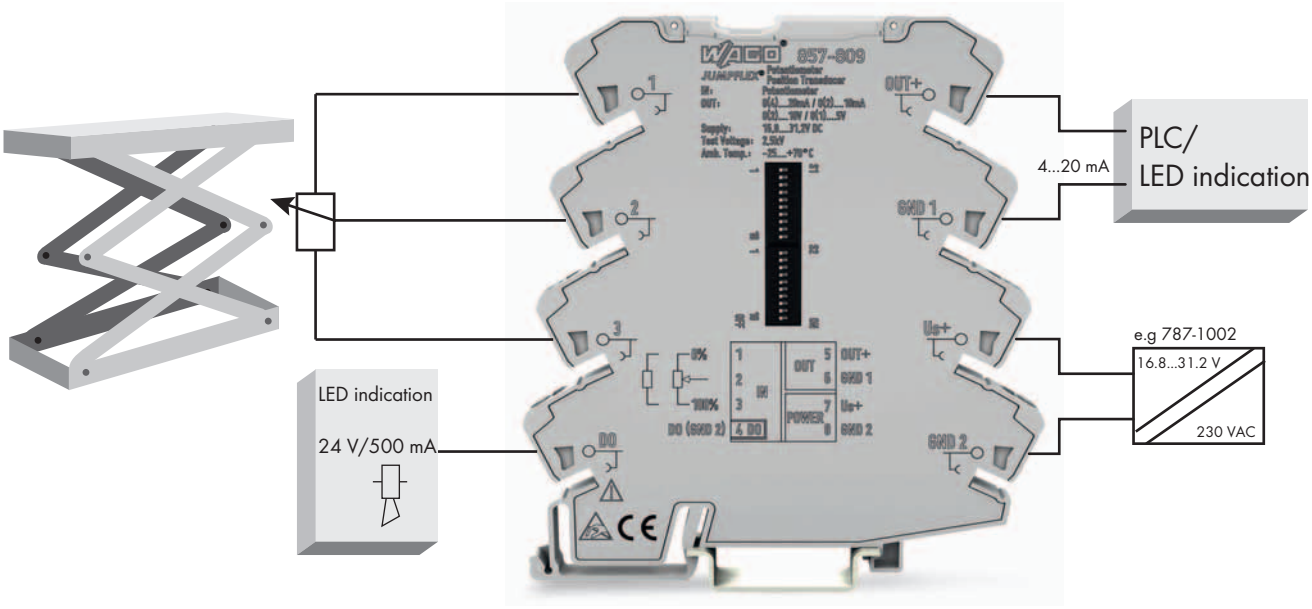


Exit parameterization mode without saving value.

SP = Switching points

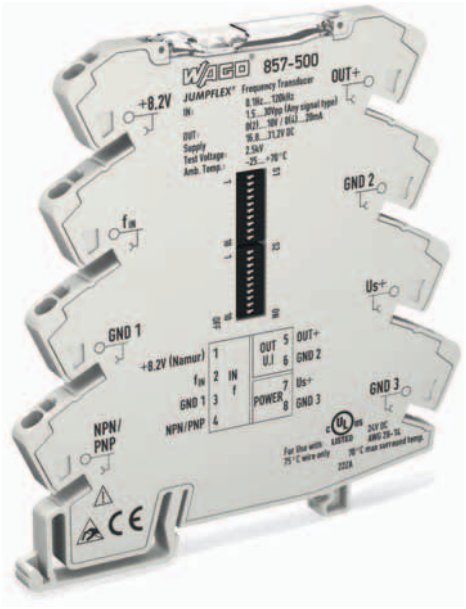


Application example:



JUMPFLEX® Transducers

Frequency transducer 0.1 Hz ... 120 kHz



Configuration via:



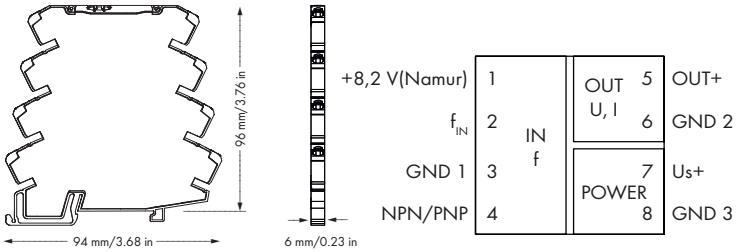
DIP Switches



PC Configura-tion Software



Smartphone App



Short description:
The 857-500 Frequency Transducer 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® Transducer, for DIN 35 rail**	**857-500**	1
Frequency transducer		

Technical Data

Configuration:	
Configuration	DIP switches, PC configuration software, smartphone app
Input:	
Sensor types	-Frequency generators
	-NAMUR sensors
	-NPN/PNP transistor outputs without pull-up or pull-down resistor
	-mech. contact (dry contact)

Technical Data

Input for frequency generators or NPN/PNP transistor outputs with pull-up or pull-down resistor	
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
Input for NAMUR sensors per DIN EN 50227	
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	10 Hz
Short-circuit current	≤ 14 mA
Short-circuit monitoring	> 4.7 mA
Wire break monitoring	< 0.2 mA
Input for NPN/PNP transistor outputs without pull-up or pull-down resistor or mech. contact (dry contact)	
Frequency range	0.1 Hz ... 20 kHz
Pulse length	≥ 25 µs
Min. measuring span	10 Hz
Open-circuit voltage	5 VDC
NPN_Residual voltage	< 1.5 V
PNP Switching voltage	> 7.5 V + residual voltage U_{CE} sat

Technical Data

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)
Conversion time	Gate time measurement method
	(> 400 Hz): < 20 ms
	Pulse time measurement method
	(< 400 Hz): < 200 µs + $T_{Cycle\ duration}$
General specifications:	
Voltage supply V_S	24 V 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

General Specifications

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	38.7 g
Standards and approvals:	
Conformity marking	CE
UL 508	
ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

Refer to following pages for DIP Switch Table and Pin Assignments.

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		
		Frequency generator or NPN/PNP transistor outputs with pull-up or pull-down resistor		AC/DC			**High**	**Low**
●		NAMUR	●	AC (without DC), see Figure 1			> 1.5 V	< 0.4 V
	●	NPN/PNP transistor outputs without pull-up or pull-down resistor input Dry Contact			●		> 10 V	< 8 V
						●	> 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

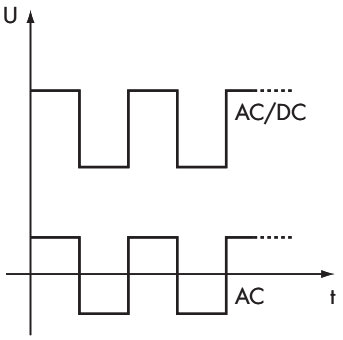


Figure 1: Coupling

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

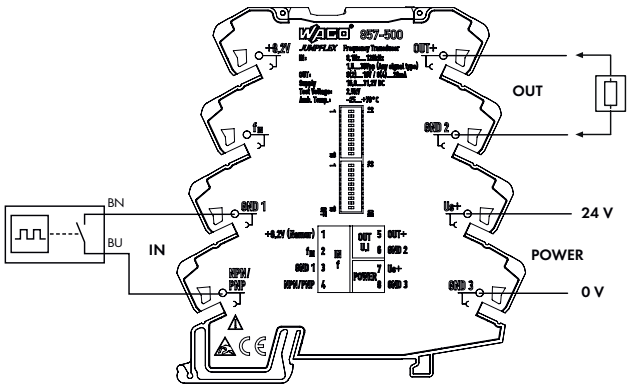
DIP Switch S2

Output Signal						Measuring Range Underflow	Measuring Range Overflow	Only for NAMUR Sensors	
								Wire Break	Short Circuit
6	7	8		9	10				
			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						
		●	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						

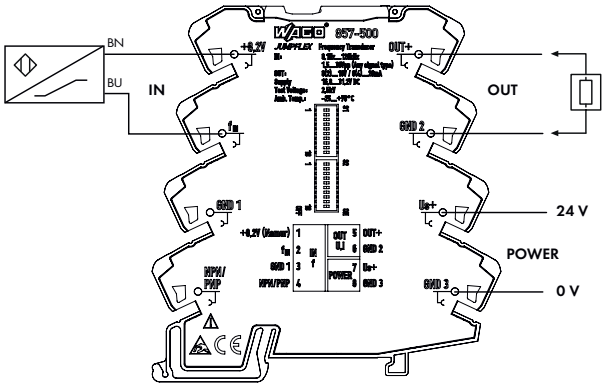
*acc. to NAMUR NE 43

857-500, Wiring Material

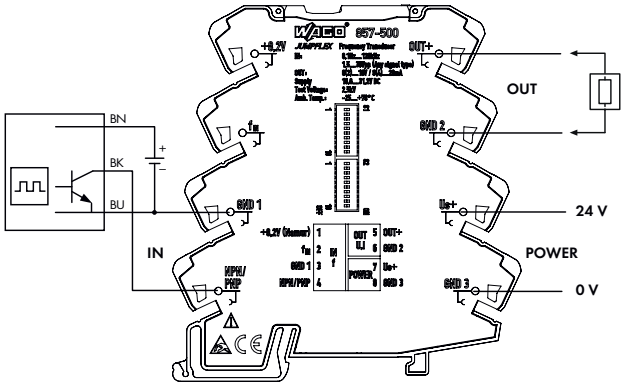
2-Conductor DC (Mechanical Contact)



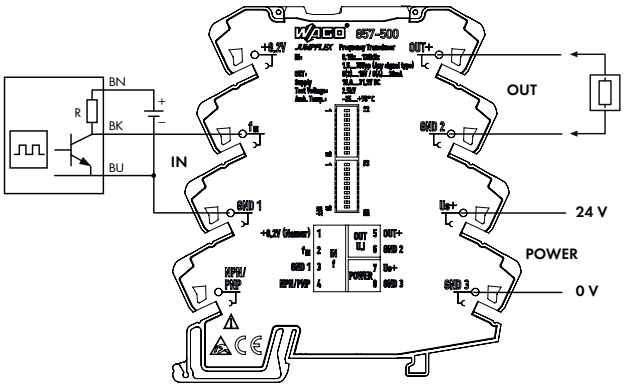
2-Conductor DC NAMUR Sensor



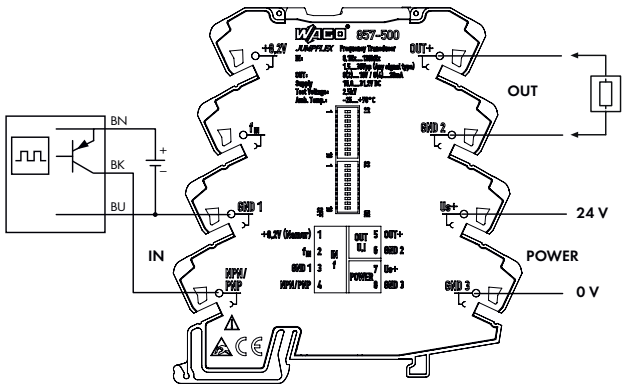
NPN Transistor Output



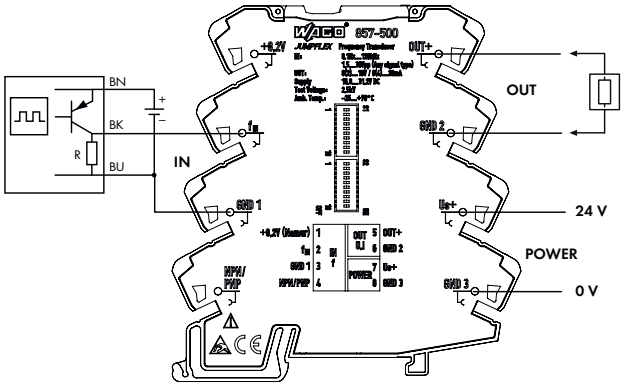
NPN Transistor Output with Pull-Up Resistor



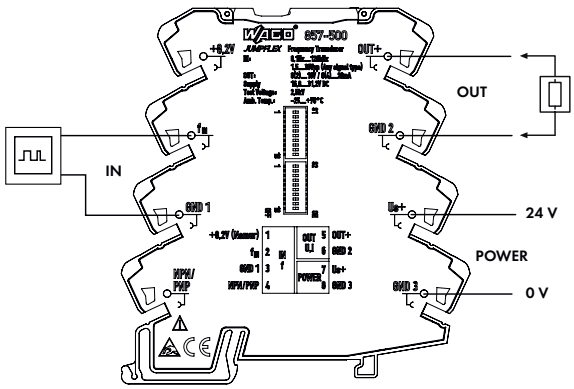
PNP Transistor Output



PNP Transistor Output with Pull-Down Resistor

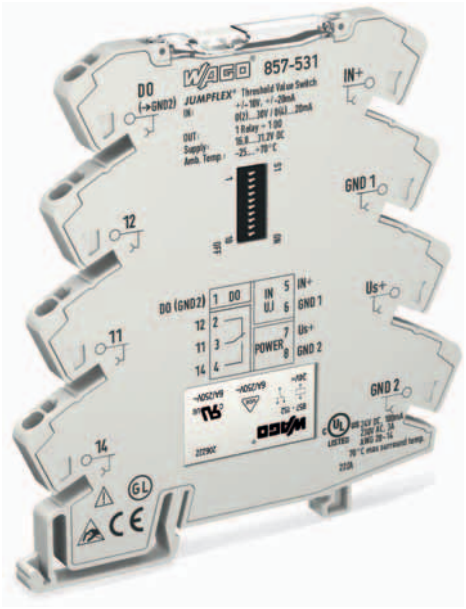


Frequency Generator



JUMPFLEX® Transducers

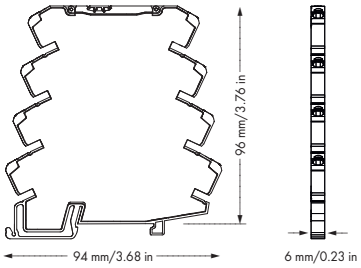
Threshold value switch with analog input and changeover relay output

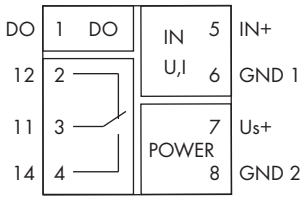


Configuration via:



DIP Switches | PC Configuration Software | Smartphone 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® transducers, for DIN 35 rail**	**857-531**	1
Threshold value switch with analog input, changeover relay output and digital output		

Technical Data

Configuration:	
Configuration	DIP switches, push/slide switch,
	PC configuration software, smartphone 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_{IN}) 100 mA (I_{IN})
Output:	
Output - Relay	
Contact type	1 changeover contact
Max. switching voltage	250 V AC
Max. continuous current (terminal	max. 6 A (to 60 °C),
blocks in a row)	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
Voltage supply V_S	24 V 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

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	49 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

(* 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		5 mV; 10 µA
	●			0 ... 10 V	●	10 mV, 20 µA
		●		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	
			0			DO not active
●			1		●	GND → U_N (switching)
	●		2	●	●	U_N → GND (switching)
●	●		3			
		●	4			
●		●	5			
	●	●	8			
●	●	●	10			

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

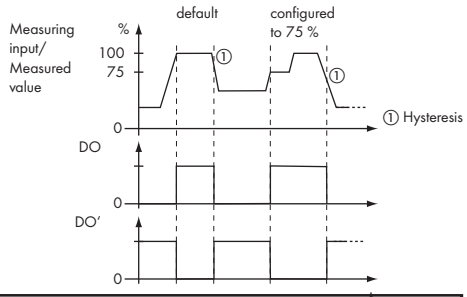


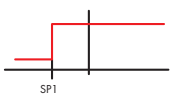
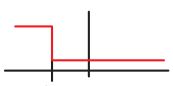
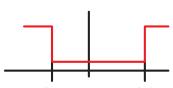
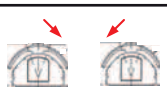
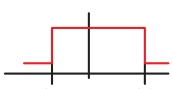
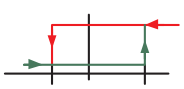
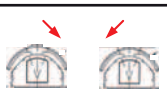
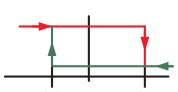
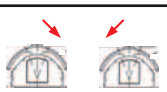
Digital Output DO/Signaling

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

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).

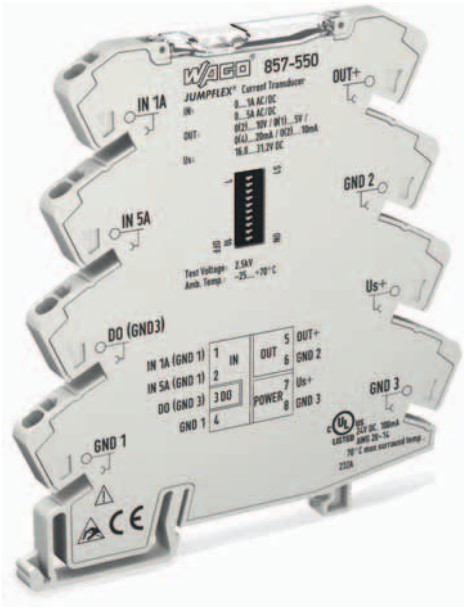
Switching Behavior, Digital Output (DO)



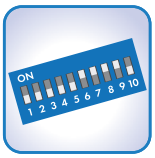
Switching Behavior	Configuration						
	Number of Switching Thresholds	Values for Switching T hresholds	Switching Threshold 1, Relay	Switching Threshold 2, Relay	Press for 1 sec. Yellow LED flashes	Red LED flashes briefly	No flashing LED
1 	1	S1	„On"	–			
2 	1	S1	„Off"	–			
3 	2	S1 + S2	„On"	„Off"			
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® Transducers

Current transducer AC/DC 0 ... 1 A, 0 ... 5 A



Configuration via:



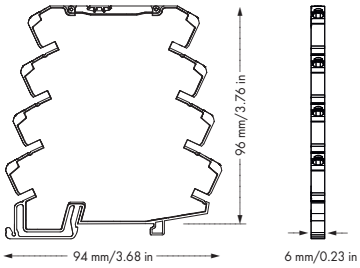
DIP Switches

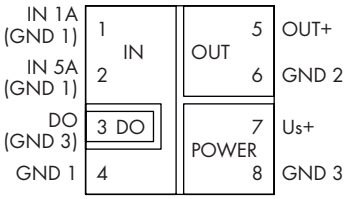


PC Configura-tion Software



Smartphone App





Short description:
The current transducer 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

Description	Item No.	Pack. Unit
***JUMPFLEX*® Transducer, for DIN 35 rail**	**857-550**	1
Current transducer		

Technical Data

Configuration:	
Configuration	DIP switches, PC configuration software,
	smartphone 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_N (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_{10-90})	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:	
Voltage supply V_S	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

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 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	50 g
Standards and approvals:	
Conformity marking	CE
cULus UL 508	
cULus ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	Plug-in current transformers: 855 Series
	see pages 268 ... 271
(* 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

		Measuring Range Underflow	Measuring Range Overflow	Overcurrent (Input Signal - End Value + 20%)			Digit 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_s+ 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			

*acc. to NAMUR NE 43

Digital Output DO/Signaling

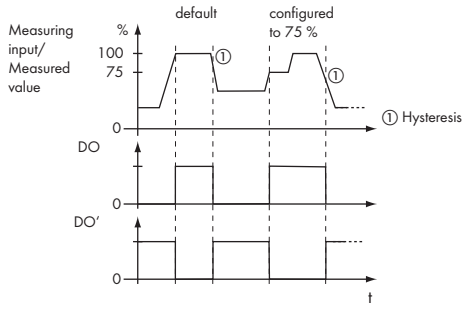
The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

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).

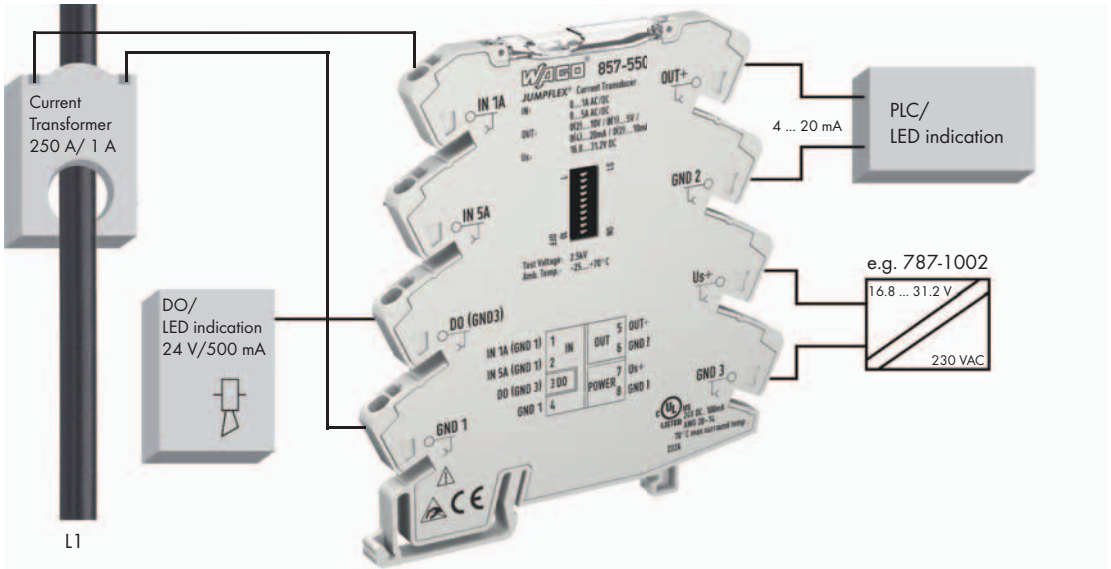
Default Setting

All DIP switches are in "OFF" position for delivery.	
Input	
Input Signal	0 ... 5 A
Measuring Method	Mean square value
Filter	not active
Output	
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)

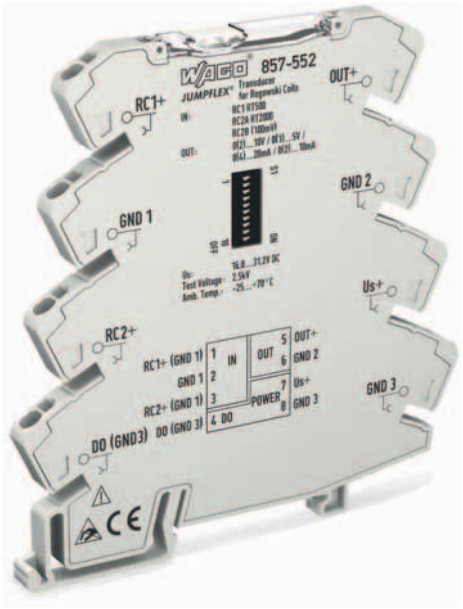


Application example:

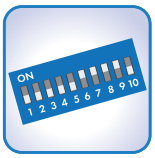


JUMPFLEX® Transducers

Rogowski Transducer



Configuration via:



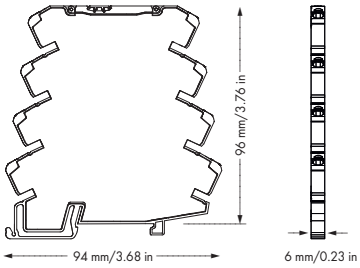
DIP Switches

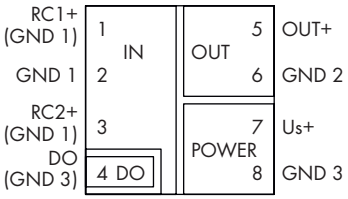


PC Configura-tion Software



Smartphone App





Short description:
The Rogowski transducer 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

Description	Item No.	Pack. Unit
Height from upper-edge of DIN 35 rail	**857-552**	1
Rogowski-Messumformer		

Technical Data

Configuration:	
Configuration	DIP switches, PC configuration software, smartphone 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
Frequency range	16 Hz ... 1000 Hz
Response threshold	< 1 % (of measuring range nominal value)
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 *
Overcurrent	0 % or +5 % (e. g. 10.5 V/21 mA)
Measuring range overflow/underflow	0 % or +2.5 %
Load impedance	Current ≤ 600 Ω, Voltage ≥ 1000 Ω
Measuring procedure	True RMS (TRMS)
Filter (T_{10-90})	600 ms (50 Hz)
Output - Digital	
Max. switching voltage	Supply voltage applied
Max. continuous current	500 mA
General specifications:	
Voltage supply V_S	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_{10-90})	max. 60 ms

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 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	36.2 g
Standards and approvals:	
Conformity marking	CE
UL 508	(pending)
ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL (pending)
Accessories	Rogowski Coils:
	RT 500 (1.5 m): 855-9100/500-0000
	RT 500 (3 m): 855-9300/500-0000
	RT 2000 (1.5 m): 855-9100/2000-0000
	RT 2000 (3 m): 855-9300/2000-0000
(* 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

7	8	Measuring Range Underflow	Measuring Range Overflow	Overcurrent (Input Signal - End Value + 20%)	9	10	Digital Output DO Signaling
		(+20 %)	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_s+ 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			

*acc. to NAMUR NE 43

Digital Output DO/Signaling

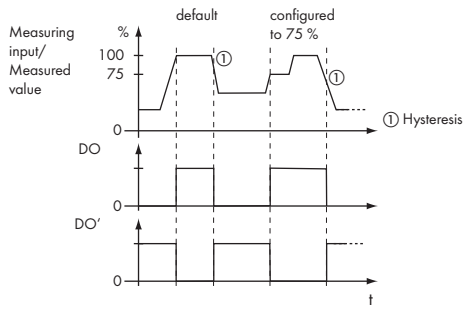
The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

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).

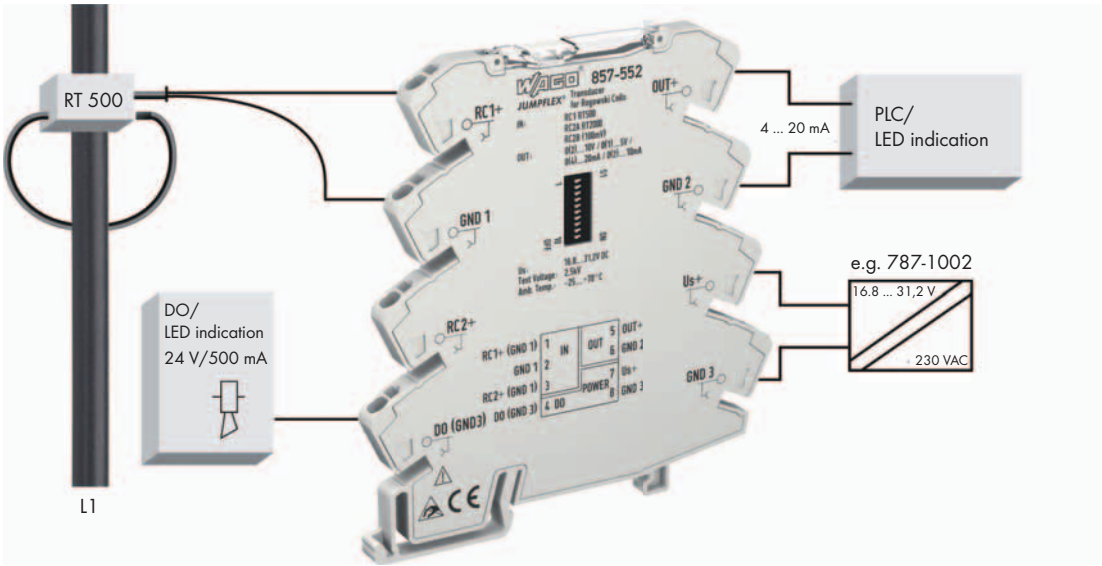
Default Setting

All DIP switches are in "OFF" position for delivery.	
Input	
Input Signal	RC1 500 A
Measuring Method	Mean square value
Filter	not active
Output	
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)

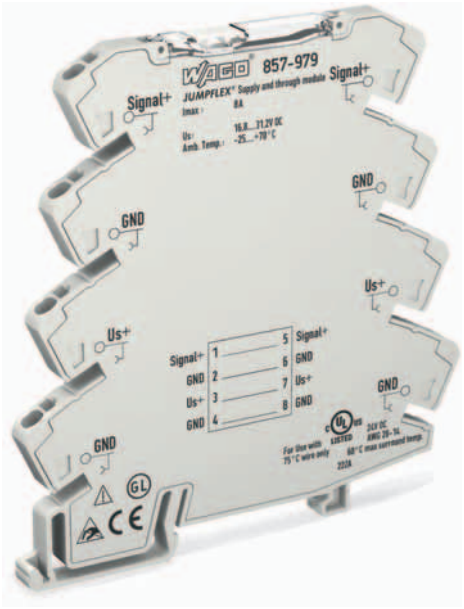


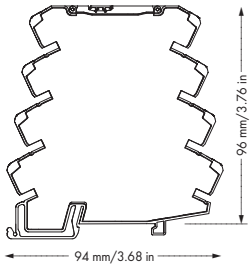
Application example:

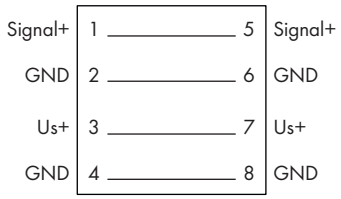


JUMPFLEX® Supply and Through Module

Supply and Through Module







Short description:
The 857-979 Supply and Through Module transmits electrically isolated signals (e.g., in conjunction with the 857-980 JUMPFLEX® Interface Adapter for analog signals). When used as a supply module, it transmits the power from the clamping points to the adjacent JUMPFLEX® modules via push-in type jumper bars.

Description	Item No.	Pack. Unit
***JUMPFLEX*® Supply and Through Module**	**857-979**	25

Technical Data

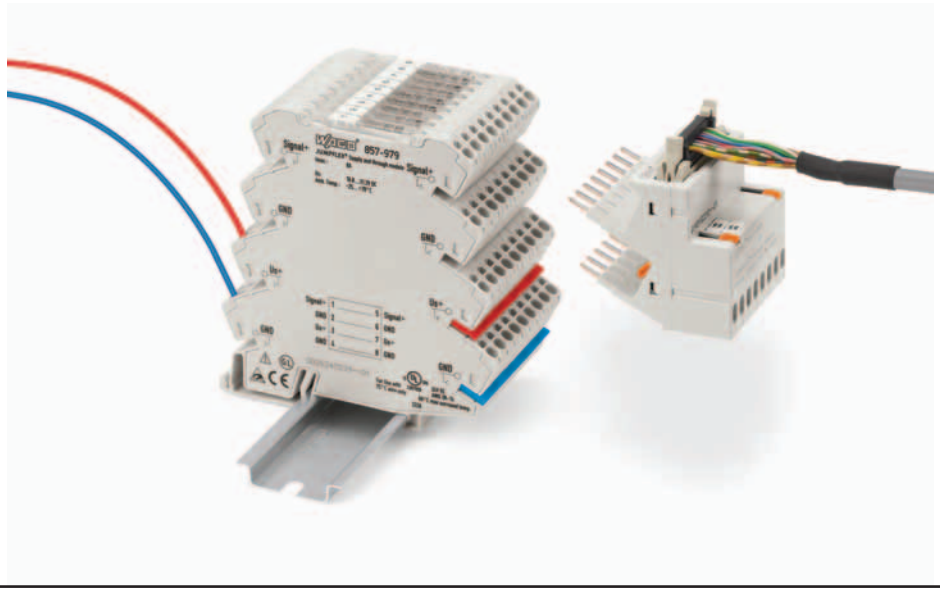
General specifications:	
Max. voltage	33 V AC/DC
Current carrying capacity	8 A
Contact resistance	< 10 mΩ
Environmental requirements:	
Ambient operating temperature	-25 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Connection and type of mounting:	
Wire connection	CAGE CLAMP® S
Cross sections	solid:
	0.08 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	30 g
Standards and approvals:	
Conformity marking	CE
UL 508	
ANSI/ISA 12.12.01	(pending)
Shipbuilding	GL
Accessories	see pages 268 ... 271

Technical Data

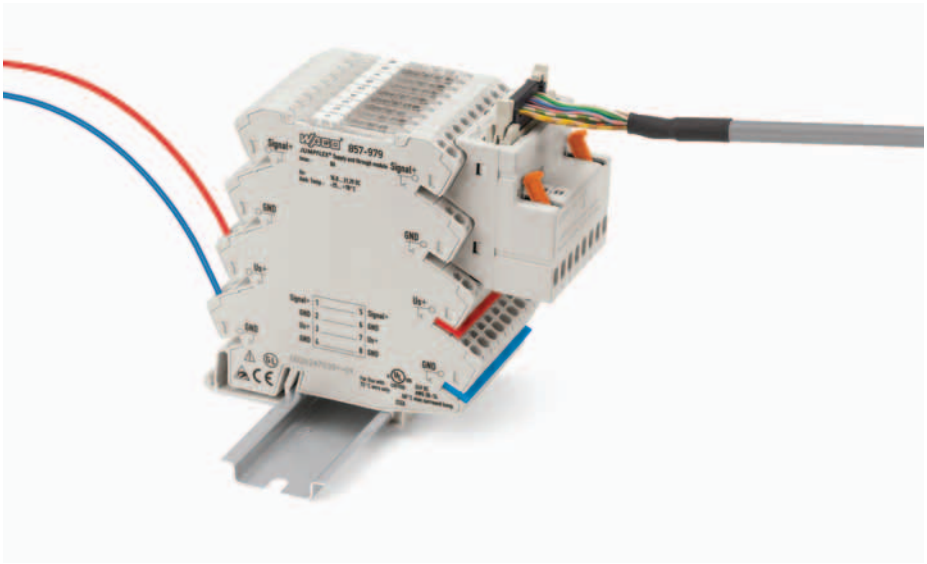
Application example: **857-979**

Power supply for 8 JUMPFLEX® modules with plugged interface adapter
- WAGO interface adapter, 857-980
- WAGO ribbon cable, 706-100/1602-200, 16-pole socket/open-ended
- Push-in type jumper bar, 9-way, 859-409

1



2



JUMPFLEX® Configuration

Interface Configuration Software/Smartphone App

JUMPFLEX® ToGo

Interface Configuration Software – DIP Switch Alternative



Software features:

- Automatic module detection
- Visualization of process values
- Parameterization of the digital switch output (threshold functionality)
- Communication via 750-923 WAGO USB Service Cable or 750-921 WAGO *Bluetooth*® Adapter

JUMPFLEX® ToGo Configuration App – DIP Switch Alternative



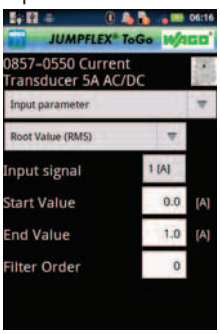
750-921
WAGO *Bluetooth*® Adapter

WAGO's *JUMPFLEX*® ToGo configuration app brings the power of a PC-based configuration software to your mobile device. Configure 857 Series Transducers' input and output parameters via finger swipe on your Android-based smartphone or tablet. You can also easily view both configuration data and actual measured value. WAGO's 750-921 *Bluetooth*® Adapter between your smartphone and transducer.

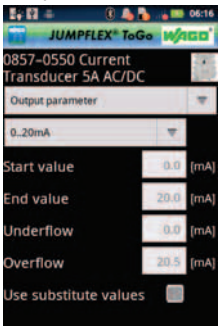
Device Information



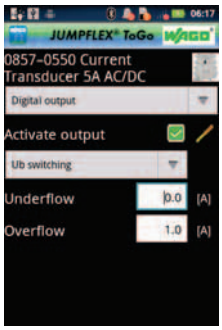
Input Parameter



Output Parameter



Digital Output



Actual Value



The interface configuration software and smartphone app support the following devices:

857-401: Isolation amplifier,
857-500: Frequency transducer
857-531: Threshold value switch
857-550: Current transducer
857-552: Rogowski transducer
857-801: Temperature transducer for Pt sensors
857-809: Potentiometer position transducer
857-811: Temperature transducer for thermocouples
857-819: Millivolt transducer

WAGO USB Service Cable



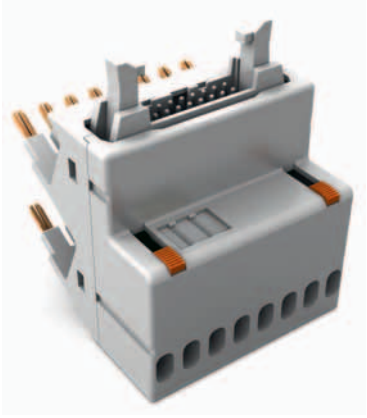
The WAGO USB Service Cable connects a PC (notebook) to either the service Interface of the 857 Series Signal Conditioners and Relay Modules (*JUMPFLEX*®) or to WAGO-I/O-SYSTEM buscouplers/controllers.

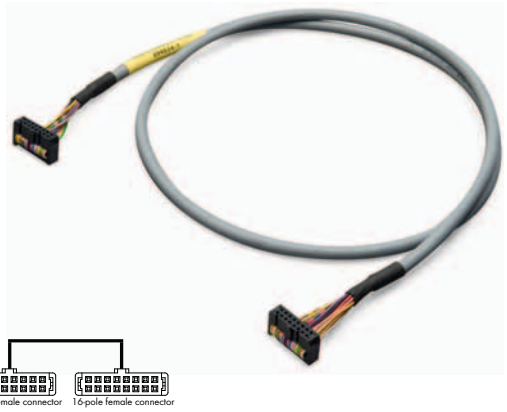
Notice:
Using the WAGO 759-923 USB Service Cable in combination with some of the programmable fieldbus controllers requires a certain firmware version or higher:
750-841 as from firmware version 12
750-872/0020-0000 as from firmware version 2

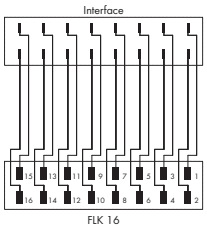
Description	Item No.	Pack. Unit
WAGO USB Communication Cable,		
length 2.5 m	**750-923**	1
WAGO USB Communication Cable,		
length 5 m	**750-923/000-001**	1

Technical Data	
USB specification	2.0 compatible/full-speed device
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

JUMPFLEX® 8-Channel Adapter for System Wiring
WAGO-Flachbandkabel







The 16-pin cables transmit signals one-to-one from the 16-pole female 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 JUMPFLEX® Interface Adapter (Item No. 857-980)

WAGO ribbon cable, 16-pole/one free cable end, 2 m long: **706-100/1602-200** (see page 66) and:

Description	Item No.	Pack. Unit
8-channel adapter	**857-980**	1
with 16-pin ribbon cable connector		
Analog		

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

Description	Item No.	Pack. Unit
WAGO ribbon cable 16/16, 1m long	**706-753/301-100**	1
WAGO ribbon cable 16/16, 2m long	**706-753/301-200**	1
WAGO ribbon cable 16/16, 3m long	**706-753/301-300**	1

Technical Data	
Ports	2 x 16-pole female connector acc. to DIN 41651
Wire cross-section	0.14 mm^2 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)

Accessories, 857 Series

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 8			
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



Wire connection



WAGO *Bluetooth*® Adapter



WAGO USB service cable

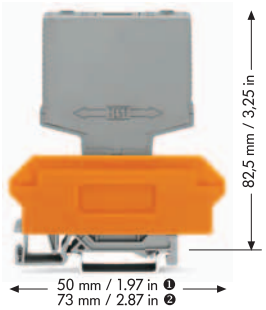
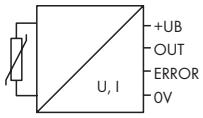
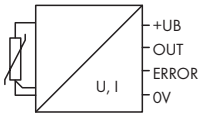


Configuration



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

Pluggable Modules - Temperature Transducers

	Input: Pt100 type RTD element 2-wire, with error output for broken wire and short circuit of sensor Module width 20 mm / 0.787 in	Input: Pt100 type RTD element 3-wire, with error output for broken wire and short circuit of sensor Module width 20 mm / 0.787 in
		
		
		

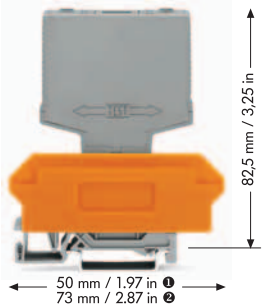
Other temperature ranges contact factory.
LED indication of broken wire or short circuit
WSB marker card

- Marking 1 ... 10; Item No.: 209-702
- Marking 1, 2, 3, 0V, +UB, OUT, ERR., 0V; Item No.: 249-622
- Marking 1, 2, 0V, +UB, OUT, ERR., 0V; Item No.: 249-623

5 cards, each containing 10 strips with 10 markers

Description	Output	Item No.	Pack. Unit	Output	Item No.	Pack. Unit
Temperature transducer	0 - 10 V	**286-860**	1	0 - 10 V	**286-870**	1
	0 - 20 mA	**286-861**	1	0 - 20 mA	**286-871**	1
	4 - 20 mA	**286-862**	1	4 - 20 mA	**286-872**	1
Technical Data	Accessories see page 281			Accessories see page 281		
Temperature range	0 °C ... 100 °C			0 °C ... 100 °C		
Operating voltage	24 V DC (± 10 %)			24 V DC (± 10 %)		
Nominal current	I_{BN} 30 mA			I_{BN} 30 mA		
Load impedance	≥ 2 kΩ (Out = V)			≥ 2 kΩ (Out = V)		
	≤ 500 Ω (Out = mA)			≤ 500 Ω (Out = mA)		
Error output - low upon error (fail safe)	V_B / max. 20 mA			V_B / max. 20 mA		
Transmission error (measuring range)	≤ 0.3 %			≤ 0.3 %		
Temperature coefficient	0.02 %/K			0.02 %/K		
Ambient operating temperature	0 °C ... +55 °C			0 °C ... +55 °C		
Electromagnetic compatibility test acc. to IEC 801-2/4/5	B acc. to EN 50082 T2 (E3.94)			B acc. to EN 50082 T2 (E3.94)		
Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

	Input: Thermocouple J (Fe-CuNi) with error output for broken wire Module width 20 mm / 0.787 in	Input: Thermocouple K (NiCr-Ni) with error output for broken wire Module width 20 mm / 0.787 in



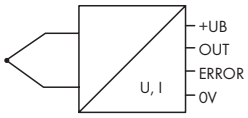


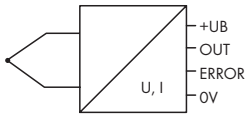


Other temperature ranges contact factory.
LED indication of broken wire or short circuit
WSB marker card

- Marking 1 ... 10; Item No.: 209-702
- Marking 1, 2, 3, 0V, +UB, OUT, ERR., 0V; Item No.: 249-622
- Marking 1, 2, 0V, +UB, OUT, ERR., 0V; Item No.: 249-623

5 cards, each containing 10 strips with 10 markers





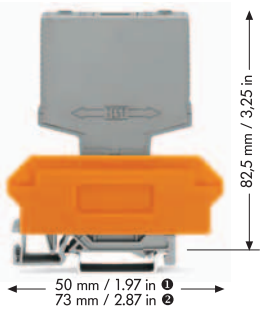
Description	Output	Item No.	Pack. Unit	Output	Item No.	Pack. Unit
Temperature transducer	0 - 10 V	**286-863**	1	0 - 10 V	**286-864**	1
	0 - 20 mA	**286-865**	1	0 - 20 mA	**286-866**	1
	4 - 20 mA	**286-867**	1	4 - 20 mA	**286-868**	1

Technical Data	Accessories see page 281	Accessories see page 281
Temperature range	0 °C ... 750 °C	0 °C ... 1000 °C
Operating voltage	24 V DC (± 10 %)	24 V DC (± 10 %)
Nominal current	I_{BN} ≤ 30 mA (Out = V)	I_{BN} ≤ 30 mA (Out = V)
	I_{BN} ≤ 50 mA (Out = mA)	I_{BN} ≤ 50 mA (Out = mA)
Load impedance	≥ 2 kΩ (Out = V)	≥ 2 kΩ (Out = V)
	≤ 500 Ω (Out = mA)	≤ 500 Ω (Out = mA)
Error output - low upon error (fail safe)	V_B / max. 20 mA	V_B / max. 20 mA
Transmission error (measuring range)	≤ 2 %	≤ 2 %
Temperature coefficient	0.02 %/K	0.02 %/K
Ambient operating temperature	0 °C ... +55 °C	0 °C ... +55 °C
Electromagnetic compatibility test acc. to IEC 801-2/4/5	B acc. to EN 50082 T2 (E3.94)	B acc. to EN 50082 T2 (E3.94)

Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Temperature Transducers

	Input: Pt100 type RTD element 2-wire, with error output for broken wire and short circuit of sensor -30 °C ... +150 °C Module width 20 mm / 0.787 in	Input: Pt100 type RTD element 3-wire, with error output for broken wire and short circuit of sensor -30 °C ... +150 °C Module width 20 mm / 0.787 in

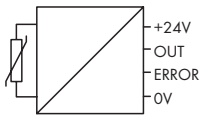


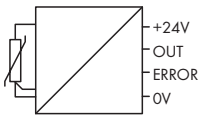




Linear temperature curve
Other temperature ranges contact factory.
LED indication of broken wire or short circuit
WSB marker card
- Marking 1 ... 10; Item No.: 209-702
- Marking 1, 2, 3, 0V, +UB, OUT, ERR., 0V; Item No.: 249-622
- Marking 1, 2, 0V, +UB, OUT, ERR., 0V; Item No.: 249-623

5 cards, each containing 10 strips with 10 markers



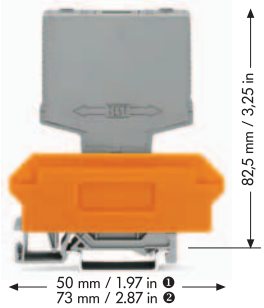


Description	Output	Item No.	Pack. Unit	Output	Item No.	Pack. Unit
Temperature transducer	0 ... 10 V	**286-860/150-030**	1	0 ... 10 V	**286-870/150-030**	1
	0 ... 20 mA	**286-861/150-030**	1	0 ... 20 mA	**286-871/150-030**	1
	4 ... 20 mA	**286-862/150-030**	1	4 ... 20 mA	**286-872/150-030**	1

Technical Data	Accessories see page 281	Accessories see page 281
Temperature range	-30 °C ... 150 °C	-30 °C ... 150 °C
Operating voltage	24 V DC (± 10 %)	24 V DC (± 10 %)
Nominal current	I_N 30 mA	I_N 30 mA
Load impedance	≥ 2 kΩ (Out = V)	≥ 2 kΩ (Out = V)
	≤ 500 Ω (Out = mA)	≤ 500 Ω (Out = mA)
Error output (closed-current principle)	V_B / 20 mA	V_B / 20 mA
Transmission error (full scale)	≤ 0.2 %	≤ 0.2 %
Temperature coefficient	≤ 0.02 %/K	≤ 0.02 %/K
Ambient operating temperature	0 °C ... +55 °C	0 °C ... +55 °C
Electromagnetic compatibility test acc. to IEC 801-2/4/5	B acc. to EN 50082 T2 (E3.94)	B acc. to EN 50082 T2 (E3.94)

Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

	Input: Pt100 type RTD element 2-wire, with error output for broken wire and short circuit of sensor 0 °C ... +300 °C Module width 20 mm / 0.787 in	Input: Pt100 type RTD element 3-wire, with error output for broken wire and short circuit of sensor 0 °C ... +300 °C Module width 20 mm / 0.787 in

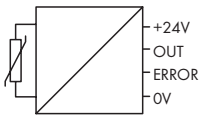


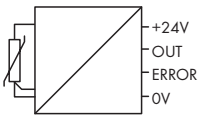




Linear temperature curve
Other temperature ranges contact factory.
LED indication of broken wire or short circuit
WSB marker card

- Marking 1 ... 10; Item No.: 209-702
- Marking 1, 2, 3, 0V, +UB, OUT, ERR., 0V; Item No.: 249-622
- Marking 1, 2, 0V, +UB, OUT, ERR., 0V; Item No.: 249-623





Description	Output	Item No.	Pack. Unit	Output	Item No.	Pack. Unit
Temperature transducer	0 ... 10 V	**286-860/000-300**	1	0 ... 10 V	**286-870/000-300**	1
	0 ... 20 mA	**286-861/000-300**	1	0 ... 20 mA	**286-871/000-300**	1
	4 ... 20 mA	**286-862/000-300**	1	4 ... 20 mA	**286-872/000-300**	1

Technical Data

Accessories see page 281

Accessories see page 281

Temperature range	0 °C ... 300 °C	0 °C ... 300 °C
Operating voltage	24 V DC (± 10 %)	24 V DC (± 10 %)
Nominal current	I_N 30 mA	I_N 30 mA
Load impedance	≥ 2 kΩ (Out = V)	≥ 2 kΩ (Out = V)
	≤ 500 Ω (Out = mA)	≤ 500 Ω (Out = mA)
Error output (closed-current principle)	V_B / 20 mA	V_B / 20 mA
Transmission error (full scale)	≤ 0.2 %	≤ 0.2 %
Temperature coefficient	≤ 0.02 %/K	0.02 %/K
Ambient operating temperature	0 °C ... +55 °C	0 °C ... +55 °C
Electromagnetic compatibility test acc. to IEC 801-2/4/5	B acc. to EN 50082 T2 (E3.94)	B acc. to EN 50082 T2 (E3.94)

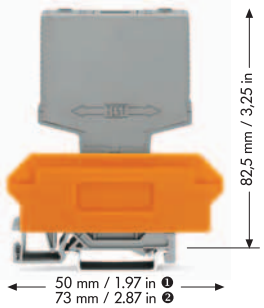
Accessories

		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;						
stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Temperature Transducers

Input: Pt1000 type RTD element
2-wire, with error output for broken wire and short circuit of sensor
0 °C ... +100 °C

Module width 20 mm / 0.787 in

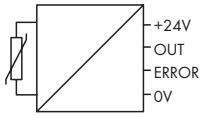




Linear temperature curve
Other temperature ranges contact factory.
LED indication of broken wire or short circuit

WSB marker card
- Marking 1 ... 10; Item No.: 209-702
- Marking 1, 2, 0V, +UB, OUT, ERR., 0V; Item No.: 249-623

5 cards, each containing 10 strips with 10 markers



Description	Output	Item No.	Pack. Unit	
Temperature transducer	0 ... 10 V	**286-873**	1	
	0 ... 20 mA	**286-874**	1	
	4 ... 20 mA	**286-875**	1	

Technical Data

Accessories see page 281

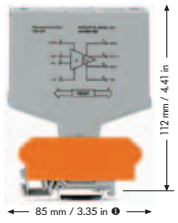
Temperature range	0 °C ... 100 °C
Operating voltage	24 V DC (± 10 %)
Nominal current	I_N 30 mA
Load impedance	≥ 2 kΩ (Out = V)
	≤ 500 Ω (Out = mA)
Error output (closed-current principle)	V_B / 20 mA
Transmission error (full scale)	≤ 0.3 %
Temperature coefficient	0.02 %/K
Ambient operating temperature	0 °C ... +55 °C
Electromagnetic compatibility test acc. to IEC 801-2/4/5	B acc. to EN 50082 T2 (E3.94)

Accessories

		Item No.	Pack. Unit	
Terminal block for pluggable modules,				
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-628**	1	
with 4-conductor terminal blocks, marker plate ❷				
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14;				
stripped length 8 ... 9 mm / 0.33 in				

Pluggable Modules - Analog Signal Conditioning

	Separate supply voltage for input/output Isolation voltage input/output 4 kV Input signal 0 V ... 10 V Module width 20 mm/ 0.787 in	Electrically isolated supply of input/output via DC/DC converter Isolation voltage input/ output/supply voltage 4 kV Input signal 0 V ... 10 V Module width 20 mm/ 0.787 in

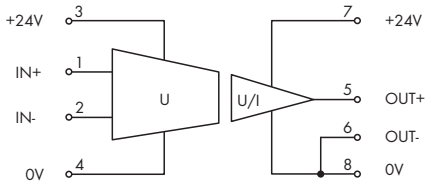


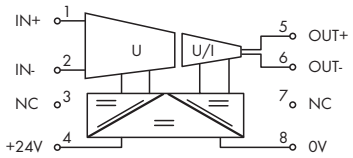




WSB marker card
- Marking V; Item No.: 209-784
- Marking 1 ... 10; Item No.: 209-702
- Marking +/-; Item No.: 209-652

5 cards, each containing 10 strips with 10 markers



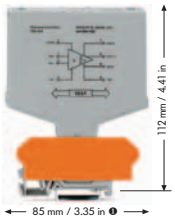


Description	Output signal	Item No.	Pack. Unit	Output signal	Item No.	Pack. Unit
Analog signal conditioning modules, for signal transformation, amplification and transmission with electrical isolation of input and output of standard signals.	0 - 10 V	**786-301**	1	0 - 10 V	**786-321**	1
	0 - 20 mA	**786-302**	1	0 - 20 mA	**786-322**	1
	4 - 20 mA	**786-303**	1	4 - 20 mA	**786-323**	1

Technical Data	Accessories see page 281	Accessories see page 281
Input signal	0 V ... 10 V	0 V ... 10 V
Max. input voltage	13 V	13 V
Input resistance	100 kΩ	100 kΩ
Load impedance	≥ 2 kΩ (Out = V); ≤ 750 Ω (Out = mA)	≥ 2 kΩ (Out = V); ≤ 750 Ω (Out = mA)
Line break detection	Measuring output (LED green = off)	Measuring output (LED green = off)
Transmission error (full scale)	≤ 0.15 %	≤ 0.15 %
Error of transmission typ.	≤ 0.1 %	≤ 0.1 %
Temperature coefficient (full scale)	≤ 0.02 %/K	≤ 0.02 %/K
Critical frequency (sinus)	1 kHz	1 kHz
Isolation voltage input / output	4 kV, 50 Hz, 1 min	4 kV, 50 Hz, 1 min
Supply voltage RR ≤ 6 % input/output	20 V ... 30 V DC	20 V ... 28 V DC
Power consumption input	8 mA ... 20 mA	60 mA
Power consumption output	15 mA ... 40 mA	60 mA
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Ambient operating temperature	0 °C ... + 55 °C	0 °C ... + 55 °C
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C
Approvals	EMC testing IEC 60801-2/4/5, Grade B met acc. to EN 50 082 Part 2 (suppl. 3.94)	EMC testing IEC 60801-2/4/5, Grade B met acc. to EN 50 082 Part 2 (suppl. 3.94)

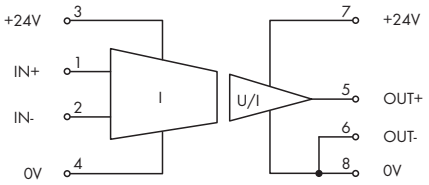
Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

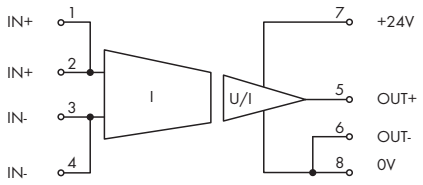
	Separate supply voltage for input/output Isolation voltage input/output 4 kV Input signal 0 mA ... 20 mA Module width 20 mm/ 0.787 in	Separate supply voltage for input/output Isolation voltage input/output 4 kV Input signal 4 mA ... 20 mA Module width 20 mm/ 0.787 in











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

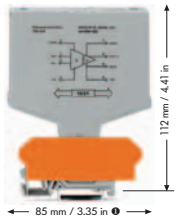
Description	Output signal	Item No.	Pack. Unit	Output signal	Item No.	Pack. Unit
Analog signal conditioning modules, for signal transformation, amplification and transmission with electrical isolation of input and output of standard signals.	0 - 10 V	**786-304**	1	0 - 10 V	**786-307**	1
	0 - 20 mA	**786-305**	1	0 - 20 mA	**786-308**	1
	4 - 20 mA	**786-306**	1	4 - 20 mA	**786-309**	1

Technical Data	Accessories see page 281	Accessories see page 281
Input signal	0 mA ... 20 mA	4 mA ... 20 mA
Max. input current	22 mA	22 mA
Input resistance	≤ 50 Ω	≤ 400 Ω
Max. voltage drop at input		≤ 8 V
Load impedance	≥ 2 kΩ (Out = V); ≤ 750 Ω (Out = mA)	≥ 2 kΩ (Out = V); ≤ 750 Ω (Out = mA)
Line break detection	Measuring output (LED green = off)	Measuring input (LED green = off) and
		Measuring output (LED green = off) (786-309)
Transmission error (full scale)	≤ 0.15 %	≤ 0.15 %
Error of transmission typ.	≤ 0.1 %	≤ 0.1 %
Temperature coefficient (full scale)	≤ 0.02 %/K	≤ 0.02 %/K
Critical frequency (sinus)	1 kHz	1 kHz
Isolation voltage input / output	4 kV, 50 Hz, 1 min	4 kV, 50 Hz, 1 min
Supply voltage RR ≤ 6 % input/output	20 V ... 30 V DC	20 V ... 30 V DC
Power consumption input	7 mA ... 18 mA	7 mA ... 18 mA
Power consumption output	9 ... 16 mA; 13 ... 35 mA; 22 ... 40 mA	25 mA; 50 mA; 50 mA
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
Ambient operating temperature	0 °C ... + 55 °C	0 °C ... + 55 °C
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C

Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Analog Signal Conditioning

	Electrically isolated supply of input/output via DC/DC converter Isolation voltage input/output/supply voltage 4 kV Input signal 0 mA ... 20 mA Module width 20 mm/ 0.787 in	Electrically isolated supply of input/output via DC/DC converter Isolation voltage input/output/supply voltage 4 kV Input signal 0 mA ... 20 mA Module width 20 mm/ 0.787 in

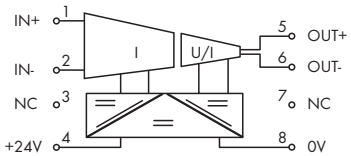


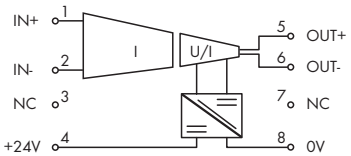




WSB marker card
- Marking V; Item No.: 209-784
- Marking 1 ... 10; Item No.: 209-702
- Marking +/-; Item No.: 209-652

5 cards, each containing 10 strips with 10 markers





Description	Output signal	Item No.	Pack. Unit	Output signal	Item No.	Pack. Unit
Analog signal conditioning modules, for signal transformation, amplification and transmission with electrical isolation of input and output of standard signals.	0 - 10 V	**786-324**	1	0 - 10 V	**786-337**	1
	0 - 20 mA	**786-325**	1	0 - 20 mA	**786-338**	1
	4 - 20 mA	**786-326**	1	4 - 20 mA	**786-339**	1

Technical Data	Accessories see page 281	Accessories see page 281
Input signal	0 mA ... 20 mA	4 mA ... 20 mA
Max. input current	22 mA	22 mA
Input resistance	≤ 50 Ω	≤ 400 Ω
Max. voltage drop at input		≤ 8 V
Load impedance	≥ 2 kΩ (Out = V); ≤ 750 Ω (Out = mA)	≥ 2 kΩ (Out = V); ≤ 750 Ω (Out = mA)
Line break detection	Measuring input (LED green = off)	Measuring input (LED green = off) and
		Measuring output (LED green = off) (786-339)
Transmission error (full scale)	≤ 0.15 %	≤ 0.15 %
Error of transmission typ.	≤ 0.1 %	≤ 0.1 %
Temperature coefficient (full scale)	≤ 0.02 %/K	≤ 0.02 %/K
Critical frequency (sinus)	1 kHz	1 kHz
Isolation voltage input / output	4 kV, 50 Hz, 1 min	4 kV, 50 Hz, 1 min
Supply voltage RR ≤ 6 % input/output	20 V ... 28 V DC	20 V ... 28 V DC
Power consumption input	70 mA; 90 mA; 95 mA	35 mA; 60 mA; 60 mA
Power consumption output	70 mA; 90 mA; 95 mA	35 mA; 60 mA; 60 mA
Nominal voltage acc. to VDE 0110 Part 1/4.97,	250 V / 4 kV / 3	250 V / 4 kV / 3
IEC 60664-1		
Ambient operating temperature	0 °C ... + 55 °C	0 °C ... + 55 °C
Storage temperature	-40 °C ... +80 °C	-40 °C ... +80 °C

Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules,						
with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator ❷	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

WSB Marker Cards

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-, 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
	Iin, Iin, Iout, Iout, 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

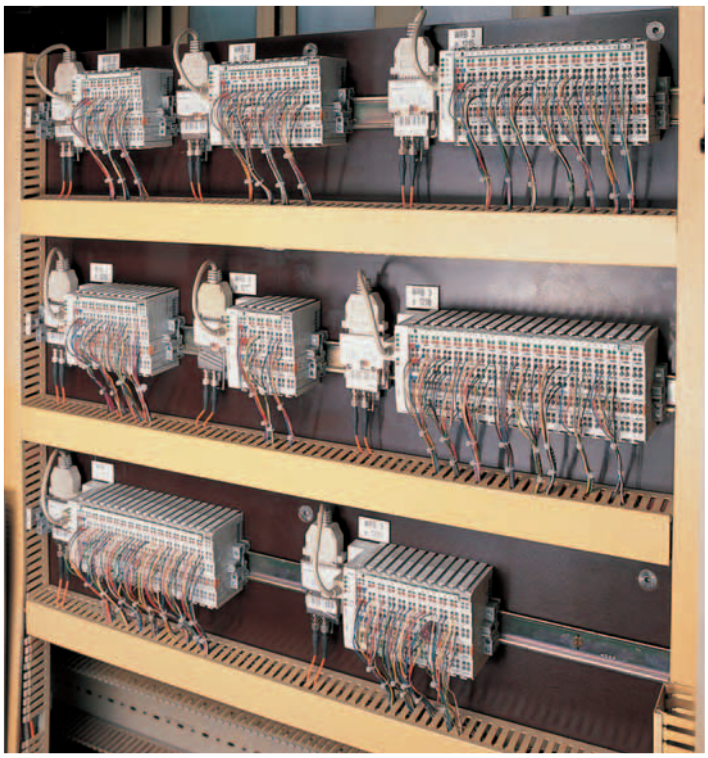
Colored marker cards



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 8	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





WAGO Application: Steag, Power Plant in Voerde, Germany

WAGO Products:
WAGO-I/O-SYSTEM with MODBUS Couplers

4



787 Series
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787 Series
EPSITRON® – ECO – Power Supplies 290 – 292



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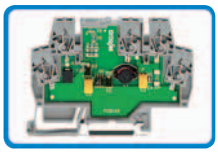

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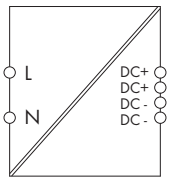
Switched-Mode Power Supply

***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 / 2A	**787-1001**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	< 100 VAC: Ia max. 1.5 A
Frequency	44 ... 66 Hz; 0 Hz
Input current Ii	0.6 A at 110 VAC / 0.4 A at 230 VAC
Discharge current	1mA 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 Vo nom	12 VDC (SELV)
Output voltage range	10.8 ... 18 VDC adjustable
Output current Io	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 mVpp at 20 MHz
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Va)
Efficiency / power losses:	
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)
Fuse protection:	
Internal fuse	2 AT
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

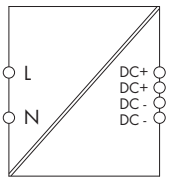
Technical Data

Environmental requirements:	
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +80 °C
Rel. humidity	30 % ... 85 % (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 mm² / 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	54 x 89 x 59 Length: 55 mm, from upper-edge of DIN 35 rail
Weight	180 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508, GL

Switched-Mode Power Supply

***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

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	< 100 VAC: Ia max. 3.5 A
Frequency	44 ... 66 Hz; 0 Hz
Input current Ii	0.9 A at 110 VAC / 0.5 A at 230 VAC
Discharge current	1mA 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 Vo nom	12 VDC (SELV)
Output voltage range	10.5 ... 15.5 VDC adjustable
Output current Io	4 A at 12 VDC
	max. 2.4 A in any mounting position
Factory preset	12 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mVpp at 20 MHz
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Va)
Efficiency / power losses:	
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)
Fuse protection:	
Internal fuse	2 AT
External fuse	Circuit breakers 10 A, 16 A, characteristic: B or C An external DC fuse is required for the DC input voltage

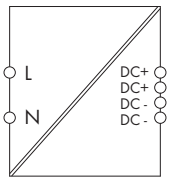
Technical Data

Environmental requirements:	
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +80 °C
Rel. humidity	30 % ... 85 % (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 mm² / 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

Switched-Mode Power Supply

***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 / 6.5A	**787-1021**	1

Technical Data

Input:	
Nominal input voltage Vi 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 Ii	1.6 A at 110 VAC / 0.9 A at 230 VAC
Discharge current	1mA 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 Vo nom	12 VDC (SELV)
Output voltage range	10.5 ... 15.5 VDC adjustable
Output current Io	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 mVpp at 20 MHz
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Va)
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	4 AT
External fuse	Circuit breakers 10 A, 16 A,
	characteristic: B or C
	An external DC fuse is required for the DC
	input voltage

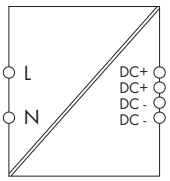
Technical Data

Environmental requirements:	
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (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 mm² / 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

Switched-Mode Power Supply

***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

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	< 100 VAC: Ia max. 1 A
Frequency	44 ... 66 Hz; 0H z
Input current Ii	0.7 A at 110 VAC / 0.5 A at 230 VAC
Discharge current	1mA 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 Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 26.4 VDC adjustable
Output current Io	1.3 A at 24 VDC
	max. 0.9 A in any mounting position
Factory preset	24 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mVpp at 20 MHz
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Va)
Efficiency / power losses:	
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)
Fuse protection:	
Internal fuse	2 AT
External fuse	Circuit breakers 10 A, 16 A,
	characteristic: B or C
	An external DC fuse is required for the DC
	input voltage

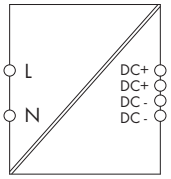
Technical Data

Environmental requirements:	
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +80 °C
Rel. humidity	30 % ... 85 % (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 mm² / 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	54 x 89 x 59
	Length: 55 mm, from upper-edge of DIN 35 rail
Weight	180 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3,
	UL 60950, UL 508, GL

Switched-Mode Power Supply

***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 / 2.5A	**787-1012**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 373 VDC
Input voltage derating	< 100 VAC: Ia max. 2.0 A
	< 90 VAC: Ia max. 1.8 A
Frequency	44 ... 66 Hz; 0 Hz
Input current Ii	1.4 A at 110 VAC / 0.6 A at 230 VAC
Discharge current	1mA 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 Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 26.4 VDC adjustable
Output current Io	2.5 A at 24 VDC
	max. 1.6 A in any mounting position
Factory preset	24 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mVpp at 20 MHz
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Va)
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	2 AT
External fuse	Circuit breakers 10 A, 16 A,
	characteristic: B or C
	An external DC fuse is required for the DC
	input voltage

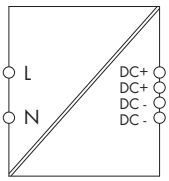
Technical Data

Environmental requirements:	
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +80 °C
Rel. humidity	30 % ... 85 % (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 mm² / 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

Switched-Mode Power Supply

***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 / 4A	**787-1022**	1

Technical Data

Input:	
Nominal input voltage Vi 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 Ii	1.6 A at 110 VAC / 0.9 A at 230 VAC
Discharge current	1mA 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 Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 26.4 VDC adjustable
Output current Io	4 A at 24 VDC
	max. 2.4 A in any mounting position
Factory preset	24 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mVpp at 20 MHz
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Va)
Efficiency / power losses:	
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)
Fuse protection:	
Internal fuse	4 AT
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

Environmental requirements:	
Ambient operating temperature	-25 °C ... +55 °C
Storage temperature	-25 °C ... +80 °C
Rel. humidity	30 % ... 85 % (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 mm² / 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	310 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3,
	UL 60950, UL 508, GL

Switched-Mode Power Supply

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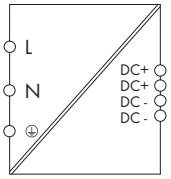

- Primary switch mode power supply unit
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, for DIN 35 rail	**787-712**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 130 ... 373 VDC (use of DC requires external protection)
Frequency	47 - 63 Hz
Input current Ii	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
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current Io	2.5 A at 24 V DC
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	< 100 mVpp to 20 MHz
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x Ia); 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	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)
Fuse protection:	
Internal fuse	F 2.5 A / 250 V
External fuse	C10 or B16 circuit breakers An external DC fuse is required for the DC input voltage

Technical Data

Environmental requirements:	
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)
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 ... 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	50 x 92 x 136 Height from upper-edge of DIN 35 rail
Weight	596 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* (* pending)

Switched-Mode Power Supply

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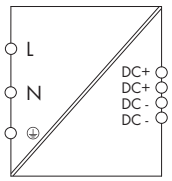

- Primary switch mode power supply unit
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, for DIN 35 rail	**787-722**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 130 ... 373 VDC (use of DC requires external protection)
Frequency	47 - 63 Hz
Input current Ii	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 Vo nom	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current Io	5 A at 24 V DC
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	< 100 mVpp to 20 MHz
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x Ia); 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	C10 or B16 circuit breakers An external DC fuse is required for the DC input voltage

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 Height from upper-edge of DIN 35 rail
Weight	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* (* pending)

Switched-Mode Power Supply

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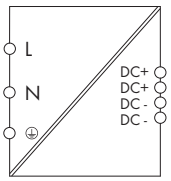


- Primary switch mode power supply unit
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Parallel operation, series connection possible
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, for DIN 35 rail	**787-732**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 130 ... 373 VDC (use of DC requires external protection)
Frequency	47 Hz ... 63 Hz
Input current Ii	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
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Output current Io	10 A at 24 V DC
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	< 100 mVpp to 20 MHz
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x Ia); 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	37.5 W (at 230 VAC and 10 ADC)
Max. power loss P_V	53 W (at 110 VAC and 11 ADC)
Fuse protection:	
Internal fuse	F 5 A / 250 V
External fuse	C10 or B16 circuit breakers An external DC fuse is required for the DC input voltage

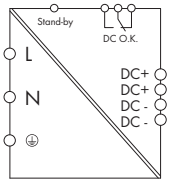
Technical Data

Environmental requirements:	
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)
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	110 x 92 x 136 Height from upper-edge of DIN 35 rail
Weight	1200 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* (* pending)

Switched-Mode Power Supply

***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

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC (use of DC requires external protection)
Input voltage derating	-5 % / V AC < 95 VAC
Frequency	50 Hz ... 60 Hz
Input current Ii	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
Output:	
Nominal output voltage Vo nom	12 VDC (SELV)
Output voltage range	11 ... 18 VDC adjustable
Output current Io	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-peak)
Current limitation	1.1 x Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)
Efficiency / power losses:	
Efficiency	83 % typ.
Power loss P_V	0.5 W (stand-by) / 3.0 W (no load) / 9.4 W (rated load)
Fuse protection:	
Internal fuse	2 AT
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

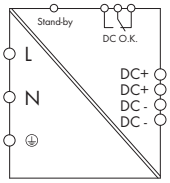
Technical Data

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 Signalising: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Signalising: 0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 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	40 x 163 x 163 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	800 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

Switched-Mode Power Supply

***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 / 10 A	**787-821**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
	(use of DC requires external protection)
Input voltage derating	-5 % / V AC < 95 VAC
Frequency	50 Hz ... 60 Hz
Input current Ii	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 Vo nom	12 VDC (SELV)
Output voltage range	11 ... 18 VDC adjustable
Output current Io	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-peak)
Current limitation	1.1 x Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), 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	4 AT
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

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
	Signalising: WAGO 733 Series
Cross sections	Input/Output:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
	Signalising:
	0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 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	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

Switched-Mode Power Supply

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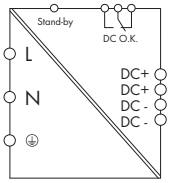


- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when 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

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC (use of DC requires external protection)
Input voltage derating	-1.5 % / V AC < 110 VAC
Frequency	50 Hz ... 60 Hz
Input current Ii	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
Output:	
Nominal output voltage Vo nom	12 VDC (SELV)
Output voltage range	11 ... 18 VDC adjustable
Output current Io	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 Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), LED red (error)
Signaling	Relay contact DC O.K. (changeover contact)
Efficiency / power losses:	
Efficiency	87 % typ.
Power loss P_v	0.8 W (stand-by) / 4.6 W (no load) / 23.4 W (rated load)
Fuse protection:	
Internal fuse	6.3 AT
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

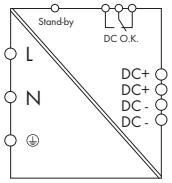
Technical Data

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 Signalising: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Signalising: 0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 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	57 x 163 x 179 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	1480 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

Switched-Mode Power Supply

***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 / 3 A	**787-818**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC (use of DC requires external protection)
Input voltage derating	-5 % / V AC < 95 VAC
Frequency	50 Hz ... 60 Hz
Input current Ii	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 Vo nom	24 VDC (SELV)
Output voltage range	22 ... 29.5 VDC adjustable
Output current Io	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 Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), 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	2 AT
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

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 Signalising: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Signalising: 0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 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	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

Switched-Mode Power Supply

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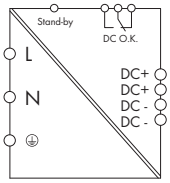

- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when 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, 24 V DC / 5 A	**787-822**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC
	(use of DC requires external protection)
Frequency	44 Hz ... 66 Hz
Input current Ii	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
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22... 29.5 VDC adjustable
Output current Io	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	< 70mVpp
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Vo), 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	4 AT
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC
	input voltage
	Transient overvoltage protection: Varistor

Technical Data

Environmental requirements:	
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)
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
	Signalising: WAGO 733 Series
Cross sections	Input/Output:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
	Signalising:
	0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 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	57 x 163 x 163
	Height from upper-edge of DIN 35 rail
Weight	1268 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950,
	UL 508

Switched-Mode Power Supply

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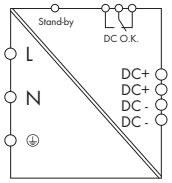


- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when 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, 24 V DC / 10 A	**787-832**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC (use of DC requires external protection)
Frequency	44 Hz ... 66 Hz
Input current Ii	1.2 A at 230 VAC and 10 ADC
Discharge current	1mA typ.
Inrush current	≤ Ie (active inrush current limitation)
Mains failure hold-up time	24 ms typ. at 230 VAC
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22... 29.5 VDC adjustable
Output current Io	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	< 70mVpp
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Vo), 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	6.3 AT
External fuse	C10 or B16 circuit breakers An external DC fuse is required for the DC input voltage Transient overvoltage protection: Varistor

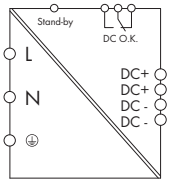
Technical Data

Environmental requirements:	
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)
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 Signalising: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Signalising: 0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 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	57 x 163 x 179 Height from upper-edge of DIN 35 rail
Weight	1485 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

Switched-Mode Power Supply

***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

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC (use of DC requires external protection)
Input voltage derating	-1.5 % / V AC < 110 VAC
Frequency	50 Hz ... 60 Hz
Input current Ii	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
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22 ... 29.5 VDC adjustable
Output current Io	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 Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), 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) / 4.8 W (no load) / 50.2 W (rated load)
Fuse protection:	
Internal fuse	10 AT
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

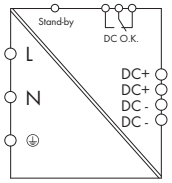
Technical Data

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
	Signalising: WAGO 733 Series
Cross sections	Input:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
	Output:
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Signalising:
	0.08 mm² ... 0.5 mm² / 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	97 x 171 x 187
	(incl. female connector)
	Length from upper-edge of DIN 35 rail
Weight	2300 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

Switched-Mode Power Supply

***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, 48 V DC / 5 A	**787-833**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC (use of DC requires external protection)
Input voltage derating	-1.5 % / V AC < 110 VAC
Frequency	50 Hz ... 60 Hz
Input current Ii	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 Vo nom	48 VDC (SELV)
Output voltage range	33 ... 52 VDC adjustable
Output current Io	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 Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), 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	6.3 AT
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

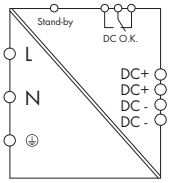
Technical Data

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 Signalising: WAGO 733 Series
Cross sections	Input/Output: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Signalising: 0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 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	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

Switched-Mode Power Supply

***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, 48 V DC / 10 A	**787-835**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 350 VDC (use of DC requires external protection)
Input voltage derating	-1.5 % / V AC < 110 VAC
Frequency	50 Hz ... 60 Hz
Input current Ii	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
Output:	
Nominal output voltage Vo nom	48 VDC (SELV)
Output voltage range	33 ... 52 VDC adjustable
Output current Io	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 Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), 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) / 4.8 W (no load) / 43.2 W (rated load)
Fuse protection:	
Internal fuse	10 AT
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

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: WAGO 231 Series
	Output: WAGO 831 Series
	Signalising: WAGO 733 Series
Cross sections	Input:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
	Output:
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Signalising:
	0.08 mm² ... 0.5 mm² / 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	97 x 171 x 187
	(incl. female connector)
	Length from upper-edge of DIN 35 rail
Weight	2460 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

Switched-Mode Power Supply

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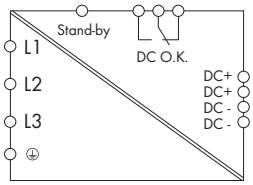

- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when 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, 24 V DC / 10 A	**787-840**	1

Technical Data

Input:	
Nominal input voltage Vi nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
	(use of DC requires external protection)
Frequency	50 - 60 Hz
Input current Ii	3 x 0.6 A at 340 VAC and 10 ADC
Discharge current	1mA typ.
Inrush current	< 30 A
Mains failure hold-up time	22 ms typ. at 3 x 400 VAC
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current Io	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	< 70mVpp
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Vo), 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 1.6 AT
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

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 mm² / 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
	Height from upper-edge of DIN 35 rail
Weight	1000 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3,
	UL 60950, UL 508

Switched-Mode Power Supply

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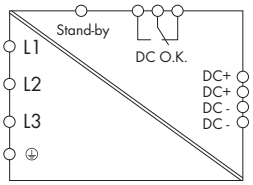


- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when 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, 24 V DC / 20 A	**787-842**	1

Technical Data

Input:	
Nominal input voltage Vi nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
	(use of DC requires external protection)
Frequency	50 - 60 Hz
Input current Ii	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 Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current Io	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	< 70mVpp
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Vo), LED red (error)
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 2.5 AT
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

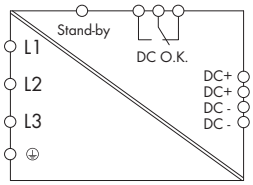
Technical Data

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
Cross sections	Input:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
	Output:
	0.5 mm² ... 10 mm² / 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	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

Switched-Mode Power Supply

***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 / 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

Input:	
Nominal input voltage Vi nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
	(use of DC requires external protection)
Frequency	50 - 60 Hz
Input current Ii	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 Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current Io	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	< 70mVpp
Current limitation	1.1 x Io typ.
Overload behavior	Constant current
Operational indication	LED green (Vo), 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 3.2 AT
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

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 mm² ... 2.5 mm² / AWG 28 ... 12
	Output:
	0.5 mm² ... 10 mm² / 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
	Height from upper-edge of DIN 35 rail
Weight	2500 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3,
	UL 60950, UL 508

Switched-Mode Power Supply

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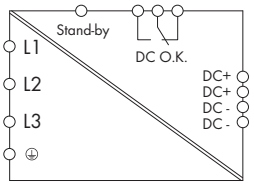


- Primary switch mode power supply unit with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when 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

Input:	
Nominal input voltage Vi nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	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
Output:	
Nominal output voltage Vo nom	48 VDC (SELV)
Output voltage range	39 ... 53 VDC adjustable
Output current Io	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-peak)
Current limitation	1.1 x Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), LED red (error)
Efficiency / power losses:	
Efficiency	93 % typ.
Power loss P_v	0.8 W (stand-by) / 8.2 W (no load) / 38 W (rated load)
Fuse protection:	
Internal fuse	3 x 3.2 AT
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

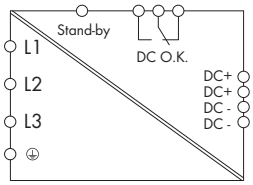
Technical Data

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: WAGO 231 Series Output: WAGO 831 Series Signalising: WAGO 733 Series
Cross sections	Input: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Output: 0.5 mm² ... 10 mm² / AWG 20 ... 8 Signalising: 0.08 mm² ... 0.5 mm² / 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	77 x 171 x 179 (incl. female connector) Length from upper-edge of DIN 35 rail
Weight	1900 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

Switched-Mode Power Supply

***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, 48 V DC / 20 A	**787-847**	1

Technical Data

Input:	
Nominal input voltage Vi nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	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 Vo nom	48 VDC (SELV)
Output voltage range	39 ... 53 VDC adjustable
Output current Io	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 Io typ.
Overload behavior	TopBoost / PowerBoost /Constant current
Operational indication	LED green (Vo), 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 3.2 AT
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

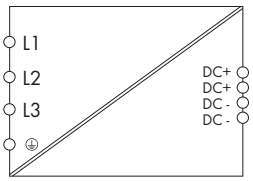
Technical Data

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 mm² ... 2.5 mm² / AWG 28 ... 12 Output: 0.5 mm² ... 10 mm² / AWG 20 ... 8 Signalising: 0.08 mm² ... 0.5 mm² / 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

Switched-Mode Power Supply

***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

Input:	
Nominal input voltage Vi nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC (use of DC requires external protection)
Frequency	50 - 60 Hz
Input current Ii	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 Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current Io	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	< 70mVpp
Current limitation	1.1 x Io typ.
Overload behavior	adjustable (constant current / fuse mode)
Operational indication	LED green (Vo), 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	91.7 % typ.
Power loss P_V	7.8 W (stand-by) / 19.9 W (rated load)
Fuse protection:	
Internal fuse	3 x 1.6 AT
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

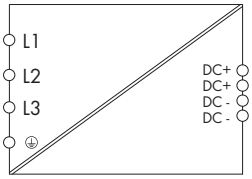
Technical Data

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
	Signalising: WAGO 733 Series
Cross sections	Input/Output:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
	Signalising:
	0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 8 ... 9 mm / 0.33 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	57 x 163 x 179
	Height from upper-edge of DIN 35 rail
Weight	1000 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3,
	UL 60950, UL 508

Switched-Mode Power Supply

***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 / 20 A	**787-852**	1

Technical Data

Input:	
Nominal input voltage Vi nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC (use of DC requires external protection)
Frequency	50 - 60 Hz
Input current Ii	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 Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current Io	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	< 70mVpp
Current limitation	1.1 x Io typ.
Overload behavior	adjustable (constant current / fuse mode)
Operational indication	LED green (Vo), 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 2.5 AT
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

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 Signalising: WAGO 733 Series
Cross sections	Input: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Output: 0.5 mm² ... 10 mm² / AWG 20 ... 8 Signalising: 0.08 mm² ... 0.5 mm² / 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	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

Switched-Mode Power Supply

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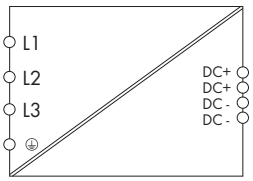

- Primary switch mode power supply unit with PowerBoost and TopBoost
- LineMonitor for parameter setting and monitoring
- RS-232 serial interface
- 4 signal outputs
- Parallel operation, series connection possible
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- 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

Input:	
Nominal input voltage Vi nom	3x (2x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC (use of DC requires external protection)
Frequency	50 - 60 Hz
Input current Ii	2.0 A at 340 VAC
Discharge current	1mA typ.
Inrush current	< 30 A
Mains failure hold-up time	15 ms typ. at 3 x 400 VAC
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current Io	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	< 70mVpp
Current limitation	1.1 x Io typ.
Overload behavior	adjustable (constant current / fuse mode)
Operational indication	LED green (Vo), 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	93.6 % typ.
Power loss P_v	7.0 W (stand-by) / 61.5 W (rated load)
Fuse protection:	
Internal fuse	3 x 3.2 AT
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

Technical Data

Environmental requirements:	
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)
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 Signalising: WAGO 733 Series
Cross sections	Input: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Output: 0.5 mm² ... 10 mm² / AWG 20 ... 8 Signalising: 0.08 mm² ... 0.5 mm² / 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 Height from upper-edge of DIN 35 rail
Weight	2300 g
Standards and approvals:	
Standards/Specifications	EN 60950, EN 61204-3, UL 60950, UL 508

Switched-Mode Power Supply

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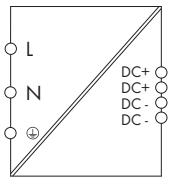

- Primary switch mode power supply unit
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 12 V DC / 2 A	**787-601**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC; 140 ... 300 VDC
Input voltage range	90 ... 264 VAC; 130 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	0.3 A typ. at 230 VAC
Discharge current	900 µA typ.
Inrush current	< 25 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	12 VDC (SELV)
Output voltage range	11 ... 15 VDC adjustable
Output current Io	2 A at 12 VDC
Factory preset	12 VDC
Adjustment accuracy	3 %
Residual ripple	< 100 mVpp to 20 MHz
Current limitation	from approx. 1.5 x Io
Overload behavior	Hiccup
Operational indication	LED green (12 V o.k.)
Efficiency / power losses:	
Efficiency	80 % typ.
Power loss P_V	4.8 W typ. (230 VAC / 12 VDC, 2 A)
Max. power loss P_V	5.7 W typ. (90 VAC / 12 VDC 2 A)
Fuse protection:	
Internal fuse	2 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

Technical Data

Environmental requirements:	
Ambient operating temperature	-10°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	max. 24 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes ("hiccup")
No-load proof	yes
Feedback voltage	max. 20 VDC
Parallel operation	no
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	40 x 95 x 90
	Height from upper-edge of DIN 35 rail
Weight	300 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, GL

Switched-Mode Power Supply

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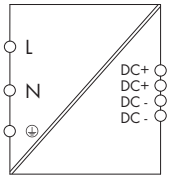

- Primary switch mode power supply unit
- Prepared for class I equipment
- Parallel operation, series connection possible
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 12 V DC / 4 A	**787-611**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC; 140 ... 300 VDC
Input voltage range	90 ... 264 VAC; 130 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	0.5 A typ. at 230 VAC
Discharge current	700 µA typ.
Inrush current	< 30 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	12 VDC (SELV)
Output voltage range	11 ... 15 VDC adjustable
Output current Io	4 A at 12 VDC
Factory preset	12 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mVpp to 20 MHz
Current limitation	from approx. 1.1 x Io
Overload behavior	Constant current
Operational indication	LED green (12 V o.k.)
Efficiency / power losses:	
Efficiency	85 % typ.
Power loss P_v	7.6 W typ. (230 VAC / 12 VDC, 4 A)
Max. power loss P_v	8.4 W typ. (90 VAC / 12 VDC 4 A)
Fuse protection:	
Internal fuse	4 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

Technical Data

Environmental requirements:	
Ambient operating temperature	-10°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	max. 40 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 20 VDC
Parallel operation	yes
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	51 x 133 x 120
	Height from upper-edge of DIN 35 rail
Weight	760 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, GL

Switched-Mode Power Supply

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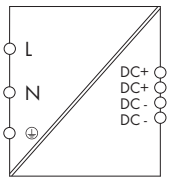

- Primary switch mode power supply unit
- Prepared for class I equipment
- Parallel operation, series connection possible
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 12 V DC / 8 A	**787-621**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC; 140 ... 300 VDC
Input voltage range	90 ... 264 VAC; 130 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	0.8 A typ. at 230 VAC
Discharge current	550 µA typ.
Inrush current	< 50 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	12 VDC (SELV)
Output voltage range	11 ... 15 VDC adjustable
Output current Io	8 A at 12 VDC
Factory preset	12 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mVpp to 20 MHz
Current limitation	from approx. 1.1 x Io
Overload behavior	Constant current
Operational indication	LED green (12 V o.k.)
Efficiency / power losses:	
Efficiency	87 % typ.
Power loss P_V	12 W typ. (230 VAC / 12 VDC, 8 A)
Max. power loss P_V	17 W typ. (90 VAC / 12 VDC 8 A)
Fuse protection:	
Internal fuse	4 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

Technical Data

Environmental requirements:	
Ambient operating temperature	-10°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	max. 24 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 20 VDC
Parallel operation	yes
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	67 x 133 x 120
	Height from upper-edge of DIN 35 rail
Weight	952 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, GL

Switched-Mode Power Supply

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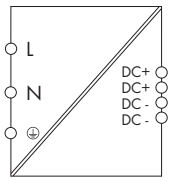

- Primary switch mode power supply unit
- Prepared for class I equipment
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 1.3 A	**787-602**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC; 140 ... 300 VDC
Input voltage range	90 ... 264 VAC; 130 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	0.3 A typ. at 230 VAC
Discharge current	900 µA typ.
Inrush current	< 25 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22 ... 28.8 VDC adjustable
Output current Io	1.3 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	3 %
Residual ripple	< 100 mVpp to 20 MHz
Current limitation	from approx. 1.5 x Io
Overload behavior	Hiccup
Operational indication	LED green (24 V o.k.)
Efficiency / power losses:	
Efficiency	83 % typ.
Power loss P_v	4.9 W typ. (230 VAC / 24 VDC, 1.3 A)
Max. power loss P_v	7 W typ. (90 VAC / 24 VDC 1.3 A)
Fuse protection:	
Internal fuse	2 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

Technical Data

Environmental requirements:	
Ambient operating temperature	-10°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	max. 40 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes ("hiccup")
No-load proof	yes
Feedback voltage	max. 30 VDC
Parallel operation	no
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	40 x 95 x 90
	Height from upper-edge of DIN 35 rail
Weight	300 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, UL 60950, UL 508, GL

Switched-Mode Power Supply

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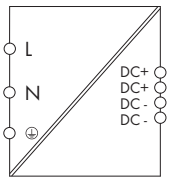

- Primary switch mode power supply unit
- Prepared for class I equipment
- Parallel operation, series connection possible
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 2.5 A	**787-612**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC; 140 ... 300 VDC
Input voltage range	90 ... 264 VAC; 130 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	0.6 A typ. at 230 VAC
Discharge current	700 µA typ.
Inrush current	< 50 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22 ... 28.8 VDC adjustable
Output current Io	2.5 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mVpp to 20 MHz
Current limitation	from approx. 1.1 x Io
Overload behavior	Constant current
Operational indication	LED green (24 V o.k.)
Efficiency / power losses:	
Efficiency	90 % typ.
Power loss P_V	7 W typ. (230 VAC / 24 VDC, 2.5 A)
Max. power loss P_V	8 W typ. (90 VAC / 24 VDC 2.5 A)
Fuse protection:	
Internal fuse	1.6 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

Technical Data

Environmental requirements:	
Ambient operating temperature	-10°C ... +70°C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (>55 °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	max. 40 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 30 VDC
Parallel operation	yes
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	51 x 133 x 120
	Height from upper-edge of DIN 35 rail
Weight	612.7 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, UL 60950, UL 508, GL

Switched-Mode Power Supply

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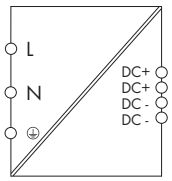

- Primary switch mode power supply unit
- Prepared for class I equipment
- Parallel operation, series connection possible
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, 24 V DC / 5 A	**787-622**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC; 140 ... 300 VDC
Input voltage range	90 ... 264 VAC; 130 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	0.85 A typ. at 230 VAC
Discharge current	550 µA typ.
Inrush current	< 30 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22 ... 28.8 VDC adjustable
Output current Io	5 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	2 %
Residual ripple	< 100 mVpp to 20 MHz
Current limitation	from approx. 1.1 x Io
Overload behavior	Constant current
Operational indication	LED green (24 V o.k.)
Efficiency / power losses:	
Efficiency	90 % typ.
Power loss P_V	10 W typ. (230 VAC / 24 VDC, 5 A)
Max. power loss P_V	13 W typ. (90 VAC / 24 VDC 5 A)
Fuse protection:	
Internal fuse	4 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

Technical Data

Environmental requirements:	
Ambient operating temperature	-10°C ... +70°C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (>55 °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	max. 40 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 30 VDC
Parallel operation	yes
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	67 x 133 x 120
	Height from upper-edge of DIN 35 rail
Weight	790 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, UL 60950, UL 508, GL

Switched-Mode Power Supply

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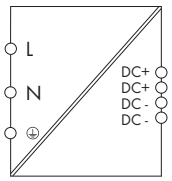


- Primary switch mode power supply unit
- Prepared for class I equipment
- Parallel operation, series connection possible
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Electrically isolated output voltage (SELV) acc. to EN 60950-1/UL 60950

Description	Item No.	Pack. Unit
Switched-Mode Power Supply,, 24 V DC / 10 A	**787-632**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 230 VAC; 100 ... 300 VDC
Input voltage range	85 ... 264 VAC; 90 ... 350 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	2 A typ. at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 60 Ap
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Output current Io	10 A at 24 VDC
Factory preset	24 VDC
Adjustment accuracy	3 %
Residual ripple	< 200 mVpp at 20 MHz
Current limitation	from 1.2 x Ia
Overload behavior	Constant current
Operational indication	LED green (24 V o.k.), LED red (overload)
Efficiency / power losses:	
Efficiency	88% typ.
Power loss P_V	26.9 W typ. (230 VAC / 24 VDC, 10 A)
Max. power loss P_V	32.6 W typ. (90 VAC / 24 VDC 10 A)
Fuse protection:	
Internal fuse	6.3 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

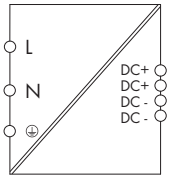
Technical Data

Environmental requirements:	
Ambient operating temperature	-10°C ... +70°C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (>50 °C); -2 % / K (Ve < 97 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.	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	max. 33 VDC
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 33 VDC
Parallel operation	yes
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	115 x 87 x 140
	Height from upper-edge of DIN 35 rail
Weight	950 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, UL 60950, UL 508, GL

Switched-Mode Power Supply

***EPSITRON*® CLASSIC Power**





- Primary switch mode power supply unit
- Prepared for class I equipment
- Parallel operation, series connection possible
- 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 / 1 A	**787-613**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC; 140 ... 300 VDC
Input voltage range	90 ... 264 VAC; 130 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	0.6 A typ. at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 50 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	48 VDC (SELV)
Output voltage range	42.3 ... 52.8 VDC adjustable
Output current Io	1 A at 48 VDC
Factory preset	48 VDC
Adjustment accuracy	2 %
Residual ripple	< 200 mVpp at 20 MHz
Current limitation	from 1.1 x Ia
Overload behavior	Constant current
Operational indication	LED green (48 V o.k.)
Efficiency / power losses:	
Efficiency	86 % typ.
Power loss P_v	7 W typ. (230 VAC / 48 VDC, 1 A)
Max. power loss P_v	7.8 W typ. (264 VAC / 48 VDC 1 A)
Fuse protection:	
Internal fuse	1.6 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

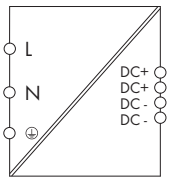
Technical Data

Environmental requirements:	
Ambient operating temperature	-10°C ... +70°C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (>60 °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	max. 65 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 56 VDC
Parallel operation	yes
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	56 x 140 x 110
	Height from upper-edge of DIN 35 rail
Weight	690 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, GL

Switched-Mode Power Supply

***EPSITRON*® CLASSIC Power**





- Primary switch mode power supply unit
- Prepared for class I equipment
- Parallel operation, series connection possible
- 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 / 2 A	**787-623**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC; 140 ... 300 VDC
Input voltage range	90 ... 264 VAC; 130 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	1.2 A typ. at 230 VAC
Discharge current	550 µA typ.
Inrush current	< 50 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	48 VDC (SELV)
Output voltage range	42 ... 52.8 VDC adjustable
Output current Io	2 A at 48 VDC
Factory preset	48 VDC
Adjustment accuracy	2 %
Residual ripple	< 200 mVpp at 20 MHz
Current limitation	from 1.1 x Ia
Overload behavior	Constant current
Operational indication	LED green (48 V o.k.)
Efficiency / power losses:	
Efficiency	90% typ.
Power loss P_V	8.8 W typ. (230 VAC / 48 VDC, 2 A)
Max. power loss P_V	11.4 W typ. (90 VAC / 48 VDC 2 A)
Fuse protection:	
Internal fuse	4 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

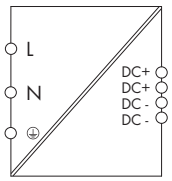
Technical Data

Environmental requirements:	
Ambient operating temperature	-10°C ... +70°C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (>55 °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	max. 65 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 56 VDC
Parallel operation	yes
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.1 ... 2.5 mm² / AWG 28 ... 12
	0.5 ... 10 mm² / AWG 20 ... 8
	(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	67 x 133 x 120
	Height from upper-edge of DIN 35 rail
Weight	800 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, GL

Switched-Mode Power Supply

***EPSITRON*® CLASSIC Power**





- Primary switch mode power supply unit
- Prepared for class I equipment
- Parallel operation, series connection possible
- 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 / 5 A	**787-633**	1

Technical Data

Input:	
Nominal input voltage Vi nom	110 ... 240 VAC; 140 ... 300 VDC
Input voltage range	85 ... 264 VAC; 90 ... 350 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	2.8 A typ. at 230 VAC
Discharge current	1 mA typ.
Inrush current	< 60 A
Mains failure hold-up time	> 20 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	48 VDC (SELV)
Output voltage range	43.2 ... 52.8 VDC adjustable
Output current Io	5 A at 48 VDC
Factory preset	48 VDC
Adjustment accuracy	3 %
Residual ripple	< 100 mVpp at 20 MHz
Current limitation	from 1.1 x Ia
Overload behavior	Constant current
Operational indication	LED green (48 V o.k.), LED red (overload)
Efficiency / power losses:	
Efficiency	89% typ.
Power loss P_v	25.9 W typ. (230 VAC / 48 VDC, 5 A)
Max. power loss P_v	31.2 W typ. (90 VAC / 48 VDC 5 A)
Fuse protection:	
Internal fuse	6.3 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

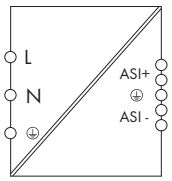
Technical Data

Environmental requirements:	
Ambient operating temperature	-10°C ... +70°C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (>50 °C); -2 % / K (Ve < 97 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.	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	max. 58 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 56 VDC
Parallel operation	yes
Series connection	yes
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	115 x 87 x 140
	Height from upper-edge of DIN 35 rail
Weight	940 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, GL

Switched-Mode Power Supply

***EPSITRON*® CLASSIC Power**





- Primary switch mode power supply unit
- Supplies AS-Interface fieldbus systems
- Minimum wire size acc. to AS-Interface specification: 1.5 mm²
- 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, for DIN 35 rail	**787-692**	1

Technical Data

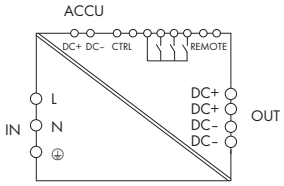
Input:	
Nominal input voltage Vi nom	110 ... 240 VAC; 140 ... 300 VDC
Input voltage range	(85) 97 ... 264 VAC / (120) 140 ... 300 VDC
Frequency	50 Hz ... 60 Hz
Input current Ii	1.4 A at 115 VAC / 0.8 A at 230 VAC
Discharge current	600 µA typ.
Inrush current	< 50 A
Mains failure hold-up time	> 50 ms at 230 VAC
Output:	
Nominal output voltage Vo nom	30.5 VDC (SELV)
Output voltage range	26 ... 33 VDC adjustable
Output current Io	3 A at 30.5 VDC
Factory preset	30.5 VDC
Adjustment accuracy	3 %
Residual ripple	< 300 mVpp (< 10 kHz) / < 50 mVpp (10 kHz ... 20 MHz)
Current limitation	from 1.1 x Ia
Overload behavior	Constant current
Operational indication	LED green (operating condition at Vo)
Efficiency / power losses:	
Efficiency	89 % typ.
Power loss P_V	9 W typ. (230 VAC / 30.5 VDC, 3 A)
Max. power loss P_V	14.2 W typ. (264 VAC / 30.5 VDC 3 A)
Fuse protection:	
Internal fuse	4 AT / 250 VAC
External fuse	C10 or B16 circuit breakers
	An external DC fuse is required for the DC input voltage
	Transient overvoltage protection: Varistor

Technical Data

Environmental requirements:	
Ambient operating temperature	-10°C ... +70°C
Storage temperature	-25 °C ... +85 °C
Rel. humidity	30 % ... 85 % (no condensation)
Derating	-3 % / K (>55 °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	max. 48 VDC (output)
Overload protection	via thermal protective circuit
Short circuit protection	yes
No-load proof	yes
Feedback voltage	max. 40 VDC
Parallel operation	no
Series connection	no
Connection and type of mounting:	
Wire connection	CAGE CLAMP® (WAGO 231 Series)
Cross sections	0.08 ... 2.5 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	51 x 133 x 120
	Height from upper-edge of DIN 35 rail
Weight	650 g
Standards and approvals:	
Standards/Specifications	EN 60950-1, EN 61204-3, EN 61204-7, UL 60950, UL 508, GL

Switched-Mode Power Supply with Integrated UPS Charger and Controller *EPSITRON®*





- 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

Description	Item No.	Pack. Unit
Switched-Mode Power Supply, with Integrated UPS Charger and Controller, 24VDC / 5A	**787-1675**	1

Technical Data

Input:	
Nominal input voltage Vi nom	100 ... 240 VAC; 110 ... 370 VDC
Input voltage range	85 ... 264 VAC
Frequency	45 ... 65 Hz; 0 Hz
Input current Ii	1,1 A at 230 VAC and 5 ADC
Discharge current	1 mA typ.
Inrush current	< 30 A
Output:	
Nominal output voltage Vo nom	24 VDC (SELV)
Output voltage range	23.0 ... 28.5 VDC (mains operation)
	18.5 ... 27.5 VDC (battery operation)
Output current Io	5 A
Adjustment accuracy	1 %
Residual ripple	< 100 mV (peak-peak)
Current limitation	1.1 x Io; 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
Efficiency / power losses:	
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	4 AT (input side)
External fuse	Circuit breakers 6 A, 10 A, 16 A, characteristic: B or C

Technical Data

Environmental requirements:	
Ambient operating temperature	-25 °C ... +70 °C
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 mm² ... 10 mm² / AWG 20 ... 10 Interface: 0.08 mm² ... 2.5 mm² / 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 61000-6-2, EN 61000-6-3 (* pending)

EPSITRON® - UPS Charger and Controller



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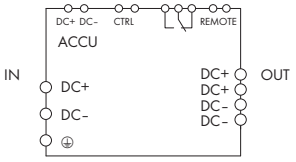

- Charger and controller for uninterruptible power supply (UPS)
- Current and voltage monitoring, as well as parameter setting via LCD and RS-232 interface
- Active signal outputs for watchdog functions
- Remote input for switching off buffered output
- Input for temperature control of connected battery
- 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

Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	22 V ... 29 V DC
Input current Ii	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
Output:	
Nominal output voltage Vo nom	24 V DC
Output voltage range	Vi - 0.5 V DC (below switch-on threshold); 20 V ... 25.5 V DC (during buffer operation)
Output current Io	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 (Vo), 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) / 20 W (rated load)
Fuse protection:	
Internal fuse	15AT

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 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)
Connection and type of mounting:	
Wire connection	Input/Output: WAGO 231 Series
Cross sections	Input/Output: 0.08 ... 2.5 mm² / 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
Dimensions and weight:	
Dimensions (mm) W x H x L	40 x 163 x 163
	Height from upper-edge of DIN 35 rail
Weight	800 g
Standards and approvals:	
Standards/Specifications	EN 60950, UL 60950, UL 508, EN 61000-6-2, EN 61000-6-3

EPSITRON®- UPS Charger and Controller



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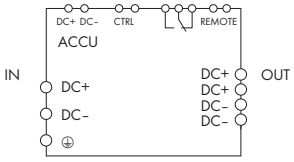

- Charger and controller for uninterruptible power supply (UPS)
- Current and voltage monitoring, as well as parameter setting via LCD and RS-232 interface
- Active signal outputs for watchdog functions
- Remote input for switching off buffered output
- Input for temperature control of connected battery
- 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 / 20 A	**787-875**	1

Technical Data

Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	22 V ... 29 V DC
Input current Ii	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 Vo nom	24 V DC
Output voltage range	Vi - 1 V DC (below switch-on threshold); 20 V ... 25.5 V DC (buffer mode)
Output current Io	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 (Vo), 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

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 Signalising: WAGO 733 Series
Cross sections	Input/Output: 0.5 mm² ... 10 mm² / AWG 20 ... 8 Signalising: 0.08 mm² ... 0.5 mm² / AWG 28 ... 20
Strip lengths	Input/Output: 13 ... 15 mm / 0.55 in Signalising: 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 Height from upper-edge of DIN 35 rail
Weight	1200 g
Standards and approvals:	
Standards/Specifications	EN 60950, UL 60950*, UL 508*, EN 61000-6-2, EN 61000-6-3 (* pending)

EPSITRON® - Lead-Acid (AGM) Battery Modules



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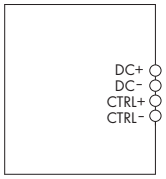

- Lead-acid Absorbed Glass Mat (AGM) battery module for uninterruptible power supply (UPS)
- Can be connected to both 787-870 UPS Charger and Controller and 787-1675 Power Supply with integrated UPS charger and controller
- Parallel operation provides higher buffer time *
- With built-in NTC K164 (4.7 kOhm) temperature sensor
- DIN 35 carrier rail mounting
- Battery control (from manufacturing no. 216570) detects both battery life and battery type

Description	Item No.	Pack. Unit
Lead-acid Absorbed Glass Mat (AGM) battery module	**787-876**	1

Technical Data

Input:	
Nominal input voltage Vi nom	24 V DC
Output:	
Nominal output voltage Vo nom	24 V DC
Output current Io	max. 7.5 A
Final load voltage	max. 27 V DC (at 25 °C)
Charging current	max. 0.3 A
Capacity	1.2 Ah
Fuse protection:	
Internal fuse	15 AT (Type FK 2)

* for parallel connection, please switch battery capacity setting to "OFF" in the UPS charger and controller.

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 mm² ... 2.5 mm² / AWG 28 ... 12
	Battery Control:
	0.08 mm² ... 2.5 mm² / 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)
Dimensions and weight:	
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
Standards and approvals:	
Standards/Specifications	Battery is tested to VdS

EPSITRON® - Lead-Acid (AGM) Battery Modules



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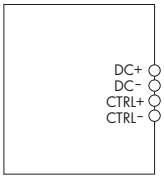

- Lead-acid Absorbed Glass Mat (AGM) battery module for uninterruptible power supply (UPS)
- Can be connected to 787-873 or 787-875 UPS Controller and power supply with integrated UPS charger and controller
- Parallel connection to increase the buffer time*
- Features built-in NTC K164 (4.7 kOhm) temperature sensor
- Battery control (from manufacturing no. 216654) detects both battery life and battery type

Description	Item No.	Pack. Unit
Lead-acid Absorbed Glass Mat (AGM) battery module	**787-871**	1

Technical Data

Input:	
Nominal input voltage Vi nom	24 V DC
Output:	
Nominal output voltage Vo nom	24 V DC
Output current Io	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.

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 mm² ... 2.5 mm² / AWG 28 ... 12
	Battery Control:
	0.08 mm² ... 2.5 mm² / 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

EPSITRON® - Lead-Acid (AGM) Battery Modules



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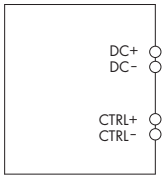

- Lead-acid Absorbed Glass Mat (AGM) battery module for uninterruptible power supply (UPS)
- Can be connected to 787-870 or 787-875 UPS Controller and power supply with integrated UPS charger and controller
- Parallel connection to increase the buffer time*
- Features built-in NTC K164 (4.7 kOhm) temperature sensor
- Battery control (from manufacturing no. 213987) detects both battery life and battery type

Description	Item No.	Pack. Unit
Lead-acid Absorbed Glass Mat (AGM) battery module	**787-872**	1

Technical Data

Input:	
Nominal input voltage Vi nom	24 V DC
Output:	
Nominal output voltage Vo nom	24 V DC
Output current Io	40 A
Final load voltage	max. 27 V DC (at 25 °C)
Charging current	max. 1.8 A
Capacity	7Ah
Fuse protection:	
Internal fuse	2 x 25 AT

* for parallel connection, please switch battery capacity setting to "OFF" in the UPS charger and controller.

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 mm² ... 2.5 mm² / AWG 28 ... 12
	Battery Control:
	0.08 mm² ... 2.5 mm² / 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	86 x 239 x 217.5
Weight	6500 g
Standards and approvals:	
Standards/Specifications	battery is tested to VdS

EPSITRON® - Lead-Acid (AGM) Battery Modules



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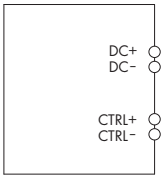


- Lead-acid Absorbed Glass Mat (AGM) battery module for uninterruptible power supply (UPS)
- Can be connected to 787-873 or 787-875 UPS Controller and power supply with integrated UPS charger and controller
- Parallel connection to increase the buffer time*
- Features built-in NTC K164 (4.7 kOhm) temperature sensor
- Battery control (from manufacturing no. 213412) detects both battery life and battery type

Description	Item No.	Pack. Unit
Lead-acid Absorbed Glass Mat (AGM) battery module	**787-873**	1

Technical Data

Input:	
Nominal input voltage Vi nom	24 V DC
Output:	
Nominal output voltage Vo nom	24 V DC
Output current Io	40 A
Final load voltage	max. 27 V DC (at 25 °C)
Charging current	max. 3A
Capacity	12 Ah
Fuse protection:	
Internal fuse	2 x 25 AT

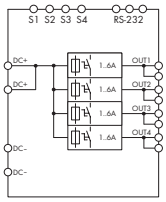
* for parallel connection, please switch battery capacity setting to "OFF" in the UPS charger and controller.

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 831 Series
	Battery Control: WAGO 231 Series
Cross sections	Input/Output:
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Battery Control:
	0.08 mm² ... 2.5 mm² / 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
Dimensions and weight:	
Dimensions (mm) W x H x L	120.5 x 239 x 217.5
Weight	10830 g
Standards and approvals:	
Standards/Specifications	Battery is tested to VdS

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

Description	Item No.	Pack. Unit
Electronic Circuit Breaker, 24 VDC / 4 x 6 A	**787-860**	1

Technical Data

Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	18 ... 30 V DC
Output:	
Nominal output voltage Vo 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	1000 µF per 1 A DC (max. 7000 µF)
Switch-on behavior	time-delayed channel switching (250 ms
	each)
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
LineMonitor, parameter setting	via LCD and RS-232 serial interface
Efficiency / power losses:	
Efficiency	96 % typ.
Power loss P_V	2 W (stand-by) / 5.5 W (rated load)
Fuse protection:	
Internal fuse	6.3 AT

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	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
Connection and type of mounting:	
Wire connection	Input: WAGO 831 Series
	Output: WAGO 231 Series
Cross sections	Input:
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Output:
	0.08 mm² ... 2.5 mm² / 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
Dimensions and weight:	
Dimensions (mm) W x H x L	40 x 171 x 163
	Height from upper-edge of DIN 35 rail
Weight	800 g
Standards and approvals:	
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2,
	EN 61000-6-3

Electronic Circuit Breaker
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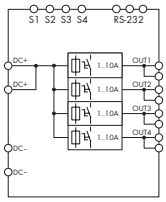

- Electronic circuit breaker with 4 channels, parametrizable
- Time-delayed switching of channels
- Floating switch contact
- Current and voltage monitoring via RS-232 interface and LCD
- Watchdog functions with active signal ports

Description	Item No.	Pack. Unit
Electronic Circuit Breaker, 24 VDC / 4 x 10 A	**787-862**	1

Technical Data

Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	18 ... 30 V DC
Output:	
Nominal output voltage Vo 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	1000 µF per 1 A DC (max. 7000 µF)
Switch-on behavior	time-delayed channel switching (250 ms each)
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
LineMonitor, parameter setting	via LCD and RS-232 serial interface
Efficiency / power losses:	
Efficiency	96 % typ.
Power loss P_V	2 W (stand-by) / 12 W (rated load)
Fuse protection:	
Internal fuse	15 AT

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	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
Connection and type of mounting:	
Wire connection	Input: WAGO 831 Series
	Output: WAGO 231 Series
Cross sections	Input:
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Output:
	0.08 mm² ... 2.5 mm² / 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
Dimensions and weight:	
Dimensions (mm) W x H x L	40 x 171 x 163
	Height from upper-edge of DIN 35 rail
Weight	800 g
Standards and approvals:	
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2,
	EN 61000-6-3

Electronic Circuit Breaker
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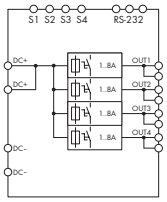


- Electronic circuit breaker with 4 channels, parametrizable
- Features active current limitation, reliably prevents voltage drops
- Time-delayed switching of channels
- Current and voltage monitoring via RS-232 interface and LCD
- Watchdog functions with active signal ports

Description	Item No.	Pack. Unit
Electronic Circuit Breaker, 24 VDC / 4 x 8 A	**787-861**	1

Technical Data

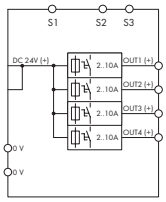
Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	18 ... 30 V DC
Output:	
Nominal output voltage Vo nom	4 x 24 V DC
Nominal current	4 x 1 ... 8 A DC
	(adjustable for each channel in 1 A steps)
Voltage drop	140 mV at 8 A
Trip time	100 ms (100 ms .. 1.5 s;
	adjustable, depending on nominal current)
Switch-on capacity	max. 20,000 µF
Switch-on behavior	time-delayed channel switching (250 ms
	each)
Trip current	1.1 x nominal current typ.
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
Efficiency / power losses:	
Efficiency	96 % typ.
Power loss P_V	2 W (stand-by) / 8.2 W (rated load)
Fuse protection:	
Internal fuse	15 AT

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	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
Connection and type of mounting:	
Wire connection	Input: WAGO 831 Series
	Output: WAGO 231 Series
Cross sections	Input:
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Output:
	0.08 mm² ... 2.5 mm² / 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
Dimensions and weight:	
Dimensions (mm) W x H x L	40 x 171 x 163
	Height from upper-edge of DIN 35 rail
Weight	800 g
Standards and approvals:	
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2,
	EN 61000-6-3

Electronic Circuit Breaker
EPSITRON®





- Compact 4-channel electronic circuit breaker
- 2–10 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50000 µF per channel
- One illuminated bi-color 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

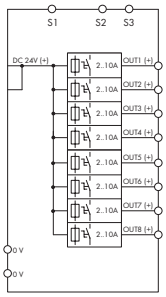
Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	18 ... 30 V DC
Output:	
Nominal output voltage Vo nom	4 x 24 V DC
Nominal current	max. 4 x 10 ADC
	(2, 3, 4, 6, 8, 10 A adjustable for each
	channel via selector switch)
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (20 ms – 100 s)
Switch-on capacity	> 50000 µF per channel
Switch-on behavior	Time-delayed channel switching
	(50 – 100 ms each)
Operational indication	Green LED (channel OK),
	Red LED (channel triggered)
Signaling	4 x LED (green/red)
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.
Efficiency / power losses:	
Efficiency	99 % typ.
Power loss P_v	1.3 W (stand-by) / 20 W (nominal load)
Fuse protection:	
Internal fuse	15 AT per channel

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)
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, Signalising:
	WAGO 721 Series
Cross sections	Input (+):
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Input (–), Output, Signalising:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in
	Input (–), Output, Signalising:
	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 (* pending)

Electronic Circuit Breaker
EPSITRON®





- Compact 8-channel electronic circuit breaker
- 2–10 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50000 µF per channel
- One illuminated bi-color button per channel simplifies switching (on/off), re-setting 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 / 8 x 10 A	**787-1668**	1

Technical Data

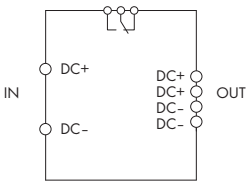
Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	18 ... 30 V DC
Output:	
Nominal output voltage Vo nom	8x 24 V DC
Nominal current	max. 8 x 10 ADC
	(2, 3, 4, 6, 8, 10 A adjustable for each
	channel via selector switch)
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (20 ms – 100 s)
Switch-on capacity	> 50000 µF per channel
Switch-on behavior	Time-delayed channel switching
	(50 – 100 ms each)
Operational indication	Green LED (channel OK),
	Red LED (channel triggered)
Signaling	8 x LED (green/red)
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.
Efficiency / power losses:	
Efficiency	99 % typ.
Power loss P_V	1.3 W (stand-by) / 20 W (nominal load)
Fuse protection:	
Internal fuse	15 AT per channel

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)
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, Signalising:
	WAGO 721 Series
Cross sections	Input (+):
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Input (–), Output, Signalising:
	0.08 mm² ... 2.5 mm² / AWG 28 ... 12
Strip lengths	Input (+): 13 ... 15 mm / 0.55 in
	Input (–), Output, Signalising:
	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 (* pending)

EPSITRON® - Capacitive Buffer Modules





- Capacitive buffer module bridges short duration voltage drops
- For uninterruptible power supply
- Potential-free contact for charge condition monitoring

Description	Item No.	Pack. Unit
Capacitive buffer modules, for DIN 35 rail	**787-880**	1

Technical Data

Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	20 V ... 30 V DC
Input current Ii	60 mA (no-load running); 1 A (charging); 11 A (max.)
Switch-on threshold (adjustable)	20 V ... 24 V DC
Output:	
Nominal output voltage Vo nom	24 V DC
Output voltage range	Vi - 0.5 V DC (below switch-on threshold); 20.4 V ... 24 V DC (during buffer operation)
Output current Io	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 (Va > 20 V), LED yellow (charging), LED red (Va < 20 V)
Signaling	1 x floating relay contact 30 V DC, 1 A
Efficiency / power losses:	
Power loss P_V	1.5 W open circuit 6.5 W nominal load

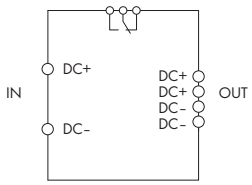
Technical Data

Environmental requirements:	
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)
Safety and protection:	
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
Connection and type of mounting:	
Wire connection	Input/Output: WAGO 231 Series Relay: WAGO 231 Series
Cross sections	Input/Output: 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 Relay: 0.08 mm² ... 2.5 mm² / 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
Dimensions and weight:	
Dimensions (mm) W x H x L	57 x 179 x 163 Height from upper-edge of DIN 35 rail
Weight	1000 g
Standards and approvals:	
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3

EPSITRON® - Capacitive Buffer Modules



Similiar to picture



- Capacitive buffer module bridges short duration voltage drops
- For uninterruptible power supply
- Potential-free contact for charge condition monitoring

Description	Item No.	Pack. Unit
Capacitive buffer modules, for DIN 35 rail	**787-881**	1

Technical Data

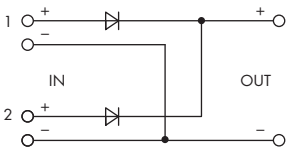
Input:	
Nominal input voltage Vi nom	24 V DC
Input voltage range	20 V ... 30 V DC
Input current Ii	60 mA (no-load running); 1 A (charging); 22 A (max.)
Switch-on threshold (adjustable)	20 V ... 24 V DC
Output:	
Nominal output voltage Vo nom	24 V DC
Output voltage range	Vi - 1 V DC (below switch-on threshold); 20.4 V ... 24 V DC (during buffer operation)
Output current Io	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 (Va > 20 V), LED yellow (charging), LED red (Va < 20 V)
Signaling	1 x floating relay contact 30 V DC, 1 A
Efficiency / power losses:	
Power loss P_v	1.5 W open circuit 15 W nominal load

Technical Data

Environmental requirements:	
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)
Safety and protection:	
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
Connection and type of mounting:	
Wire connection	Input/Output: WAGO 831 Series Relay: WAGO 231 Series
Cross sections	Input/Output: 0.5 mm² ... 10 mm² / AWG 20 ... 8 Relay: 0.08 mm² ... 2.5 mm² / 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
Dimensions and weight:	
Dimensions (mm) W x H x L	57 x 179 x 181 Height from upper-edge of DIN 35 rail
Weight	1000 g
Standards and approvals:	
Standards/Specifications	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3

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
Redundancy Module	**787-885**	1
24 VDC, 2 x 20 A / 1 x 40 A		

Technical Data

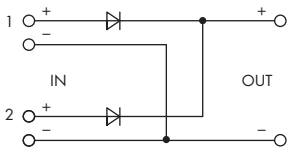
Input:	
Nominal input voltage Vi nom	2 x 24 V DC
Input voltage range	18 V ... 30 V DC
Input current Ii	2 x 20 A, max. 1 x 40 A
Output:	
Nominal output voltage Vo nom	24 V DC
Output voltage range	Ve - 1 V DC
Output current Io	20 A, max. 40 A
Operational indication	LED green (Vo), 2 x LED yellow (Vi)
Signaling	1 x floating relay contact 30 V DC, 1 A
Efficiency / power losses:	
Efficiency	97 % typ.
Power loss P_V	1.5 W open circuit
	14 W nominal load (20 A) /
	26 W nominal load (40 A)
Fuse protection:	
Internal fuse	no

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 (acc. to EN 60529)
Feedback voltage	max. 33 VDC
Parallel operation	yes
Connection and type of mounting:	
Wire connection	Input/Output: WAGO 831 Series
	Relay: WAGO 231 Series
Cross sections	Input/Output:
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Relay:
	0.08 mm² ... 2.5 mm² / 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
Dimensions and weight:	
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
Standards and approvals:	
Standards/Specifications	EN 60950, UL 60950, UL 508,
	EN 61000-6-2, EN 61000-6-3

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
Redundancy Module	**787-886**	1
48 VDC, 2 x 20 A / 1 x 40 A		

Technical Data

Input:	
Nominal input voltage Vi nom	2 x 48 V DC
Input voltage range	36 V ... 54 V DC
Input current Ii	2 x 20 A, max. 1 x 40 A
Output:	
Nominal output voltage Vo nom	48 V DC
Output voltage range	Ve - 1 V DC
Output current Io	20 A, max. 40 A
Operational indication	LED green (Vo), 2 x LED yellow (Vi)
Signaling	1 x floating relay contact 30 V DC, 1 A
Efficiency / power losses:	
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)
Fuse protection:	
Internal fuse	no

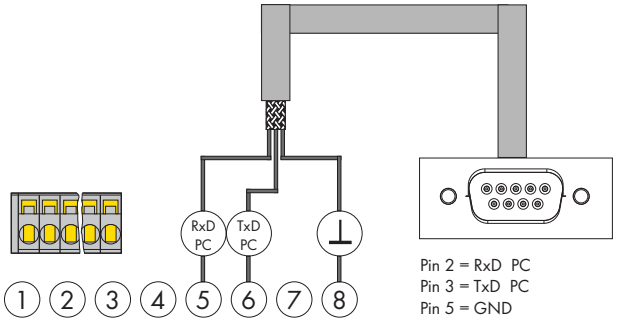
Technical Data

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 (acc. to EN 60529)
Feedback voltage	max. 60 VDC
Parallel operation	yes
Connection and type of mounting:	
Wire connection	Input/Output: WAGO 831 Series
	Relay: WAGO 231 Series
Cross sections	Input/Output:
	0.5 mm² ... 10 mm² / AWG 20 ... 8
	Relay:
	0.08 mm² ... 2.5 mm² / 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
Dimensions and weight:	
Dimensions (mm) W x H x L	40 x 181 x 163
	Length from upper-edge of DIN 35 rail
Weight	860 g
Standards and approvals:	
Standards/Specifications	EN 60950, UL 60950*, UL 508*,
	EN 61000-6-2, EN 61000-6-3
	(* pending)

EPSITRON - RS-232 Communication Cable



Similiar to picture



The 787-890 Communication Cable is used for configuration and visualization via PC or controller.
It is suitable for all 787-8xx Series devices equipped with an RS-232 serial interface.
PC software for 787 Series devices can be downloaded at: www.wago.com/epsitron
Function blocks for communication with WAGO-I/O-SYSTEM 750 are also available.

NOTE:
The 787-890 Communication Cable is not electrically isolated.

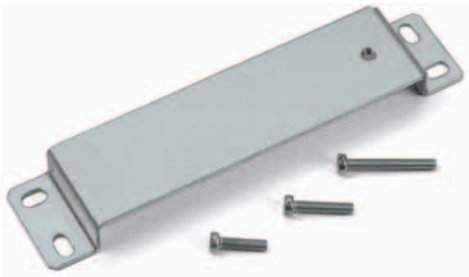
Description	Item No.	Pack. Unit
RS-232 communication cable	**787-890**	1

Technical Data	
Type of signal	RS-232
Ports	1 x 8-pole 734-108 Female Connector with strain relief (787-8xx Module side), 1x 9-pole SUB-D female connector (PC/controller side)
Isolation	No
Cross sections	3 x 0.34 mm² (AWG 22), shielded
Ambient operating temperature	-10°C ... +70°C
Degree of protection	IP20
Length	1.8 m

EPSITRON® Wall Mounting Adapter

	Wall mounting adapter, for screw fixing of 787-8xx devices on mounting plate or wall without DIN 35 rail.	





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	
Wall Mount Adapter	**787-895**	*5*	

Technical Data

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	

EPSITRON® Carrier Rail Adapter

**Carrier rail adapter
for mounting 787-8xx devices
to a DIN 35 rail**



Carrier rail adapter for mounting 787-8xx devices to a DIN 35 rail.
The 787-896 Carrier Rail Adapter allows both vertical and horizontal mounting of 787-8xx devices.
Mounting the adapter to the device is performed by sliding both single parts into the guide slots of the cooling element and then screwing, allowing the position to be changed easily.

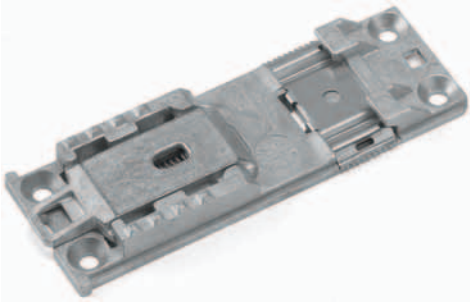
Description	Item No.	Pack. Unit
Carrier Rail Adapter	**787-896**	1

Technical Data

Material	Galvanized sheet metal
Dimensions (mm) W x H x L	35 x 136.5 x 15.5
Fixing	by sliding both single parts into the guide slot and then screwing
Included	Carrier rail adapter Assembly instructions

EPSITRON® Carrier Rail Adapter

	Carrier rail adapter made of zinc die-cast for mounting 787-8xx devices to a DIN 35 rail	



Carrier rail adapter made of zinc die-cast for mounting 787-8xx devices to a DIN 35 rail.
The 787-897 Carrier Rail Adapter allows horizontal mounting of 787-8xx devices.
Mounting the adapter to the device is performed by sliding both single parts into the guide slots of the cooling element and then screwing, allowing the position to be changed easily.

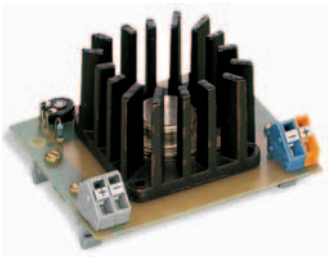
Description	Item No.	Pack. Unit	
Carrier Rail Adapter	**787-897**	1	

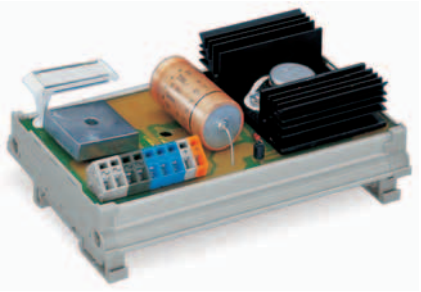
Technical Data

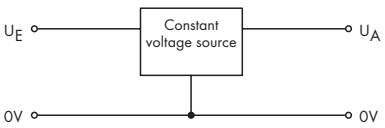
Material	Zinc die-cast	
Dimensions (mm) W x H x L	37 x 102.5 x 10.5	
Fixing	by pressing the adapter into the guide slot	
Included	Carrier rail adapter Assembly instructions	

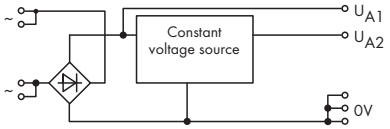
Rail-Mounted Modules - Constant Voltage Sources

	24 VDC; 3 A Input 27 ... 35 VDC Mounting feet for DIN 35 rail	24 VDC; 3 A Input 24 VAC +10 %, 50 ... 60 Hz Mounting carrier for DIN 35 rail







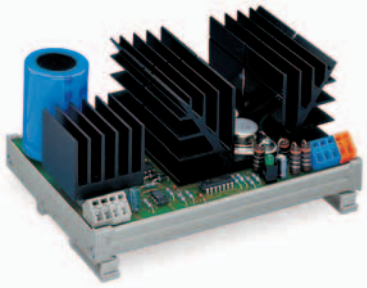


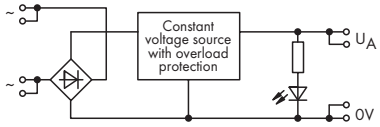
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Constant voltage source 24 VDC	**289-907**	1	**288-800**	1

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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (236 Series)	CAGE CLAMP® (236 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
Accessories		
WMB Multi marking system for mounting carrier		see page 408
Marker strips for mounting carrier		white 709-198 / translucent 709-196

	24 VDC; 5 A **Input 24 VAC +10 %** **Electronic overload protection** **Output voltage indication by LED** **Mounting carrier for DIN 35 rail**	





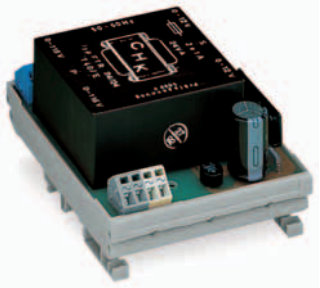
Description	Item No.	Pack. Unit	
Constant voltage source 24 VDC	**288-801**	1	

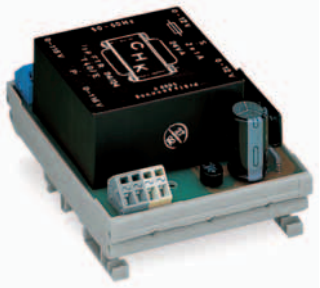
Technical Data

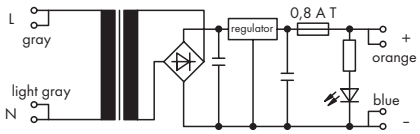
Input voltage	24 VAC +10%	
Output voltage	24 VDC (± 10 %)	
Nominal output current	5 A	
Overload protection	electronic	
Voltage returns after removal of overload	after 4 s	
Ambient operating temperature	0 °C ... +30 °C	
Weight	600.5 g	
Dimensions (mm) W x H x L	170 x 85 x 108	
	Height from upper-edge 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	
Accessories		
WMB Multi marking system for mounting carrier	see page 408	
Marker strips for mounting carrier	white 709-198 / translucent 709-196	

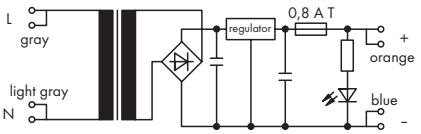
Rail-Mounted Modules - Power Supplies

	115 VAC / 24 VDC; 0.5 A Output voltage indication by LED Mounting carrier for DIN 35 rail	230 VAC / 24 VDC; 0.5 A Output voltage indication by LED Mounting carrier for DIN 35 rail







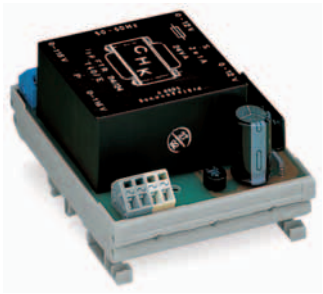


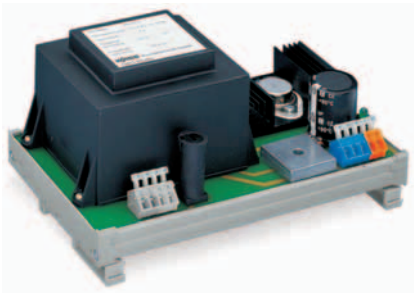
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Power supply, with universal mounting carrier	**288-809**	1	**288-810**	1

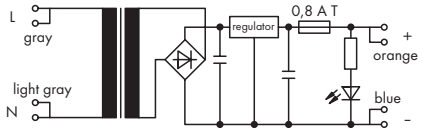
Technical Data

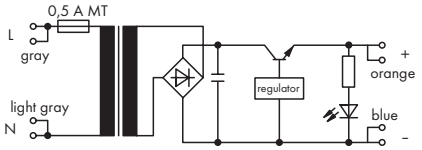
Nominal input voltage Vi nom	115 VAC	230 VAC
Input voltage range	± 10 %	± 10 %
Frequency	50 Hz ... 60 Hz	50 Hz ... 60 Hz
Power consumption at nominal load	30 VA	30 VA
Nominal output voltage Vo nom	24 VDC	24 VDC
Output voltage range	± 4 %	± 4 %
Output current Io	0.5 A	0.5 A
Residual ripple	≤ 10 mVss	≤ 10 mVss
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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (236 Series)	CAGE CLAMP® (236 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
Approvals	Transformer acc. to VDE 0551	Transformer acc. to VDE 0551
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / translucent 709-196	white 709-198 / translucent 709-196

	230 VAC / 12 VDC; 0.5 A Output voltage indication by LED Mounting carrier for DIN 35 rail	115 VAC / 24 VDC; 2 A Output voltage indication by LED Mounting carrier for DIN 35 rail









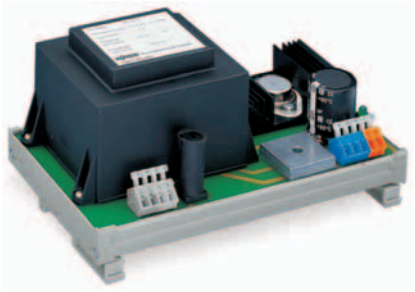
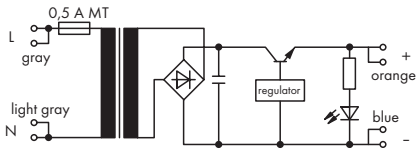
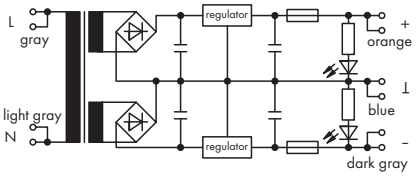
Description	Item No.	Pack. Unit	Item No.	Pack. Unit
Power supply, with universal mounting carrier	**288-808**	1	**288-813**	1

Technical Data

Nominal input voltage Vi nom	230 VAC	115 VAC
Input voltage range	± 10 %	± 10 %
Frequency	50 Hz ... 60 Hz	50 Hz ... 60 Hz
Power consumption at nominal load	23 VA	80 VA
Nominal output voltage Vo nom	12 VDC	24 VDC
Output voltage range	± 4 %	± 10 %
Output current Io	0.5 A	2 A
Residual ripple	≤ 10 mVss	≤ 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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (236 Series)	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
Approvals	Transformer acc. to VDE 0551	Transformer acc. to VDE 0551

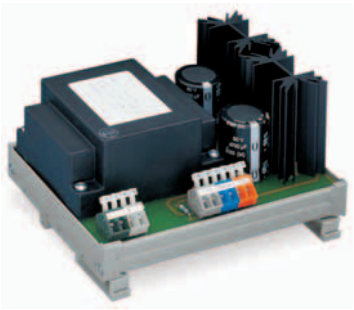
Accessories		
WMB Multi marking system for mounting carrier	see page 408	see page 408
Marker strips for mounting carrier	white 709-198 / translucent 709-196	white 709-198 / translucent 709-196

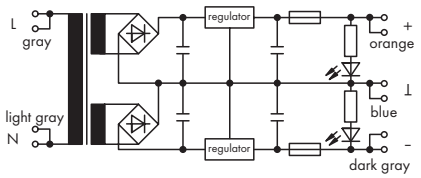
Rail-Mounted Modules - Power Supplies

	230 VAC / 24 VDC; 2 A Output voltage indication by LED Mounting carrier for DIN 35 rail	230 VAC / ± 12 VDC; 0.5 A 230 VAC / ± 15 VDC; 0.5 A Output voltage indication by LED Mounting carrier for DIN 35 rail
		
		

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 Vi 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 Vo nom	24 VDC		± 12 VDC (288-814)	
			± 15 VDC (288-815)	
Output voltage range	± 10 %		± 4 %	
Output current Io	2 A		2 x 0.5 A	
Residual ripple	≤ 80 mVss		≤ 10 mVss	
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 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	
Approvals	Transformer acc. to VDE 0551		Transformer acc. to VDE 0551	
Accessories				
WMB Multi marking system for mounting carrier	see page 408		see page 408	
Marker strips for mounting carrier	white 709-198 / translucent 709-196		white 709-198 / translucent 709-196	

	230 VAC / ± 15 VDC; **2 x 1 A short-circuit proof** **Output voltage indication by LED** **Mounting carrier for DIN 35 rail**	





Description	Item No.	Pack. Unit	
Power supply, with universal mounting carrier	**288-816**	1	

Technical Data

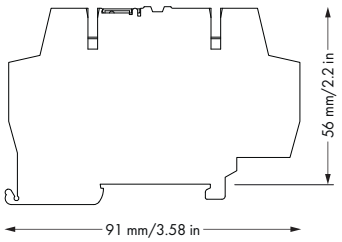
Nominal input voltage Vi nom	230 VAC	
Input voltage range	± 10 %	
Frequency	50 Hz ... 60 Hz	
Power consumption at nominal load	53 VA	
Nominal output voltage Vo nom	± 15 VDC	
Output voltage range	± 4 %	
Output current Io	2 x 1 A	
Residual ripple	≤ 10 mVss	
Short-circuit current	approx. 1.5 A	
Ambient operating temperature	0 °C ... +40 °C	
Weight	1011 g	
Dimensions (mm) W x H x L	138 x 87 x 106	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (256 Series)	
Cross sections	0.08 ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)	
Stripped lengths	5 ... 6 mm / 0.22 in	
Approvals	Transformer acc. to VDE 0551	

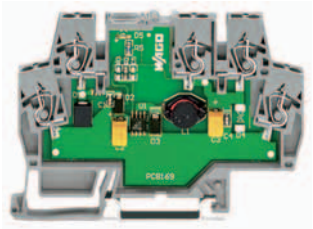
Accessories

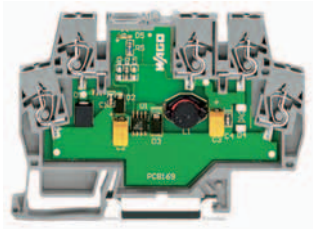
WMB Multi marking system for mounting carrier	see page 408	
Marker strips for mounting carrier	white 709-198 / translucent 709-196	

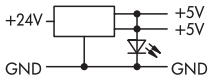
Rail-Mounted Terminal Blocks with DC/DC Converter

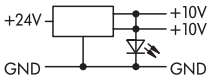
	DC/DC converter 24 V / 5 V, 0.5 ADCADC	DC/DC converter 24 V / 10 V, 0.5 ADC









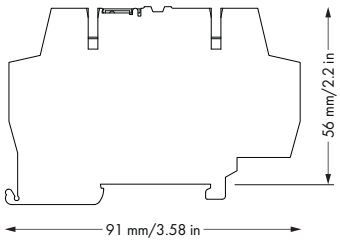


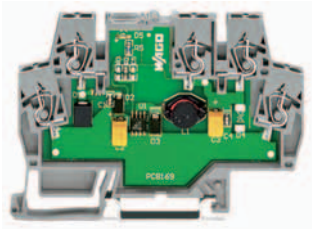
Description	V_N / V_O	Item No.	Pack. Unit	V_N / V_O	Item No.	Pack. Unit
DC/DC converter, for DIN 35 rail	24 VDC / 5 VDC ± 2 %	**859-801**	1	24 VDC / 10 VDC ± 2 %	**859-802**	1

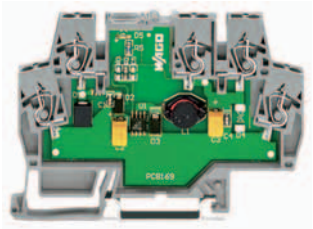
Technical Data

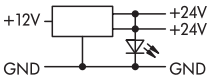
Nominal input voltage (V_N)	24 VDC	24 VDC
Input voltage range	10 ... 30 VDC	15 ... 30 VDC
Output voltage	5 VDC ± 2 %	10 VDC ± 2 %
Output current (max.)	500 mA	500 mA
Line regulation, max. (full load, over input voltage range)	2 %	0.5 %
Max. load regulation (no load to full load, nominal input	0.5 %	0.7 %
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	40 µs	500 µs
change from 25 % to 75% of full load)		
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	temporary (short-circuit of the output for 1 minute without
	damage to the device)	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
	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 ... 2.5 mm² / AWG 28 ... 14	0.08 ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in

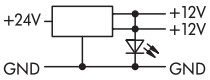
	DC/DC converter 12 V / 24 V, 250 mADC	DC/DC converter 24 V / 12 V, 0.5 ADC











Description	V_N / V_O	Item No.	Pack. Unit	V_N / V_O	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

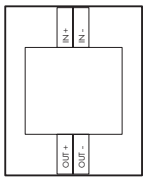
Technical Data

Nominal input voltage (V_N)	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
	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 … 2.5 mm² / AWG 28 … 14	0.08 … 2.5 mm² / AWG 28 … 14
Stripped lengths	5 … 6 mm / 0.22 in	5 … 6 mm / 0.22 in

Rail-Mounted Modules - DC/DC Converter

	24 V / 24 V; 0.21 ADC Mounting feet for DIN 35 rail	24 V / 18 V; 0.4 ADC Mounting carrier for DIN 35 rail

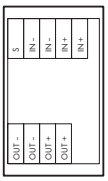
289-913

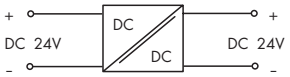


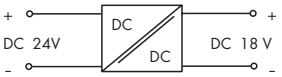




288-895







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
	Height from upper-edge of DIN 35 rail	Height from upper-edge of DIN 35 rail
Wire connection	CAGE CLAMP® (236 Series)	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 1-Immunity to interference		acc. to EN 50082-2 (1996) * * Only in conjunction with DALI/DSI Master Module 750-641
EMC 1-Emission of interference		acc. to EN 50081-1 (1993) * * Only in conjunction with DALI/DSI Master Module 750-641
Accessories		
WMB Multi marking system for mounting carrier		see page 408
Marker strips for mounting carrier		white 709-198 / translucent 709-196

Back-Up Capacitor Module

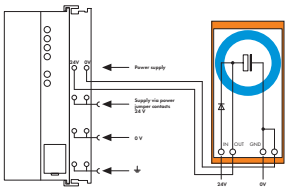
	Back-up capacitor module smoothes unstable 24 VDC power supplies Mounting carrier for DIN 35 rail	

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	
	Height from upper-edge of DIN 35 rail	
Wire connection	CAGE CLAMP® (236 Series)	
Cross sections	0.08 … 2.5 mm² / AWG 28 … 12	
Stripped lengths	5 … 6 mm / 0.22 in	

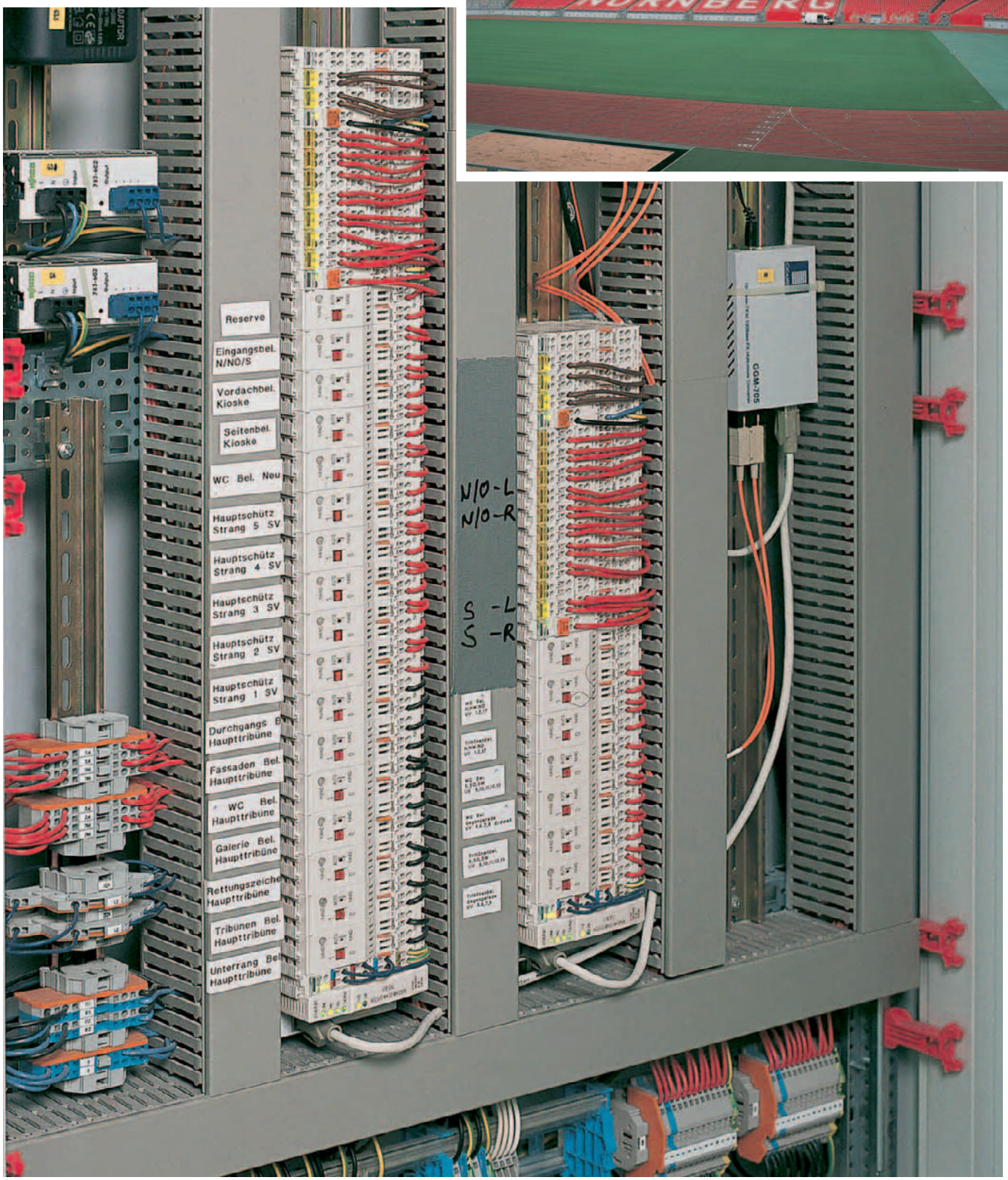
Accessories

WMB Multi marking system for mounting carrier	see page 408	
Marker strips for mounting carrier	white 709-198 / transparent 709-196	

WAGO Application: Lighting Control System, easyCredit Stadium in Nuremberg, Germany

WAGO Products:
WAGO-I/O-SYSTEM with ETHERNET Controllers,
Power Supplies Units and
Rail-Mounted Terminal Blocks





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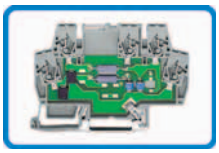


792 Series

Rail-Mounted Terminal Blocks with Overvoltage Protection 354 – 356
Accessories, 792 Series 357



280/870 Series

Rail-Mounted Terminal Blocks with Overvoltage Protection 358 – 361

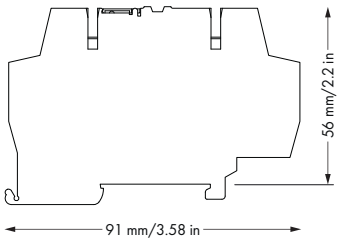


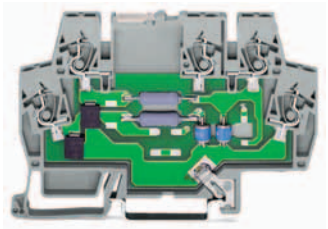
286 Series

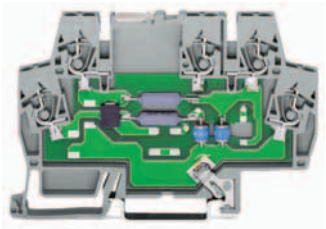
Pluggable Modules - Surge Suppression Devices 362 – 363
Pluggable Modules - Surge Suppression Devices 364 – 366

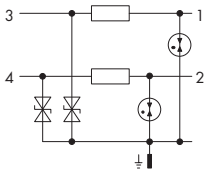
Rail-Mounted Terminal Blocks with Overvoltage Protection

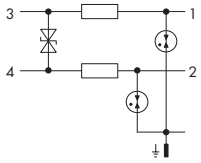
	Overvoltage protection for information technology systems ME24 24 V DC; for protection of 2 single lines (line/protected ground), unbalanced interfaces	Overvoltage protection for information technology systems MD24 24 V DC; for protection of balanced interfaces (line/line) with electrical isolation (telecommunications)









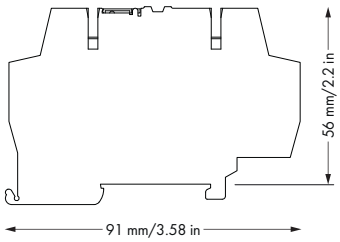


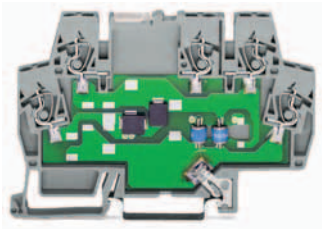
The coordination characteristics give information about the let-through energy of the overvoltage protector and the protection capacity.

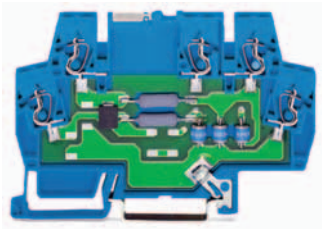
Description	Nominal Voltage	Item No.	Pack. Unit	Nominal Voltage	Item No.	Pack. Unit
Overvoltage protection in terminal block, for DIN 35 Rail	24 V DC	**792-800**	1	24 V DC	**792-801**	1

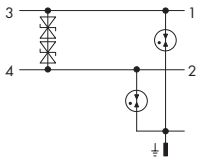
Technical Data	Accessories see page 357	Accessories see page 357
Nominal voltage	DC 24 V	DC 24 V
Max. cont. operating voltage	33 V DC / 23 V AC	33 V DC / 23 V AC
Nominal current	0.5 A	0.5 A
Nominal discharge current I_{SN} (8/20) µs	5 kA per line ; 10 kA total	5 kA per line ; 10 kA total
Voltage protection level at I_N category C2	≤ 65 V (line/protected ground); ≤ 110 V (line/line)	≤ 50 V (line/line); ≤ 750 V (line/protected ground)
Voltage protection level at 1 kV/µs category C3	≤ 45 V (line/protected ground); ≤ 90 V (line/line)	≤ 45 V (line/line); ≤ 650 V (line/protected ground)
Coordination characteristics	X / 1	X / 1
Series impedance R / line	1.8 Ω	1.8 Ω
Response time t_a	≤ 1 ns	≤ 100 ns (line/protected ground); ≤ 1 ns (line/line)
Limiting frequency	6 MHz line/protected ground	6 MHz line/protected ground
Capacitance C	≤ 1.0 nF (line/protected ground); ≤ 0.5 nF (line/line)	≤ 5 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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	IEC 61643-21	IEC 61643-21

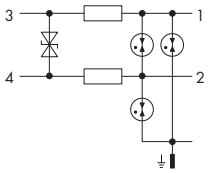
	Overvoltage protection for information technology systems SD24 24 V DC; for protection of supply lines (power supply units)	Overvoltage protection for information technology systems MDEX24 24 V DC; for protection in intrinsically safe circuits











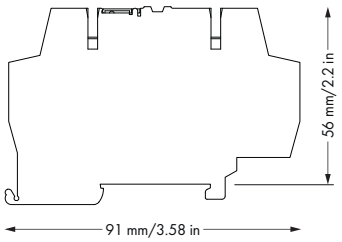
The coordination characteristics give information about the let-through energy of the overvoltage protector and the protection capacity.

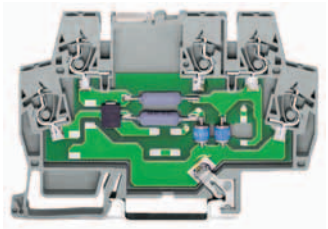
Description	Nominal Voltage	Item No.	Pack. Unit	Nominal Voltage	Item No.	Pack. Unit
Overvoltage protection in terminal block, for DIN 35 Rail	24 V DC	**792-802**	1	24 V DC	**792-803**	1

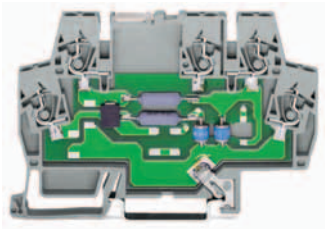
Technical Data	Accessories see page 357	Accessories see page 357
Nominal voltage	DC 24 V	DC 24 V
Max. cont. operating voltage	33 V DC / 23 V AC	33 V DC / 23 V AC
Max. Input voltage acc. to EN 50020 U_i		30 V
Max. input current acc. to EN 50020 I_i		0.5 A
Nominal current	10 A	0.5 A
Nominal discharge current I_{SN} (8/20) µs	5 kA (line/protected ground); 300 A (line/line)	5 kA per line ; 10 kA total
Voltage protection level at I_N 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_a	≤ 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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	IEC 61643-21	IEC 61643-21

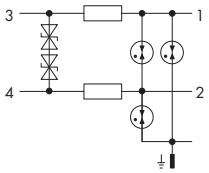
Rail-Mounted Terminal Blocks with Overvoltage Protection

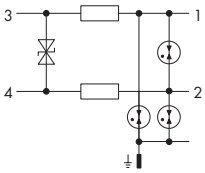
	Overvoltage protection for information technology systems MD48LON 48 24 V DC; for protection of LON networks (FTT 10 or LPT 10)	Overvoltage protection for MDHF5 5 VDC information technology systems; protects symmetric and asymmetric interfaces with high data rates, PROFIBUS or RS-485











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
Overvoltage protection in terminal block, for DIN 35 Rail	48 V DC	**792-804**	1	5 V DC	**792-805**	1

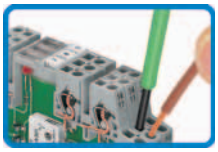
Technical Data	Accessories see page 357	Accessories see page 357
Nominal voltage	DC 48 V	DC 5 V
Max. cont. operating voltage	55 V DC / 38.5 V AC	6 V DC / 4.2 V AC
Nominal current	1.7 A	0.1 A
Nominal discharge current I_{SN} (8/20) µs	5 kA per line ; 10 kA total	5 kA per line ; 10 kA total
Voltage protection level at I_N category C2	≤ 100 V (line/line); ≤ 750 V (line/protected ground)	≤ 27 V (line/line); ≤ 50 V (line/protected ground)
Voltage protection level at 1 kV/µs category C3	≤ 70 V (line/line); ≤ 650 V (line/protected ground)	≤ 14 V (line/line); ≤ 14 V (line/protected ground)
Coordination characteristics	X / 1	X / 1
Series impedance R / line	0.4 Ω	1 Ω
Response time t_a	≤ 100 ns (line/lineound); ≤ 1 ns (line/protected ground)	≤ 1 ns
Limiting frequency	10 MHz	250 MHz / 180 MHz line/protected ground
Capacitance C	≤ 0.6 pF (line/protected ground); ≤ 10 pF (line/line)	≤ 16 pF (line/protected ground); ≤ 19 pF (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
	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 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Approvals	IEC 61643-21	IEC 61131-3

Accessories, 792 Series

Operating tool



Wire connection



Marking pen with fibre tip



Test pin



End and intermediate plate

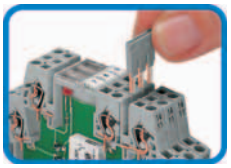


Description		Item No.	Pack. Unit
End and intermediate plate; 1 mm / 0.039 in thick, gray		859-525	100 (4x25)
Test pin; Ø 1 mm / 0.039 in; test wire for sold. onto test plug		859-500	1 (1x1)
Marking pen	for permanent marking	210-110	1
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	210-720	1

Push-in type jumper bar



Commoning

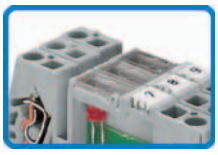


Description		Item No.	Pack. Unit
Push-in type jumper bars, light gray, insulated, 18 A	2-way	859-402	200 (8x25)
	3-way	859-403	200 (8x25)
	4-way	859-404	200 (8x25)
	5-way	859-405	200 (8x25)
	6-way	859-406	100 (4x25)
	7-way	859-407	100 (4x25)
	8-way	859-408	100 (4x25)
	9-way	859-409	100 (4x25)
	10-way	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



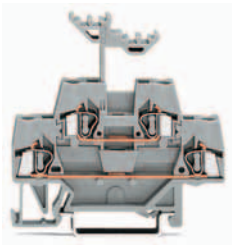
Marking



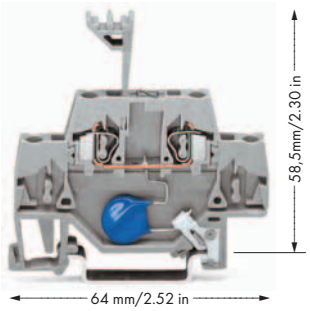
Description		Item No.	Pack. Unit
Miniature WSB Quick marking system	plain	248-501	5 cards
Marking software and printer/plotter see Section 8			
Marking	1 ...10 (10 x)	248-502	5 cards
	11 ... 20 (10x)	248-503	5 cards
	21 ... 30 (10x)	248-504	5 cards
	31 ... 40 (10x)	248-505	5 cards
	41 ... 50 (10 x)	248-506	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			

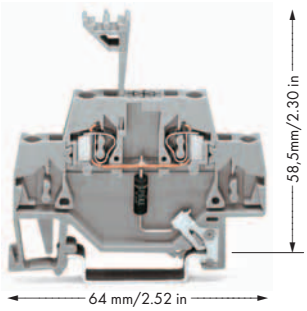
Rail-Mounted Terminal Blocks with Overvoltage Protection

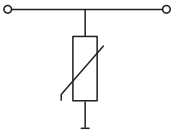
	With varistor V_{BN} AC/DC 24 V ... 110/120 V; I_{SN} 60 A ... 130 A Rated current 20 A Terminal block width 5 mm/0.197 in	With suppressor diode V_{BN} AC/DC 24 V ... AC 230 V; I_{SN} 11 A ... 122 A Rated current 20 A Terminal block width 5 mm/0.197 in

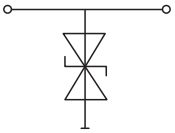


Through terminal blocks with the same shape
see Full Line Catalog Volume 1









Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Terminal block with surge suppression device and direct connection to DIN 35 rail	24 V DC	**280-502/281-609**	50	24 V DC	**280-502/281-602**	50
	48 V DC	**280-502/281-610**	50	48 V DC	**280-502/281-603**	50
	60 V DC	**280-502/281-611**	50	60 V DC	**280-502/281-604**	50
	115 V DC	**280-502/281-612**	50	115 V DC	**280-502/281-605**	50
	24 VAC	**280-502/281-613**	50	24 VAC	**280-502/281-606**	50
	110/120 VAC	**280-502/281-614**	50	110/120 VAC	**280-502/281-607**	50
				230 VAC	**280-502/281-608**	50

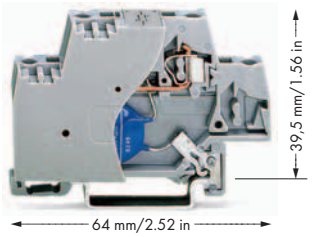
Technical Data	V_N	Max. Operating Voltage $V_{B\ max.}$	Nominal Discharge Current I_{SN}	Max. Surge Current $I_{S\ max.}$	Capacity	Protection Level
Terminal blocks with varistor	24 V DC	31 V DC	60 A	250 A	≤ 1.25 nF	77 V DC
	48 V DC	65 V DC	60 A	250 A	≤ 0.72 nF	135 V DC
	60 V DC	85 V DC	130 A	1.2 kA	≤ 0.48 nF	165 V DC
	115 V DC	150 V DC	130 A	1.2 kA	≤ 0.22 nF	300 V DC
	24 VAC	30 V AC	60 A	250 A	≤ 1.05 nF	93 V AC
	110/120 VAC	140 V AC	130 A	1.2 kA	≤ 0.18 nF	360 V AC
Terminal blocks with suppressor diode	24 V DC	30.8 V DC	122 A		≤ 1 nF	64 V DC
	48 V DC	58 V DC	59 A		≤ 0.63 nF	111 V DC
	60 V DC	77 V DC	44 A		≤ 0.55 nF	162 V DC
	115 V DC	136 V DC	25 A		≤ 0.4 nF	282 V DC
	24 VAC	28 V AC	86 A		≤ 0.8 nF	84 V AC
	110/120 VAC	133 V AC	18 A		≤ 0.35 nF	388 V AC
	230 VAC	253 V AC	11 A		≤ 0.36 nF	706 V AC

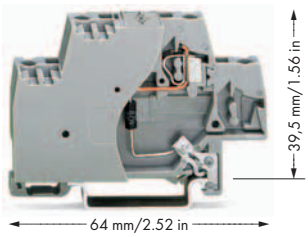
Technical Data

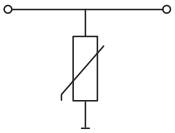
Wire connection	CAGE CLAMP®	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	8 ... 9 mm / 0.33 in	8 ... 9 mm / 0.33 in

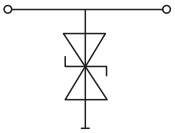
Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
End and Intermediate Plate, 2.5 mm/0.098 in thick	orange	**280-341**	100 (4*25)	orange	**280-341**	100 (4*25)
	gray	**280-340**	100 (4*25)	gray	**280-340**	100 (4*25)

	With varistor V_{BN} AC/DC 24 V ... AC 230 V; I_{SN} 300 A ... 1 kA Rated current 20 A Terminal block width 10 mm/0.394 in	With suppressor diode V_{BN} AC/DC 24 V ... AC 230 V; I_{SN} 37 A ... 305 A Rated current 20 A Terminal block width 10 mm/0.394 in









Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Terminal block with surge suppression device and direct connection to DIN 35 rail	24 V DC	**280-502/281-582**	25	24 V DC	**280-502/281-589**	25
	48 V DC	**280-502/281-583**	25	48 V DC	**280-502/281-590**	25
	60 V DC	**280-502/281-584**	25	60 V DC	**280-502/281-591**	25
	115 V DC	**280-502/281-585**	25	115 V DC	**280-502/281-592**	25
	24 V AC	**280-502/281-586**	25	24 V AC	**280-502/281-593**	25
	110/120 V AC	**280-502/281-587**	25	110/120 V AC	**280-502/281-594**	25
	230 V AC	**280-502/281-588**	25	230 V AC	**280-502/281-595**	25

Technical Data

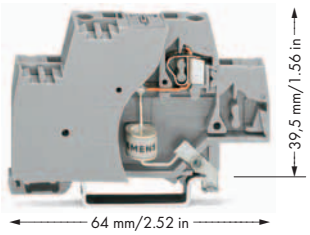
	V_N	Max. Operating Voltage $V_{B\ max.}$	Nominal Discharge Current I_{SN}	Max. Surge Current $I_{S\ max.}$	Capacity	Protection Level
Terminal blocks with varistor andend plate	24 V DC	31 V DC	300 A	1 kA	≤ 4.6 nF	77 V DC
	48 V DC	56 V DC	300 A	1 kA	≤ 2.8 nF	135 V DC
	60 V DC	85 V DC	1 kA	4.5 kA	≤ 1.7 nF	165 V DC
	115 V DC	150 V DC	1 kA	4.5 kA	≤ 0.8 nF	300 V DC
	24 V AC	30 V AC	300 A	1 kA	≤ 3.5 nF	93 V AC
	110/120 V AC	150 V AC	1 kA	4.5 kA	≤ 0.57 nF	360 V AC
	230 V AC	275 V AC	1 kA	4.5 kA	≤ 0.32 nF	710 V AC
Terminal blocks with varistor and end plate	24 V DC	28 V DC	305 A		≤ 2.7 nF	59 V DC
	48 V DC	53 V DC	162 A		≤ 1.7 nF	111 V DC
	60 V DC	70 V DC	123 A		≤ 1.35 nF	146 V DC
	115 V DC	128 V DC	68 A		≤ 0.85 nF	265 V DC
	24 V AC	26 V AC	258 A		≤ 2.4 nF	70 V AC
	110/120 V AC	133 V AC	46 A		≤ 0.63 nF	388 V AC
	230 V AC	253 V AC	37 A		≤ 0.4 nF	706 V AC

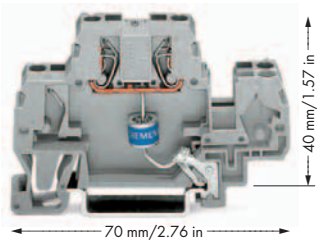
Technical Data

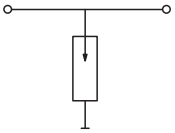
Wire connection	CAGE CLAMP®	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Stripped lengths	8 ... 9 mm / 0.33 in	8 ... 9 mm / 0.33 in

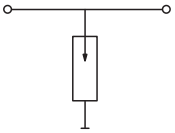
Rail-Mounted Terminal Blocks with Overvoltage Protection

	With gas filled surge arrester V_{BN} AC 24 V ... 230 V; I_{SN} 5 kA Rated current 20 A Terminal block width 10 mm/0.394 in	With gas filled surge arrester V_{BN} AC 24 V ... 230 V; I_{SN} 5 kA Rated current 20 A Terminal block width 10 mm/0.394 in









Description	V_N	Item No.	Pack. Unit	V_N	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/DC	**870-523/281-580**	25
	230 V AC/DC	**280-503/281-581**	25	230 V AC/DC	**870-523/281-581**	25

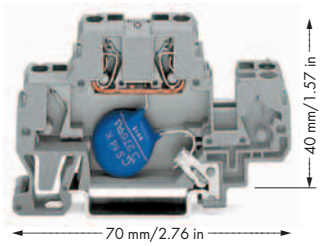
Technical Data

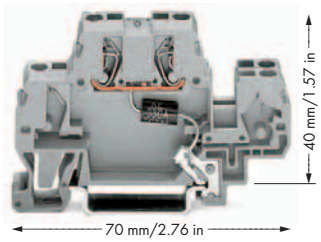
Max. operating voltage $V_{B\ max.}$	70 V AC/90 V DC	70 V AC/90 V DC
	180 V AC/230 V DC	180 V AC/230 V DC
	450 V AC/600 V DC	450 V AC/600 V DC
Nominal discharge current I_{SN}	5 kA	5 kA
Capacity	≤ 2 pF	≤ 2 pF
Protection level	600 V AC	600 V AC
	650 V AC	650 V AC
	1100 V AC	1100 V AC
Wire connection	CAGE CLAMP®	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / 4 mm² "f" / AWG 28 ... 14
Stripped lengths	8 ... 9 mm / 0.33 in	6 ... 7 mm / 0.26 in

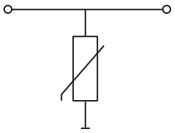
Accessories

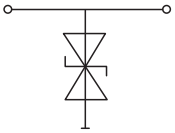
			Item No.	Pack. Unit
				
End and Intermediate Plate, 2 mm/0.079 in thick		gray	**870-518**	100 (4*25)
		orange	**870-519**	100 (4*25)

	With varistor V_{BN} AC/DC 24 V ... AC 230 V; I_{SN} 300 A ... 1 kA Rated current 20 A Terminal block width 10 mm/0.394 in	With suppressor diode V_{BN} AC/DC 24 V ... AC 230 V; I_{SN} 37 A ... 305 A Rated current 20 A Terminal block width 10 mm/0.394 in









Description	V_N	Item No.	Pack. Unit	V_N	Item No.	Pack. Unit
Terminal block with surge suppression device and direct connection to DIN 35 rail	24 V DC	**870-523/281-582**	25	24 V DC	**870-523/281-589**	25
	48 V DC	**870-523/281-583**	25	48 V DC	**870-523/281-590**	25
	60 V DC	**870-523/281-584**	25	60 V DC	**870-523/281-591**	25
	115 V DC	**870-523/281-585**	25	115 V DC	**870-523/281-592**	25
	24 V AC	**870-523/281-586**	25	24 V AC	**870-523/281-593**	25
	110/120 V AC	**870-523/281-587**	25	110/120 V AC	**870-523/281-594**	25
	230 V AC	**870-523/281-588**	25	230 V AC	**870-523/281-595**	25

Technical Data	V_N	Max. Operating Voltage $V_{B\ max.}$	Nominal Discharge Current I_{SN}	Max. Surge Current $I_{S\ max.}$	Capacity	Protection Level
Terminal block with varistor	24 V DC	31 V DC	300 A	1 kA	≤ 4.6 nF	77 V DC
	48 V DC	56 V DC	300 A	1 kA	≤ 2.8 nF	135 V DC
	60 V DC	85 V DC	1 kA	4.5 kA	≤ 1.7 nF	165 V DC
	115 V DC	150 V DC	1 kA	4.5 kA	≤ 0.8 nF	300 V DC
	24 V AC	30 V AC	300 A	1 kA	≤ 3.5 nF	93 V AC
	110/120 V AC	150 V AC	1 kA	4.5 kA	≤ 0.57 nF	360 V AC
	230 V AC	275 V AC	1 kA	4.5 kA	≤ 0.32 nF	710 V AC
Terminal block with suppressor diode	24 V DC	28 V DC	169 A		≤ 2.7 nF	59 V DC
	48 V DC	53 V DC	90 A		≤ 1.7 nF	111 V DC
	60 V DC	70 V DC	69 A		≤ 1.35 nF	146 V DC
	115 V DC	128 V DC	68 A		≤ 0.85 nF	265 V DC
	24 V AC	26 V AC	258 A		≤ 2.4 nF	70 V AC
	110/120 V AC	133 V AC	46 A		≤ 0.63 nF	388 V AC
	230 V AC	253 V AC	37 A		≤ 0.4 nF	706 V AC

Technical Data

Wire connection	CAGE CLAMP®	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / 4 mm² "f" / AWG 28 ... 14	0.08 mm² ... 2.5 mm² / 4 mm² "f" / AWG 28 ... 14
Stripped lengths	6 ... 7 mm / 0.26 in	6 ... 7 mm / 0.26 in

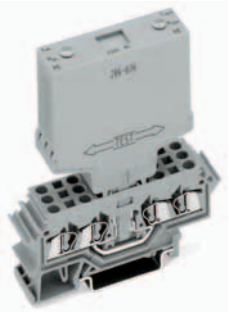
Pluggable Modules - Surge Suppression Devices

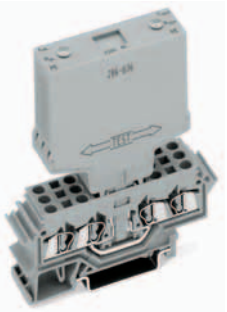
	Single stage suppression for 3-wire control, signal or power circuits No interruption of current flow when changing module 24 V AC/DC Module width 15 mm / 0.591 in	Single stage suppression for 3-wire control, signal or power circuits No interruption of current flow when changing module 110 V / 120 V AC; 230 V AC Module width 15 mm / 0.591 in

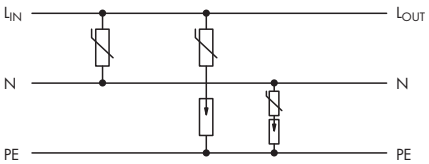
Note:
For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.

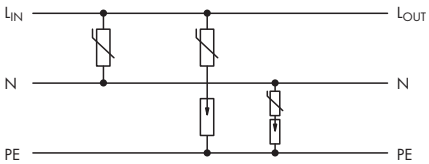
WSB marker card
- Marking F; Item No.: 209-791
- Marking 1 ... 10; Item No.: 209-702
- Marking Lin, N, PE Lout, N, PE, Lin, N, PE; Item No.: 249-655

5 cards, each containing 10 strips with 10 markers









Description	U_{BN}	Item No.	Pack. Unit	U_{BN}	Item No.	Pack. Unit
Surge suppression module	24 V AC/DC	**286-836**	1	230 V AC	**286-835**	1
				115 V AC	**286-835/115-000**	1

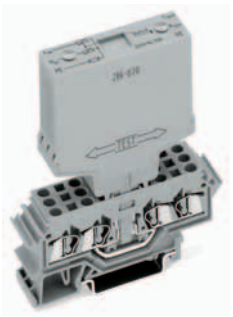
Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal operating voltage V_{BN}	24 V AC/DC	230 V AC; 115 V AC
Operating voltage	35 V AC / 45 V DC	275 V AC; 150 V AC
Nominal current	10 A	10 A
Nominal discharge current between L/N and PE	300 A	1 kA
Nominal discharge 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 acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
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

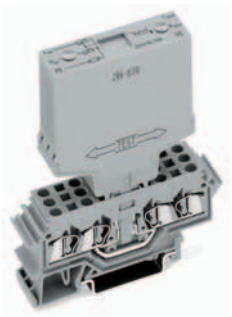
	Single stage suppression for 3-wire control, signal or power circuits No interruption of current flow when changing module with fault indication 110 V / 120 V AC Module width 15 mm / 0.591 in	Single stage suppression for 3-wire control, signal or power circuits No interruption of current flow when changing module with fault indication 230 V AC Module width 15 mm / 0.591 in

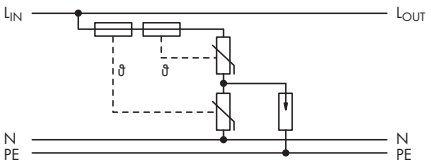
Note:
For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.

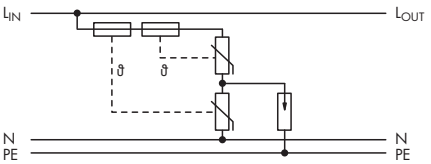
WSB marker card
- Marking F; Item No.: 209-791
- Marking 1 ... 10; Item No.: 209-702
- Marking Lin, N, PE Lout, N, PE, Lin, N, PE; Item No.: 249-655

5 cards, each containing 10 strips with 10 markers







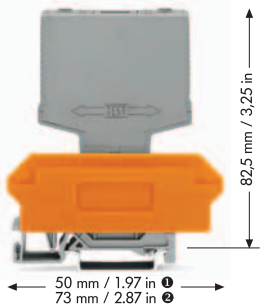


Description	U_{BN}	Item No.	Pack. Unit	U_{BN}	Item No.	Pack. Unit
Surge suppression module	230 V AC	**286-838**	1	115 V AC	**286-838/115-000**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal operating voltage V_{BN}	230 V AC	115 V AC
Operating voltage	300 V AC	150 V AC
Nominal current	10 A	10 A
Nominal discharge current between L/N and PE	1 kA	1 kA
Nominal discharge current between L and N	1 kA	1 kA
Max. surge current between L/N and PE	2.5 kA	2.5 kA
Max. surge current between L and N	2.5 kA	2.5 kA
Protection level between L/N and PE	1 kV	800 V
Protection level between L and N	800 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 acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
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

Pluggable Modules - Surge Suppression Devices

	Three-stage suppression for 2-wire data, measuring and control circuits 24 V DC Module width 20 mm / 0.787 in	Three-stage suppression for 3-wire data, measuring and control circuits 12 V DC Module width 20 mm / 0.787 in

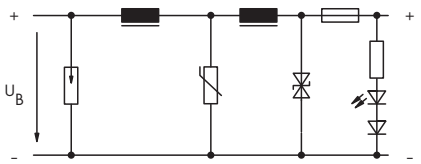


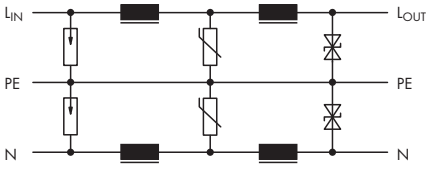




Note:
For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.
WSB marker card
- Marking F; Item No.: 209-791
- Marking 1 ... 10; Item No.: 209-702
- Marking +/-; Item No.: 209-652
- Marking Lin, PE, PE, N, Lout, PE, PE, N; Item No.: 249-652

5 cards, each containing 10 strips with 10 markers



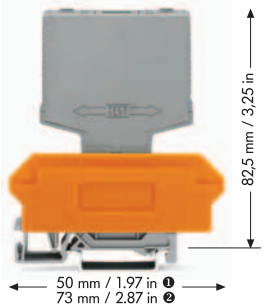


Description	U_{BN}	Item No.	Pack. Unit	U_{BN}	Item No.	Pack. Unit
Surge suppression module	24 V DC	**286-833**	1	12 V DC	**286-834**	1

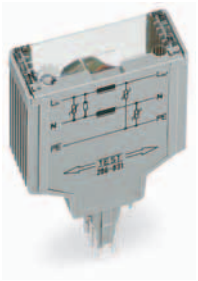
Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal operating voltage V_{BN}	24 V DC	12 V DC
Operating voltage	30 V DC	14 V DC
Nominal current	0.1 A	6 A
Nominal discharge current between L/N and PE		1.5 kA
Nominal discharge current between L and N	5 kA	
Max. surge 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 ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

	Three-stage suppression for 3-wire data, measuring and control circuits 24 V DC Module width 20 mm / 0.787 in	Two-stage suppression for 3-wire control, signal or power circuits 24 V AC/DC Module width 20 mm / 0.787 in

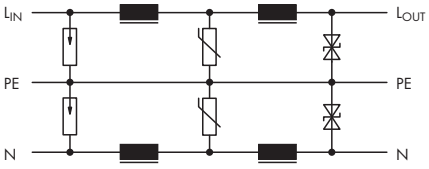


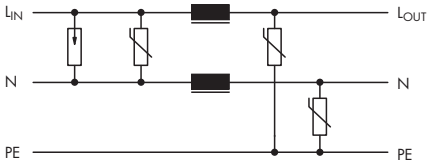




Note:
For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.
WSB marker card
- Marking F; Item No.: 209-791
- Marking 1 ... 10; Item No.: 209-702
- Marking Lin, PE, PE, N, Lout, PE, PE, N; Item No.: 249-652
- Marking PE, N, Lin, PE, N, Lout; Item No.: 209-911

5 cards, each containing 10 strips with 10 markers





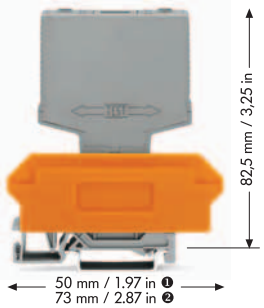
Description	U_{BN}	Item No.	Pack. Unit	U_{BN}	Item No.	Pack. Unit
Surge suppression module	24 V DC	**286-834/024-000**	1	24 V AC/DC	**286-831**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal operating voltage V_{BN}	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
Max. surge current between L/N and PE	1.5 kA	500 A
Max. surge current between L and N		1.5 kA
Protection level between L/N and PE	≤ 59 V	≤ 93 V
Protection level between L and N		≤ 93 V
Response time between L/N and PE	≤ 10 ns	≤ 25 ns
Response time between L and N		≤ 25 ns
Through resistance / inductivity	50 mΩ / 14 µH	25 mΩ / 2 x 7 µH
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1		250 V / 4 kV / 3
Ambient operating temperature	-25 °C ... +85 °C	-25 °C ... +85 °C

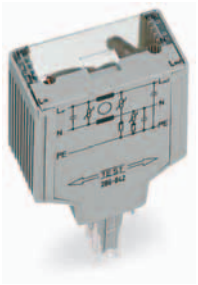
Accessories		Item No.	Pack. Unit		Item No.	Pack. Unit
Terminal block for pluggable modules, with 2-conductor terminal blocks, orange separator ❶	22 mm / 0.866 in	**280-638**	1	22 mm / 0.866 in	**280-638**	1
with 4-conductor terminal blocks, orange separator	22 mm / 0.866 in	**280-628**	1	22 mm / 0.866 in	**280-628**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in	**280-764**	1	25 mm / 0.984 in	**280-764**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in						

Pluggable Modules - Surge Suppression Devices

	Two-stage suppression for 3-wire control, signal or power circuits 24 V AC/DC Module width 20 mm / 0.787 in	Two-stage suppression for 3-wire control, signal or power circuits with filter 115 V DC, 230 V DC, 110 V / 120 V AC, 230 V AC/DC Module width 25 mm / 0.984 in

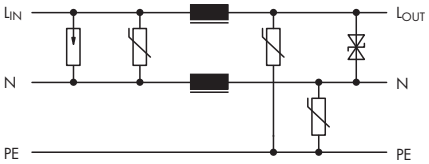


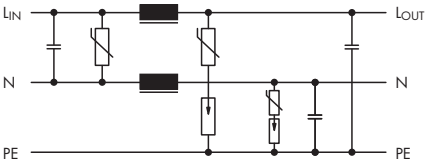




Note:
For isolation measurements the ground (earth) contact at the transient suppression module must be disconnected.
WSB marker card
- Marking F; Item No.: 209-791
- Marking 1 ... 10; Item No.: 209-702
- Marking PE, N, Lin, PE, N, Lout; Item No.: 209-911

5 cards, each containing 10 strips with 10 markers





Description	U_{BN}	Item No.	Pack. Unit	U_{BN}	Item No.	Pack. Unit
Surge suppression module	24 V AC/DC	**286-832**	1	115 V DC	**286-844**	1
				110 V/120 V AC	**286-843**	1
				230 V DC	**286-841**	1
				230 V AC	**286-842**	1

Technical Data	Accessories see pages 150 ... 151	Accessories see pages 150 ... 151
Nominal operating voltage V_{BN}	24 V AC/DC	115 V DC; 110 V/120 V AC 230 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 x 7 µH	- / 2 x 0.8 mH
Nominal voltage acc. to VDE 0110 Part 1/4.97, IEC 60664-1	250 V / 4 kV / 3	250 V / 4 kV / 3
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 ❶	22 mm / 0.866 in **280-638**	1	27 mm / 1.063 in **280-639**	1
with 4-conductor terminal blocks, orange separator	22 mm / 0.866 in **280-628**	1	27 mm / 1.063 in **280-629**	1
with 4-conductor terminal blocks, marker plate ❷	25 mm / 0.984 in **280-764**	1	30 mm / 1.181 in **280-765**	1
wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 14; stripped length 8 ... 9 mm / 0.33 in				



WAGO Application: Plastic Technology Center (SKZ) in Würzburg, Germany

WAGO Products:
WAGO-I/O-SYSTEM with ETHERNET Controllers, DALI and EnOcean Components

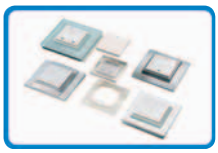
6



789 Series
EnOcean Radio Receivers in DIN-Rail-Mount Enclosure 372



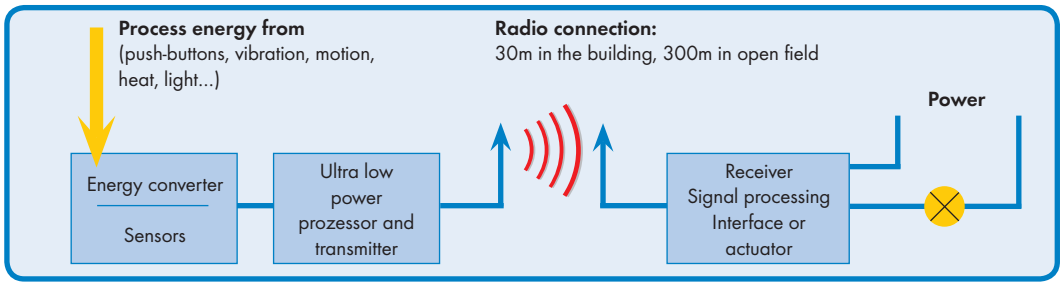
770 Series
WINSTA® - Radio Receiver 373

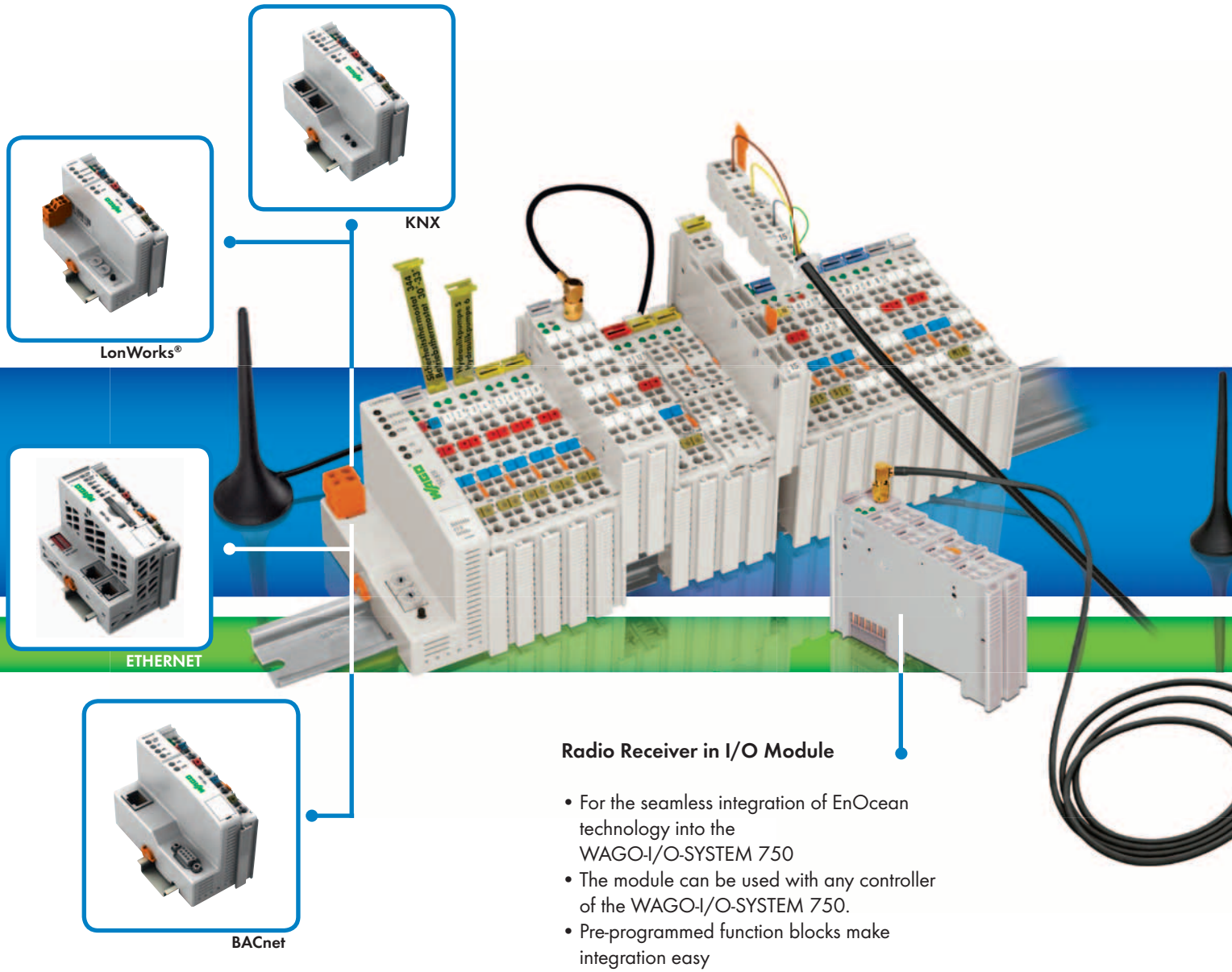


758 Series
Radio Receiver and Transmitter 374

WAGO Radio Receiver with EnOcean Technology

The Benefits for Electronic and Radio Technology





Radio Receiver in I/O Module

- For the seamless integration of EnOcean technology into the WAGO-I/O-SYSTEM 750
- The module can be used with any controller of the WAGO-I/O-SYSTEM 750.
- Pre-programmed function blocks make integration easy
- The number of sensors is almost illimited

Item No. 750-642

enocean®

Radio Receiver in DIN-Rail Mount Enclosure

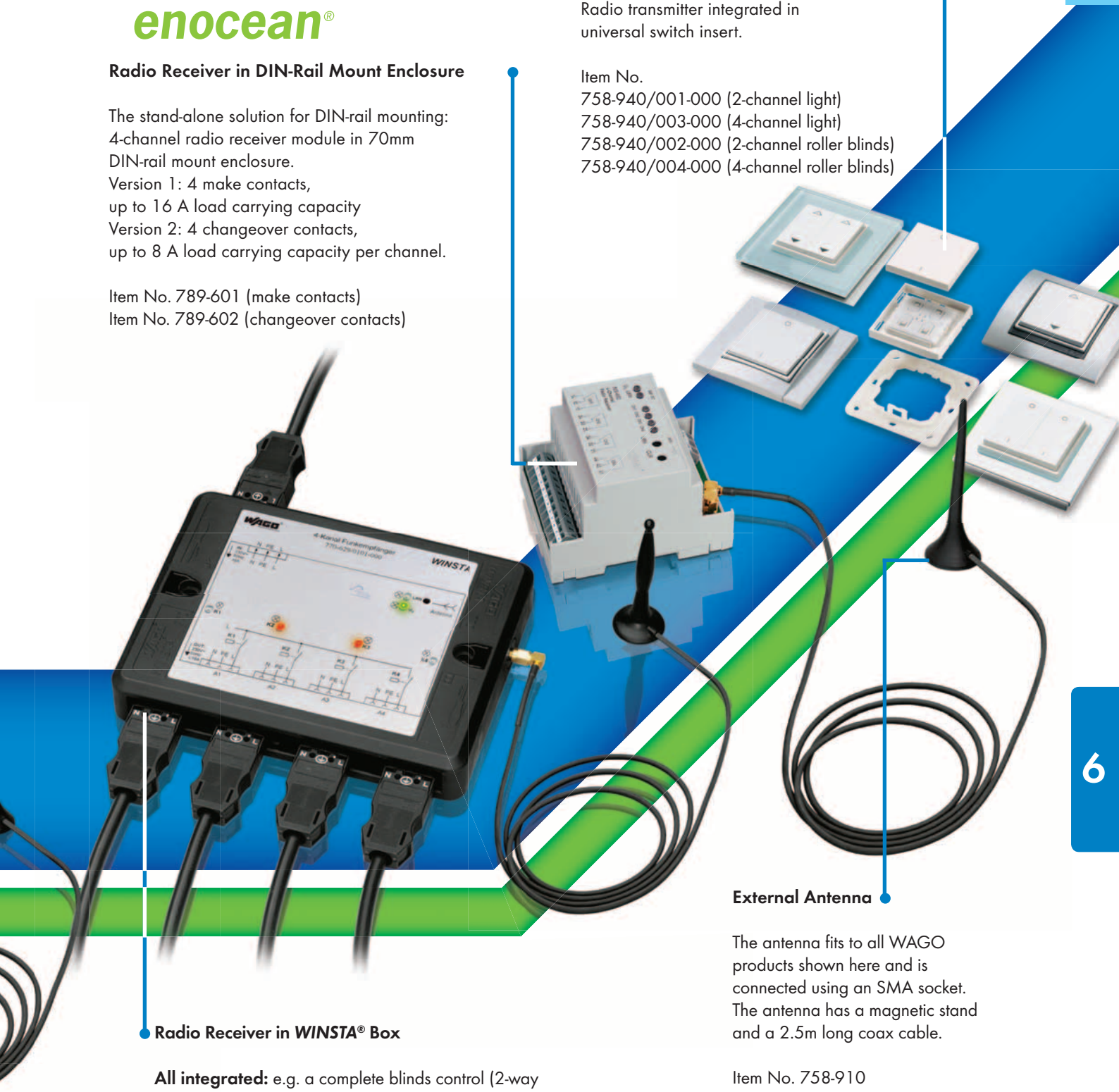
The stand-alone solution for DIN-rail mounting:
4-channel radio receiver module in 70mm DIN-rail mount enclosure.
Version 1: 4 make contacts,
up to 16 A load carrying capacity
Version 2: 4 changeover contacts,
up to 8 A load carrying capacity per channel.

Item No. 789-601 (make contacts)
Item No. 789-602 (changeover contacts)

Radio Transmitter

Radio transmitter integrated in universal switch insert.

Item No.
758-940/001-000 (2-channel light)
758-940/003-000 (4-channel light)
758-940/002-000 (2-channel roller blinds)
758-940/004-000 (4-channel roller blinds)



Radio Receiver in *WINSTA*® Box

All integrated: e.g. a complete blinds control (2-way sunblind outputs for 230V/2A) or a 4-channel module for lighting control (4-way switch output 230V/16A) with receiver and all required switching relay.
The *WINSTA*® boxes are suitable for wall-, floor- and ceiling-mounting.

Item No. 770-629/102-000 (sunblinds control)
Item No. 770-629/101-000 (lighting control)

External Antenna

The antenna fits to all WAGO products shown here and is connected using an SMA socket. The antenna has a magnetic stand and a 2.5m long coax cable.

Item No. 758-910

4-Channel EnOcean Radio Receivers in DIN-Rail Mount Enclosure

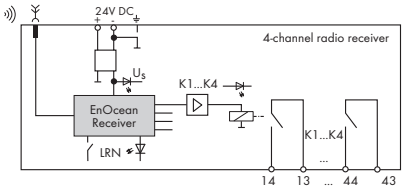
	4-channel EnOcean radio receiver with 4 make contacts, 16 A	4-channel EnOcean radio receiver with 4 changeover contacts, 8 A

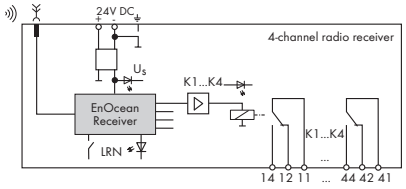
The 4-channel radio receiver in DIN-rail mount enclosure is used to switch 4 independent electrical devices or loads. The radio receiver processes telegrams transmitted by sensors (binary information) using EnOcean radio technology (PTM + STM modules).
The outputs are switched via relay contacts.

- Radio receiver for battery-less and wireless sensors
- LED indication of switch status
- External antenna for optimum transmission range (required)
- Frequency band 868 MHz
- Transmitter-to-receiver assignment via learn mode









Description	Item No.	Pack. Unit	Item No.	Pack. Unit
4-channel EnOcean radio receiver	**789-601**	1	**789-602**	1

Technical Data

Voltage supply	24 V DC	24 V DC
Voltage range	-15 % ... + 20 %	-15 % ... + 20 %
Current consumption (internal)	max. 90 mA	max. 90 mA
Number of receive channels	40 (10 per output)	40 (10 per output)
Number of channels	4 (relay outputs)	4 (relay outputs)
Output current (per channel)	max. 16 A, AC1	max. 8 A, AC1
Type of load	resistive / lamp load	resistive / motor load
Switching frequency	max. < 5 Hz	max. < 5 Hz
Delay time transmitter /output command	< 100 ms; 40 ms ... 70 ms typ.	< 100 ms; 40 ms ... 70 ms typ.
Switching voltage	230 V AC	230 V AC
Fuse protection	Loads: wire breaker, max.16 A	Loads: wire breaker, max.16 A
Isolation	potential free contacts	potential free contacts
Ambient operating temperature	0°C ... +55°C	0°C ... +55°C
Storage temperature	-25 °C ... +85 °C	-25 °C ... +85 °C
Relative air humidity (no condensation)	85 %	85 %
Degree of pollution	2	2
Degree of protection	IP20	IP20
Mounting position	any	any
Dimensions (mm) W x H x L	70 x 55 x 90	70 x 55 x 90
	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 mm² ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)	0.08 mm² ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN)
Stripped lengths	5 ... 6 mm / 0.22 in	5 ... 6 mm / 0.22 in
Standards/Specifications	Vibration and shock resistance acc. to IEC 60068-2-6 and	Vibration and shock resistance acc. to IEC 60068-2-6 and
	IEC 60068-2-27	IEC 60068-2-27
Accessories: RF magnetic antenna incl. 3m connecting	758-910	758-910
cable with SMA connector		

WINSTA® Radio Receivers

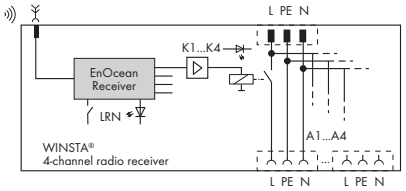
	4-channel radio receiver with 4 make contacts	2-channel radio receiver with sunblind outputs

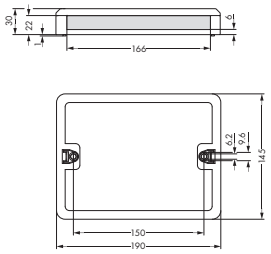
The 4-channel radio receiver is used to switch 4 independent electrical devices. The 2-channel radio receiver has 2 sunblind outputs that can be controlled independently from each other. The radio receiver processes telegrams transmitted by switches using EnOcean radio technology (STM modules). The outputs are switched via relay contacts.

- Radio receiver for battery-less and wireless sensors
- LED indication of switch status
- External antenna for optimum transmission range (required)
- Frequency band 868 MHz
- Transmitter-to-receiver assignment via learn mode
- The state of outputs can be predefined for a power failure scenario
- Wire connection using WINSTA connectors



Illustration and block diagram for 770-629/101-000





Description	Item No.	Pack. Unit	Item No.	Pack. Unit
WINSTA® radio receiver	**770-629/101-000**	1	**770-629/102-000**	1

Technical Data

Voltage supply	230 V AC, 50 Hz ... 60 Hz, max. 16 A	230 V AC, 50 Hz ... 60 Hz, max. 16 A
Voltage range	± 10 %	± 10 %
Current consumption (internal)	max. 21 mA	max. 21 mA
Number of channels	4	2
Output current (per channel)	max. 16 A / 4 A	2 A motor load
Total current	max. 16 A	max. 4 A
Inrush current	max. 120 A / 50 ms	25 A
Type of load	resistive / lamp load	resistive / inductive
Switching frequency	max. 5 Hz	max. 5 Hz
Isolation	isolated internal voltage supply	isolated internal voltage supply
	2500 V impulse withstand voltage	2500 V impulse withstand voltage
Fuse protection	External, 16 A max.	External, 16 A max.
Ambient operating temperature	0°C ... +55°C	0°C ... +55°C
Storage temperature	-25 °C ... +85 °C	-25 °C ... +85 °C
Relative air humidity (no condensation)	85 %	85 %
Degree of pollution	2	2
Degree of protection	IP20	IP20
Mounting position	any	any
Dimensions (mm) W x H x L	190 x 145 x 30	190 x 145 x 30
Type of mounting	Wall screw adapter	Wall screw adapter
Standards/Specifications	Vibration and shock resistance acc. to IEC 60068-2-6 and	Vibration and shock resistance acc. to IEC 60068-2-6 and
	IEC 60068-2-27	IEC 60068-2-27
Accessories: RF magnetic antenna incl. 3m connecting cable with SMA connector	758-910	758-910
Connection accessories WINSTA connectors	Input: socket, 3 poles, e.g. 770-103;	Input: socket, 3 poles, e.g. 770-103;
	4-channel output: plug, 3 poles, e.g. 770-113	2-channel output: plug, 4 poles, e.g. 770-114

Radio Receiver and Transmitter

External antenna, GSM 900/1800



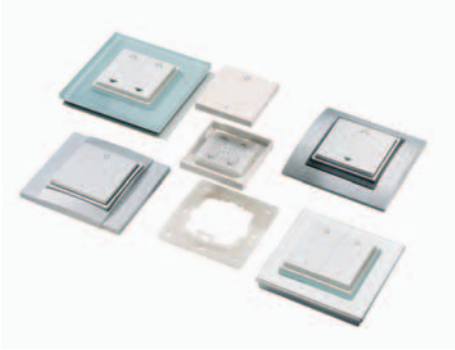
External antenna, WLAN/Bluethooth 2.4 GHz



Description		Item No.	Pack. Unit	Technical Data
External antenna	GSM 900/1800	**758-910**	1	Frequency band: 870 MHz ... 960 MHz; 1710 MHz ... 1880 MHz
				VSWR: 870 MHz ... 960 MHz < 1.5; 1710 MHz ... 1880 MHz < 1.5
				Gain: 870 MHz ... 960 MHz 0 dB; 1710 MHz ... 1880 MHz 0 dB
				Max. Power: 20 W
				Cable length: 250 cm
				Connector: SMA right angle plug + ferrite bead
External antenna	WLAN/Bluetooth 2.4 GHz	**758-912**	1	Frequency band: 2400 MHz ... 2485 MHz
				Gain: 2 dBi
				Cable length: 250 cm
				Connector: SMA right angle plug

Notes on operating the antenna with WAGO EnOcean radio receivers: The antenna is to be mounted on a plate measuring at least 9.8 x 9.8 inches (25 x 25 mm)
The distance of interfering sources to the antenna and antenna line must be at least 11.8 inches (30 mm) and the free space between the antenna and the next wall must be at least 13.78 inches (35 mm). The antenna cable should, under no circumstances, be bent sharply, since irreversible damage may result to the antenna (RG 174 bend radius > 0.6 inches/ 15mm)

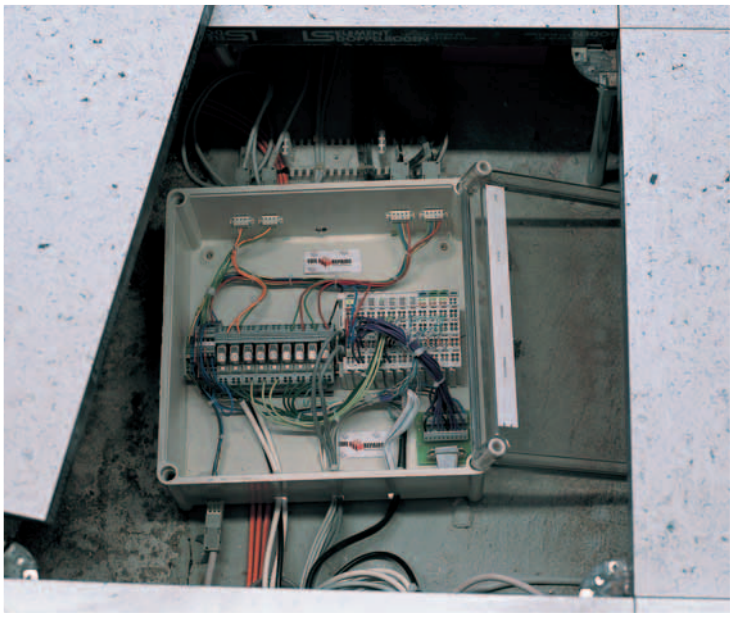
Radio transmitter, EnOcean easyfit PTM 250



Description	Item No.	Pack. Unit	Technical Data
2-channel light	**758-940/001-000**	1	Integrated radio transmitter: EnOcean PTM 200
4-channel light	**758-940/003-000**	1	Energy harvesting source: electrodynamic energy generator, maintenance free
2-channel roller blind	**758-940/002-000**	1	Radio technology /range: EnOcean 868 MHz, RPS Type 2; 300 m free field, typ. 30 m within buildings
4-channel roller blind	**758-940/004-000**	1	Total installation height: 14 mm (frame lies directly against the wall)
			Dimensions of rocker /frame cut-out /central plate: 50 x 50 mm / 55 x 55 mm / 71 x 71 mm
			Color: white

The universal switch insert can be integrated into numerous control programmes by different manufacturers, e.g.: BERKER, GIRA, JUNG and MERTEN. Delivery is without frame. Frames of the desired control programm have been orderen separately.





WAGO Application: Bellinzona Business Center (Tessin), Switzerland

WAGO Products:
WAGO-I/O-SYSTEM with ETHERNET Controllers, Power Supplies and Interface Modules

7



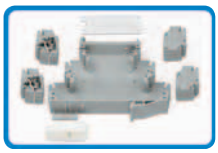
280, 286, 786 Series

Empty Component Plug Housings for Building Custom Circuits 378 – 379
Empty Component Plug Housings for Building Custom Circuits 380



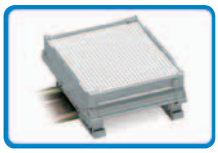
859 Series

Empty Electronic Terminal Block Housing 381



789 Series

DIN-Rail Mounted Enclosures 382
Accessories, 789 Series 383

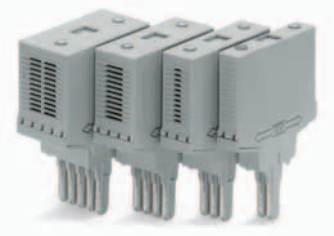


209, 210, 288 Series

Mounting Carrier for DIN-Rail Mounting PCBs 384 – 385
Mounting Carrier and Feet for DIN-Rail Mounting PCBs 386 – 387

Empty Component Plug Housings for Building Custom Circuits

286 Series, empty component plug

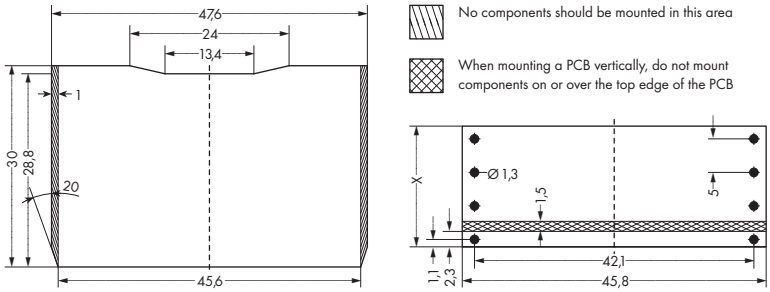


Description		Item No.	Pack. Unit
Empty component plug, type 9	4-pole, 10 mm / 0.394 in wide	**286-110**	1
Empty component plug, type 10	6-pole, 15 mm / 0.591 in wide	**286-111**	1
Empty component plug, type 11	8-pole, 20 mm / 0.787 in wide	**286-112**	1
Empty component plug, type 12	10-pole, 25 mm / 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

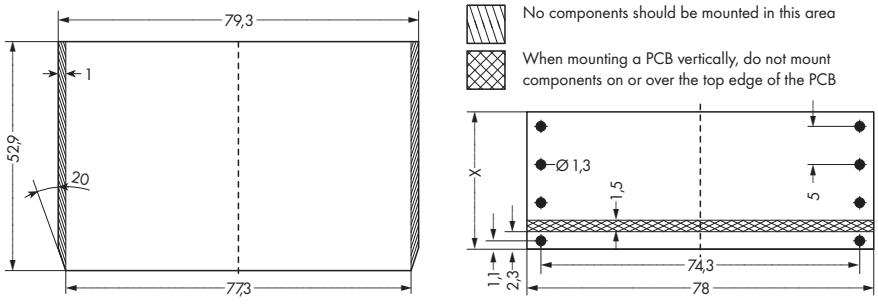


Description		Item No.	Pack. Unit
Empty component plug, type 14	6-pole, 15 mm / 0.591 in wide	**786-101**	1
Empty component plug, type 15	8-pole, 20 mm / 0.787 in wide	**786-102**	1
Empty component plug, type 16	10-pole, 25 mm / 0.984 in wide	**786-103**	1

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



Accessories

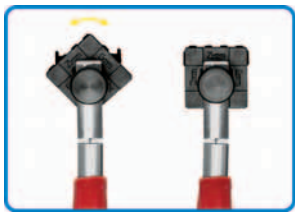
Unlocking pliers for component plug housing



WSB-marker cards



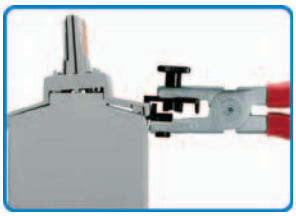
Description		Item No.	Pack. Unit
Unlocking pliers for component plug housing		**210-492**	1
WSB Quick marking system for module width 5 - 17.5 mm	**plain**	**209-501**	5 cards
Marking	**1 ... 10 (10 x)**	**209-702**	5 cards
10 strips with 10 markers, white with black printing			



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 mm² ... 2.5 mm² / 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

Empty Component Plug Housings for Building Custom Circuits

280 Series, empty component plug housings for building custom circuits



Description		Item No.	Pack. Unit
Empty component plug, type 1	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)	**280-801**	100
Empty component plug, type 2	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)	**280-802**	50
Empty component plug, type 3	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)	**280-804**	50

250 V/ 4 KV/ 3 (rated voltage/ rated surge voltage/ pollution degree);

2-conductor terminal



3-conductor terminal



4-conductor terminal



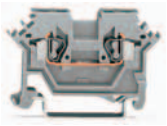
Description		Item No.	Pack. Unit
2-conductor terminal block	gray, terminal block width 5 mm /0.197 in, marking on both sides	**280-616**	100
2-conductor terminal block	gray, terminal block width 5 mm /0.197 in, marking in center position	**280-916**	100
3-conductor terminal block	gray, terminal block width 5 mm /0.197 in	**280-610**	100
4-conductor terminal block	gray, terminal block width 5 mm /0.197 in, marking on both sides	**280-606**	100
4-conductor terminal block	gray, terminal block width 5 mm /0.197 in, marking in center position	**280-686**	100

Wire range 0.08 mm² ... 2.5 mm² / 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



2-conductor terminal block



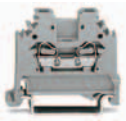
3-conductor terminal block



4-conductor terminal block



2-conductor terminal block



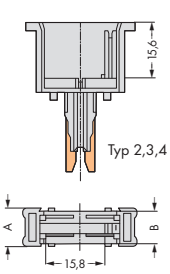
Description		Item No.	Pack. Unit
Empty component plug, type 4	2-pole, 10 mm / 0.394 in wide; Inside dimensions of plug W/H/D 8.2/15/15	**280-803**	50
250 V/ 4 KV/ 3 (rated voltage/ rated surge voltage/ pollution degree);			
6 A max.			
Front-entry 2-conductor terminal block	gray, terminal block width 5 mm /0.197 in, marking on both sides	**280-601**	100
Front-entry 2-conductor terminal block	gray, terminal block width 5 mm /0.197 in, marking in center position	**280-901**	100
Front-entry 3-conductor terminal block	gray, terminal block width 5 mm /0.197 in	**280-681**	100
Wire range 0.08 mm² ... 2.5 mm² / AWG 28 ... 12 (THHN, THWN); Stripped lengths 8 ... 9 mm / 0.33 in			
Front-entry 4-conductor terminal block	gray, terminal block width 5 mm /0.197 in, marking on both sides	**280-621**	100
Front-entry 4-conductor terminal block	gray, terminal block width 5 mm /0.197 in, marking in center position	**280-833**	100
Side-entry 2-conductor terminal block	gray, terminal block width 5 mm /0.197 in	**280-101**	100
Wire range .,08 mm² ... 2.5 mm² / 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			

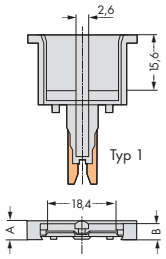


Press screwdriver into appropriate slot (1) and remove cover with levering action (2).



Introduce cover in the outer groove of the plug and press completely down until snap-fit engaged.

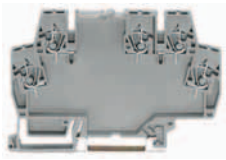




Typ	1	2	3	4
A	5	10	10	10
B	3,2	8,2	8,2	8,2

Empty Electronic Terminal Block Housing

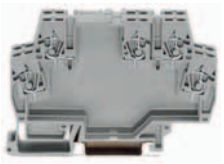
859-110



859-501

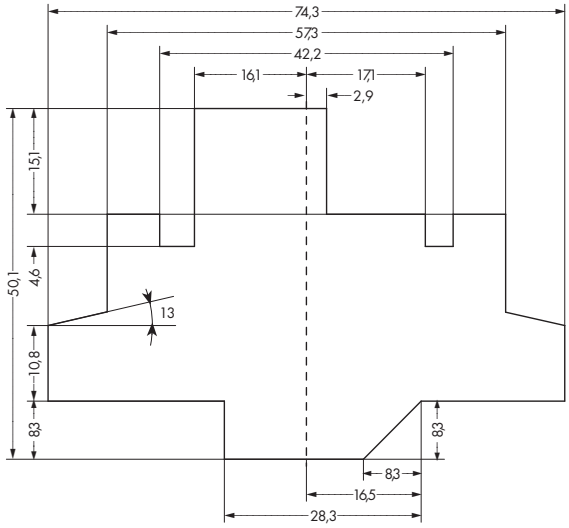


859-110 and 859-501

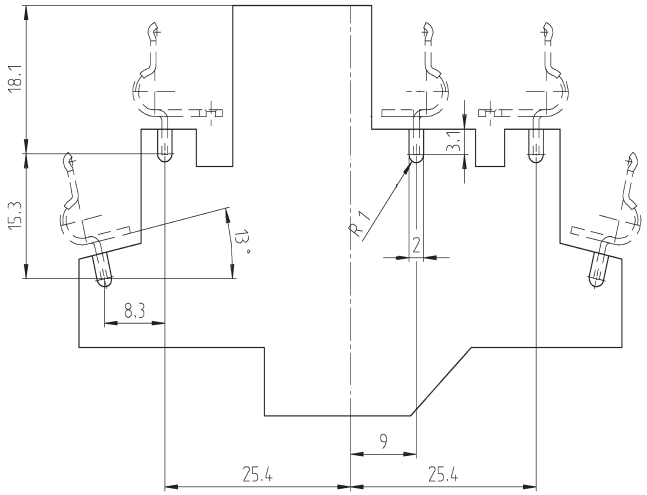


Description	Item No.	Pack. Unit	Technical Data
Modular housing for mounting electronic components in a rail-mounted terminal block	**859-110**	1	Housing material: PA 6.6
Frame to enlarge the terminal block width	**859-501**	1	Flammability rating: V0
			Color: gray (similar to RAL 7038)
			Degree of protection: 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 mm² ... 2.5 mm² /AWG 28 ... 14
			Stripped lenghts: 5 ... 6 mm / 0.22 in

PCB dimensions



PCB dimensions



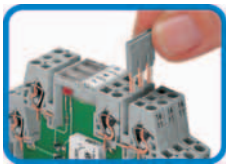
End and intermediate plate



Push-in type jumper bar



Commoning

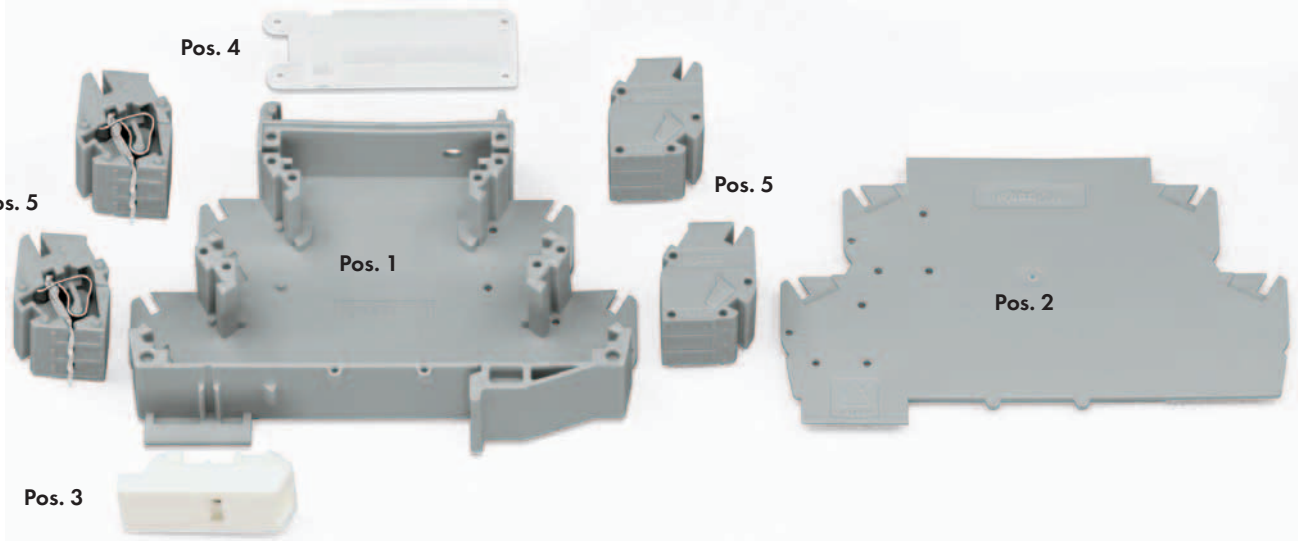


Test pin



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	**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**	
	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)

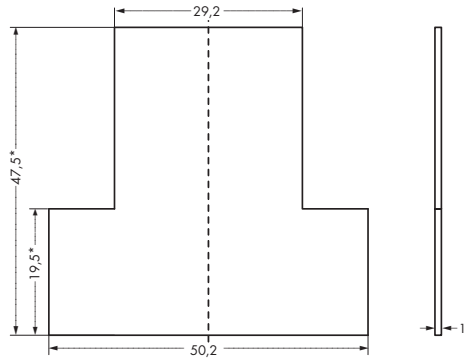
DIN-Rail Mounted Enclosures



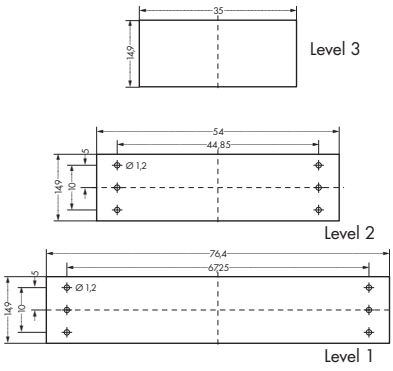
Description		Item No.	Pack. Unit	Technical Data
Housing 55 mm/2.17 in	Pos. 1	**789-120**	1	Rated voltage acc. to VDE 0110 Part 1 /4.97 IEC 60664-1: 250 V /4 kV /3
Top cover 55 mm/2.17 in	Pos. 2	**789-122**	1	Housing material: PA 6.6
Transparent cover	Pos. 4	**789-124**	1	Flammability rating: V0
Release 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 Hight 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 mm² ... 2.5 mm² /AWG 28 ... 14
3-pole terminal block: COO*	Pos. 5	**789-134**	1	Stripped lenghts: 5 ... 6 mm / 0.22 in

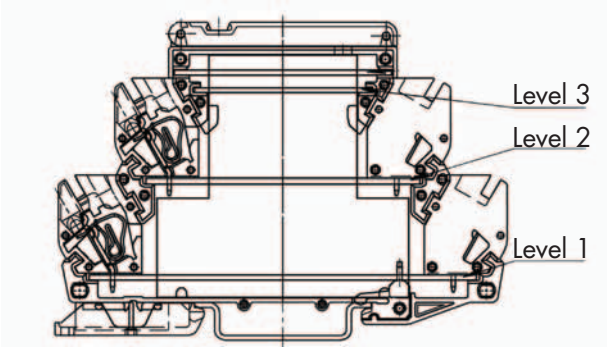
* C = with clamping spring, O = without clamping spring, enclosure open on the right side

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





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



Wire connection



Marking pen with fiber tip

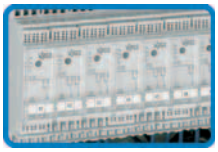


Description		Item No.	Pack. Unit
Operating tool, with partially insulated shaft	Type 2, blade (3.5 x 0.5) mm	**210-720**	1
Marking pen	for permanent marking	**210-110**	1

Miniature quick marking card



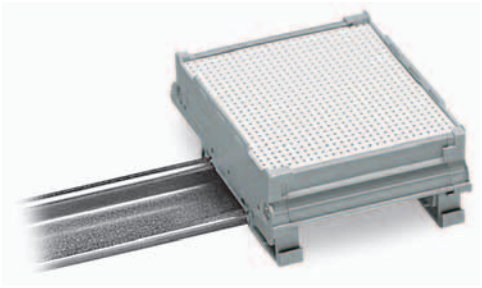
Marking

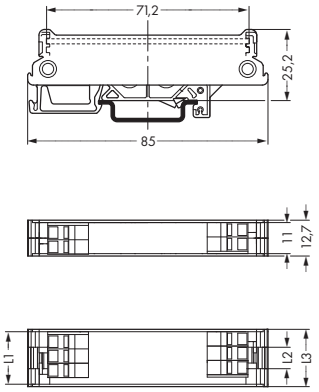


Description		Item No.	Pack. Unit
Miniature WSB Quick marking system	**plain**	**248-501**	5 cards
Marking software and printer/plotter see Section 8			
Marking	**1 ...10 (10 x)**	**248-502**	5 cards
	11 ... 20 (10x)	**248-503**	5 cards
	21 ... 30 (10x)	**248-504**	5 cards
	31 ... 40 (10x)	**248-505**	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 for DIN-Rail Mounting PCBs

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

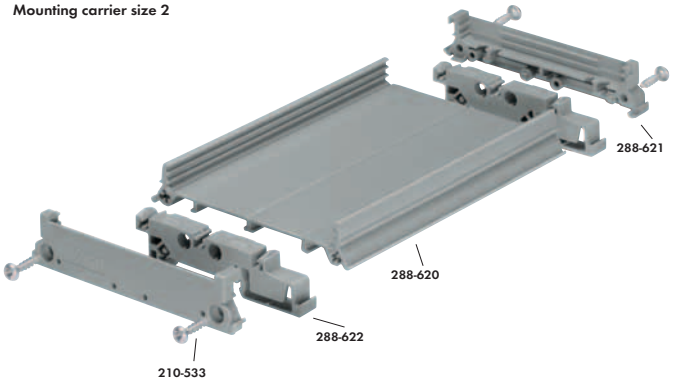
In order to determine the length of a complete mounting carrier:
Length of PCB: L1
Length of track section: L2 = L1 – 11 mm /0.433 in
Length of mounting carrier: L3 = L1 + 1.7 mm/0.067 in
with lateral cover size 1, 6.35 mm/0.25 in thick.
Distance between PCB and upper groove of track section is 5 mm/0.197 in PCB tolerances: thickness 1.5 mm ± 0.2 mm, length/width ± 0.2 mm; -0.1/+0.3 for milling contours

Marker strips



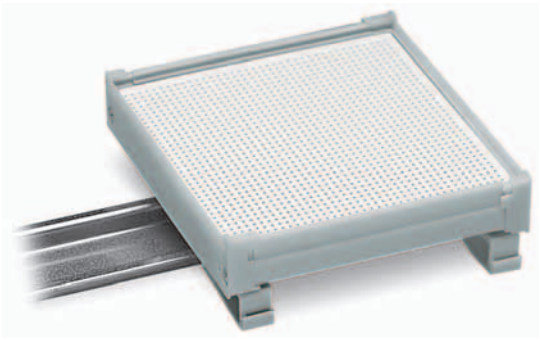
Description		Item No.	Pack. Unit
Phillips screw 2.9 x 13*	* To be used from a module length of 35 mm/1.378 in. For smaller modules the lateral covers have to be riveted. Rivet length depends on module length. Rivets not in the WAGO product range.	**210-533**	25
7.5x0.5mm on roll 5x1m, white		**709-198**	1
7.5x0.5mm on roll 5x1m, translucent		**709-196**	1

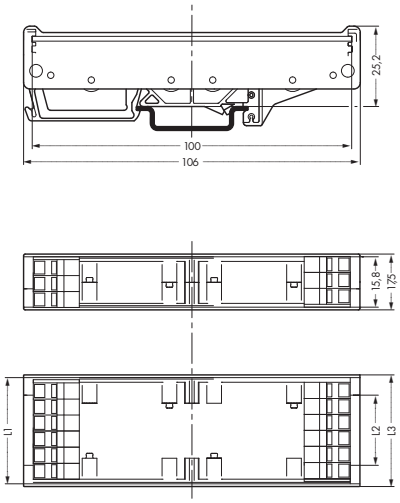
Mounting carrier size 2



Mounting Carrier for DIN-Rail Mounting PCBs

Mounting carrier size 2

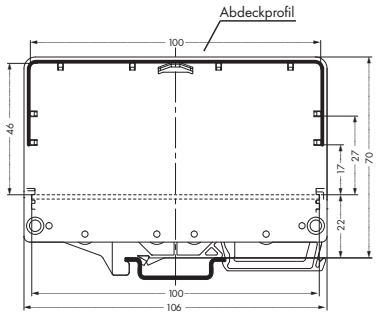




Description	Item No.	Pack. Unit
Lateral cover, size 2, small*, 8.75 mm /0.344 in thick	**288-621**	1
Fixing foot for mounting on DIN 35 rails	**288-622**	1
Track section, size 2, 1 m /3'3'' long	**288-620**	1

Mounting carrier size 2, with covering section

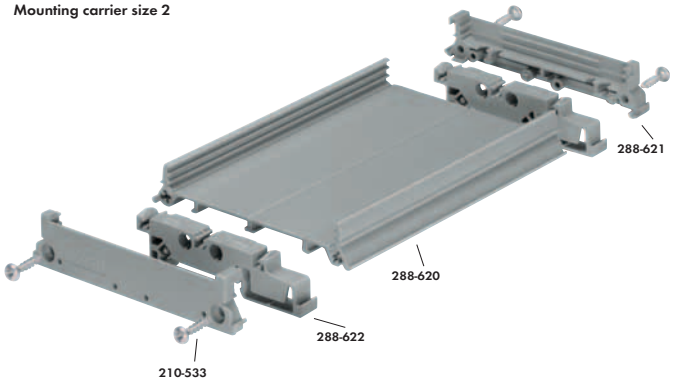




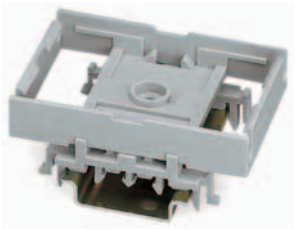
Description	Item No.	Pack. Unit
Lateral cover, size 2, big* 8.75 mm /0.344 in thick	**288-626**	1
Covering section, size 2, 1 m /3'3'' long	**288-627**	1

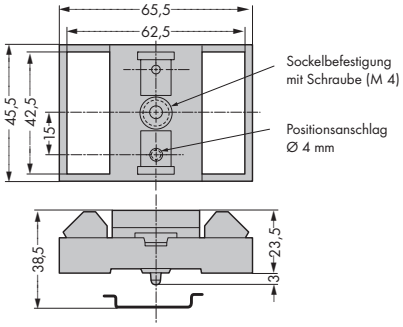
In order to determine the length of a complete mounting carrier:
Length of PCB: L1
Length of track section: L2 = L1 – 15,8 mm/0.622 in
Length of mounting carrier: L3 = L1 + 1.7 mm/0.067 in
Length of covering section: L4 = L1
with lateral cover, size 2, 8.75 mm/0.344 in thick
Distance between PCB and 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



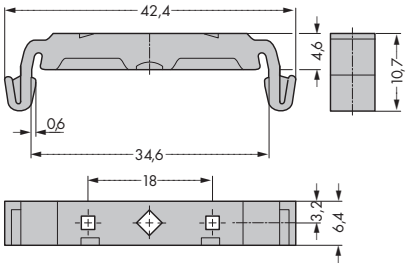
Mounting Carrier and Feet for DIN-Rail Mounting PCBs





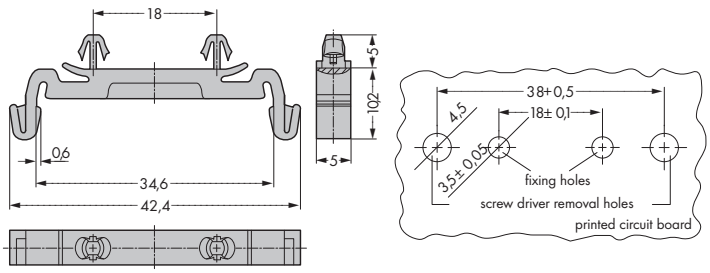
Description		Item No.	Pack. Unit
Mounting carrier	For screw-fixing or DIN-rail mounting with snap-fit type universal mounting feet		
	(then needs 2 x mounting feet)	**288-001**	1
Universal mounting foot	Snap-fit type, suitable for DIN 15, 32 and 35 rails	**288-002**	10
Universal mounting foot	Suitable for Europa card (100 x 160) mm	**288-003**	1





Description		Item No.	Pack. Unit
Mounting foot	For screw-fixing to relay modules, holes for fixing screws 2 mm/0.079 in,		
	PCB hole Ø 3.2 mm/0.126 in, distance 18 mm/0.709 in,	**209-120**	25
Fixing screw	For mounting foot 209-120	**209-119**	50





Description		Item No.	Pack. Unit
Mounting foot	For snap-fit mounting to relay modules, for fixing hole Ø 3.5 mm/0.138 in,		
	distance 18 mm/0.709 in, for mounting on DIN 35 rail	**209-188**	25

WAGO Application: Stockholm-Arlanda Airport, Sweden
Automated Passenger Boarding Bridges

WAGO Products:
WAGO-I/O-SYSTEM with DeviceNet Couplers and Rail-Mounted Terminal Blocks





8



790, 791 Series
Shield (Screen) Connecting System 390 – 393



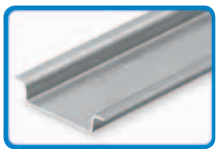
ProServe
Designing, Assembling and Marking 394 – 399
Mobile Printer, Thermal Transfer Printers and Accessories 400 – 403
Engraving Plotters with Engraver and Accessorie 404 – 407



Marking Accessories
WMB Multi Marking System, Miniature Quick Marking Card,
WMB Inline, Marker Cards and Group Marker Carriers 408



211 Series
WAGO Wire and Cable Marking 410 – 411

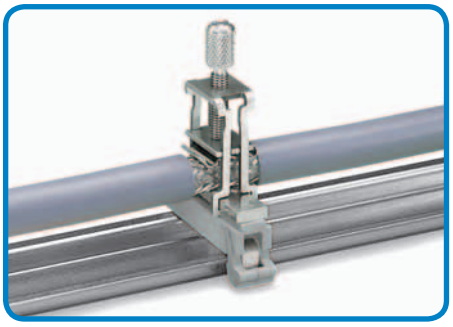


210, 249 and 209 Series
Carrier Rails 412
Accessories for Carrier Rails 413



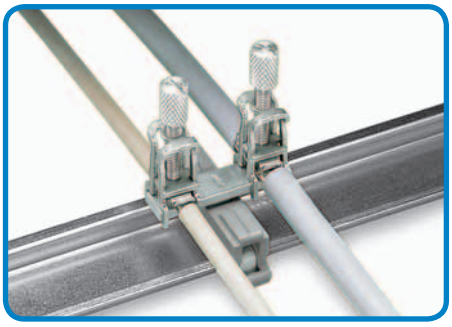
206, 210 Series
Tools, Test and Measurement Tools 414 – 419

Shield (Screen) Connecting System
Description and Handling

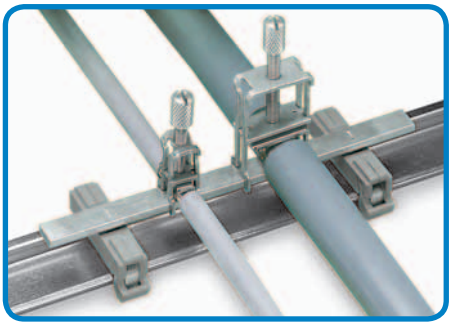


Carrier with grounding foot
45 mm/1.772 in long, busbar 90° to the rail
Item No. 790-113

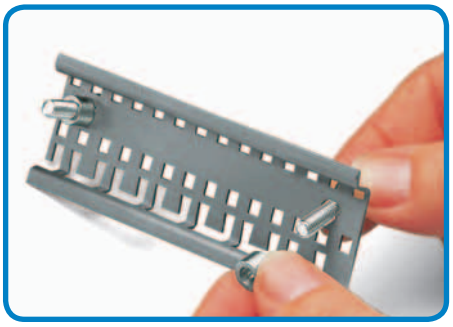
for all sizes of shield (screen) clamping saddles



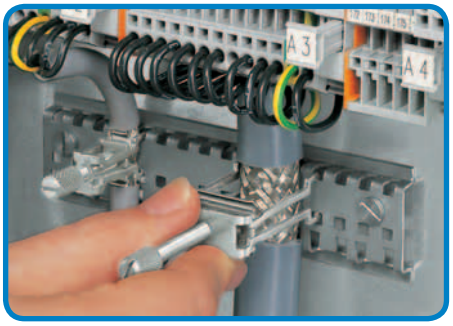
Carrier with grounding foot
45 mm/1.772 in long, busbar parallel to the rail
Item No. 790-114



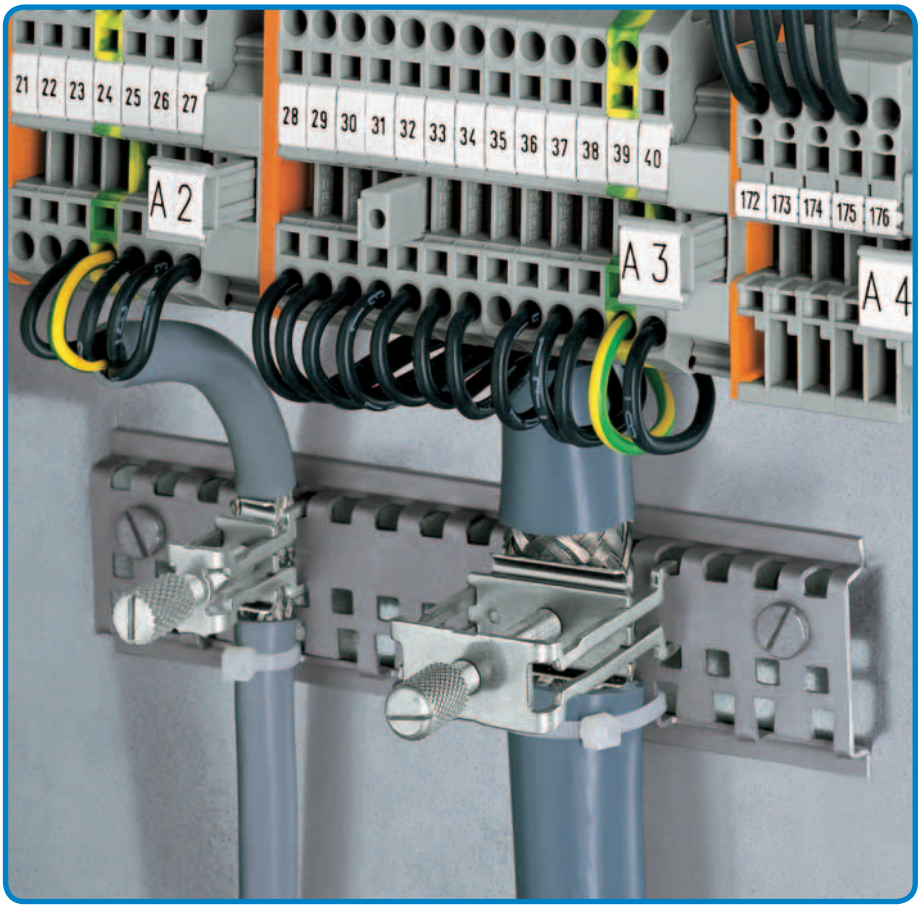
Carrier with 2 grounding feet
125 mm/4.921 in long, busbar parallel to the rail
Item No. 790-115

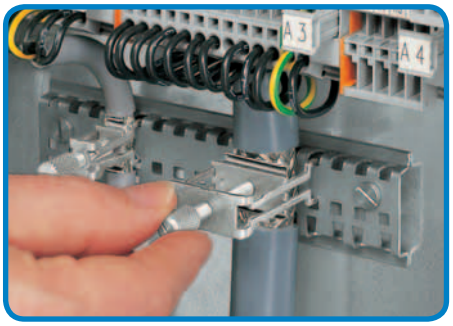


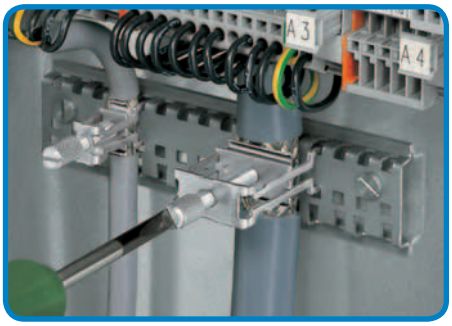
Using a stand off
with a special slotted carrier rail

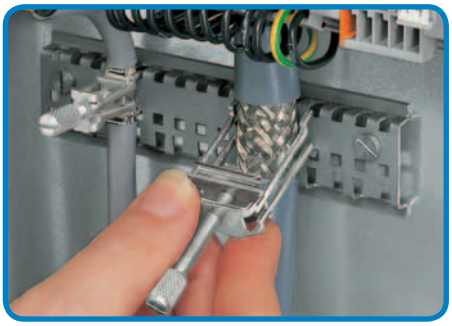


Addition of a shield (screen) clamping saddle.



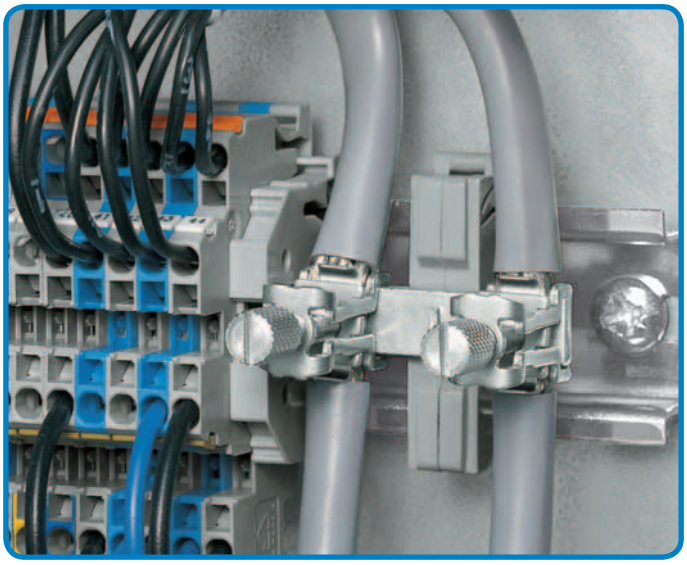




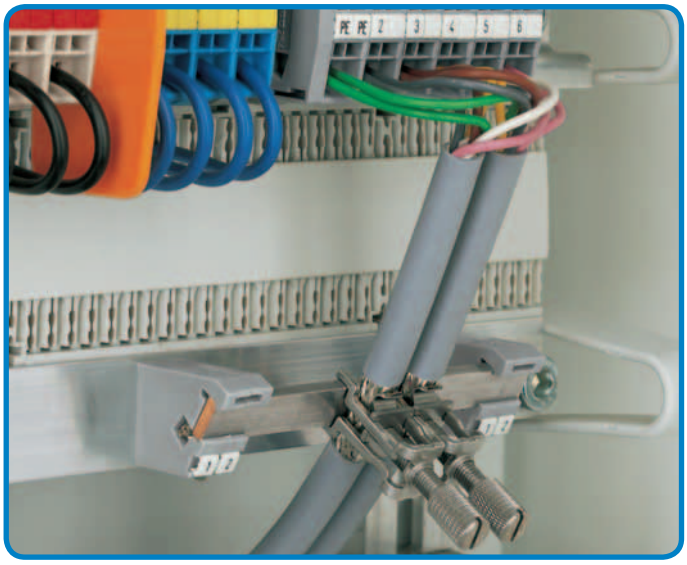


Tightenning/releasing a shield (screen) clamping saddle. To attach the clamping saddle, tighten the knurled screw. To remove, unscrew until ratcheted mechanism is released, then slightly tip saddle and remove the clamping saddle.

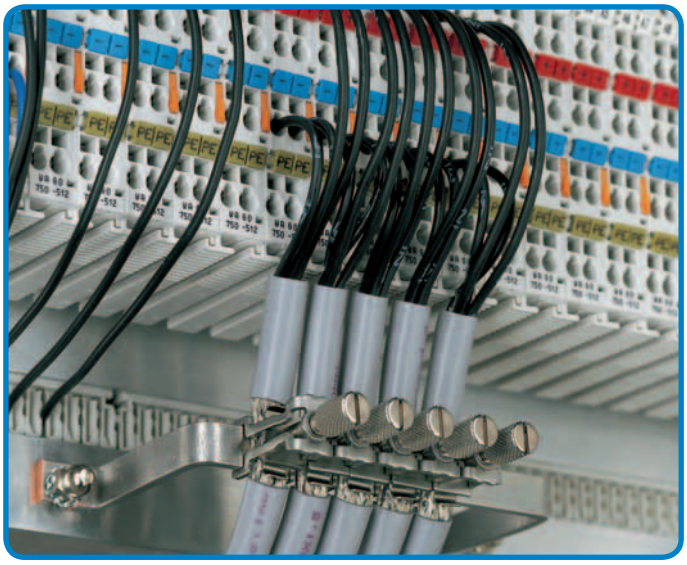
Mounting Options Based on Application



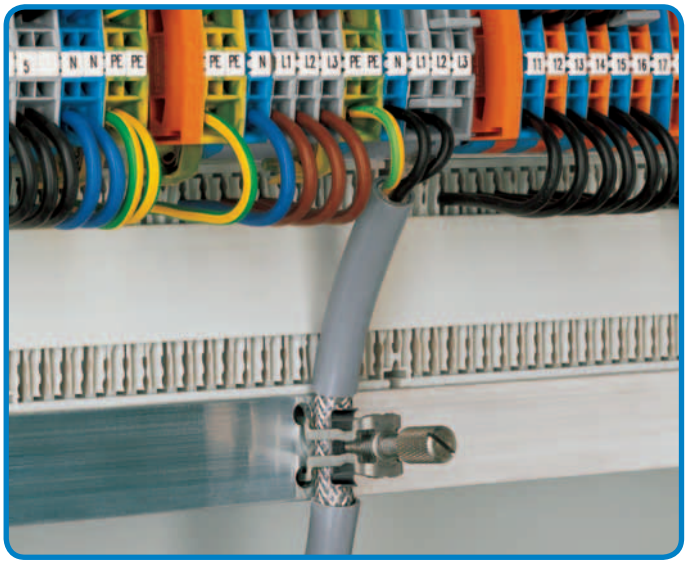
– carrier with grounding foot, busbar parallel to the rail



– isolated mounting carriers for a common shield (screen) reference potential, independent of the housing potential

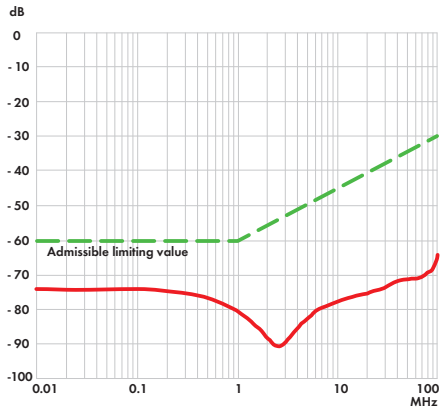


– U-shaped copper busbar 10 mm (0.394 in) x 3 mm (0.118 in)



– snap into any metal plate up to max. thickness 3 mm/0.118 in

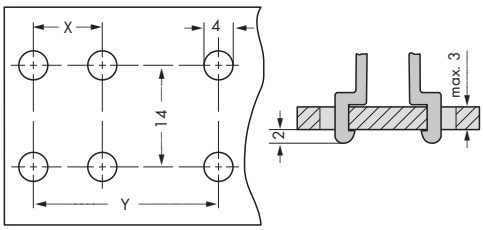
Negative shield (screen) attenuation



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



Hole dimensions for panel mounting

The WAGO shield (screen) connecting system is highly effective because the clamping unit can be brought very close to the unshielded part of the cable. Additionally, the spring material is part of the clamping saddle, giving good electrical connection and compensating for any deformation in the braiding. The system also acts as a partial strain relief.

Shield (Screen) Clamping Saddles and Shield (Screen) Clamps

Shield (screen) clamping saddles

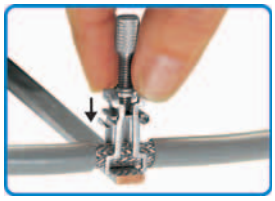




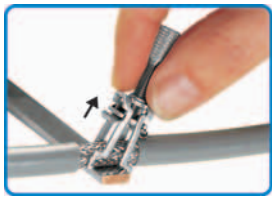
Description		Diameter of Connectable Conductor	Item No.	Pack. Unit
Shield (screen) clamping saddle, incl. knurled screw	11 mm/0.433 in wide	up to 8 mm/0.315 in	**790-108**	50 (5x10)
	19 mm/0.748 in wide	7 mm/0.276 in to 16 mm/0.63 in	**790-116**	50 (5x10)
	27 mm/1.063 in wide	6 mm/0.236 in to 24 m /0.944 in	**790-124**	50 (5x10)
	43 mm/1.693 in wide	22 mm/0.866 in to 40 mm/1.575 in	**790-140**	50 (5x10)

Note: Not for ground connections!
Recommended tightening torque: 0.5 Nm
Assembly: The shield (screen) clamping saddle is shipped ready for direct connection to the busbar 10 mm (0.394 in) x 3 mm (0.118 in) or to a drilled mounting plate. After connection, tighten the knurled screw to complete the installation.
Removal: To remove a shield (screen) clamping saddle, unscrew until ratcheted mechanism is released, then slightly tip saddle and remove the clamping saddle.

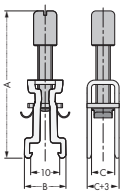
Assembly



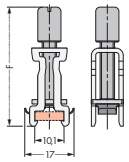
Removal



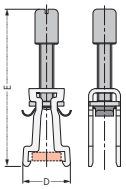
Installation position delivery



Closed position



Removal position

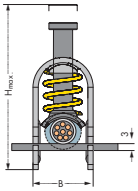


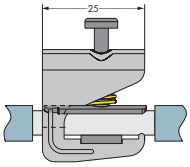
Dimensions in mm

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 (screen) clamps







Description		Diameter of Connectable Conductor	Item No.	Pack. Unit
Shield (screen) camps	H_{max} 40 mm, B 10 mm	1.5 mm/0.059 in to 6.5 mm/0.256 in	**791-107**	50
	H_{max} 47 mm, B 17 mm	5 mm/0.197 in to 11 mm/0.434 in	**791-111**	50
	H_{max} 63 mm, B 23 mm	10 mm/0.394 in to 17 mm/0.670 in	**791-117**	50
	H_{max} 78 mm, B 30 mm	16 mm/0.631 in to 24 mm/0.946 in	**791-124**	50

Note: Not for ground connections!

Accessories for Shield (Screen) Clamping Saddles and Shield (Screen) Clamps

Carrier with grounding foot



Description		Item No.	Pack. Unit
Carrier with grounding foot	bar 90° to the rail, 10 mm (0.394 in) x 3 mm (0.118 in), bar a. foot – Cu with tin plating, 45 mm/1.774 in long	**790-113**	25
Carrier with grounding foot	bar parallel to the rail, 10 mm (0.394 in) x 3 mm (0.118 in), bar a. foot – Cu with tin plating, 15 mm/0.591 in long	**790-110**	25
Carrier with grounding foot	bar parallel to the rail, 10 mm (0.394 in) x 3 mm (0.118 in), bar a. foot – Cu with tin plating, 25 mm/0.986 in long	**790-112**	25
Carrier with grounding foot	bar parallel to the rail, 10 mm (0.394 in) x 3 mm (0.118 in), bar a. foot – Cu with tin plating, 45 mm/1.774 in long	**790-114**	25
Carrier with 2 grounding feet	bar parallel to the rail, 10 mm (0.394 in) x 3 mm (0.118 in), bar a. foot – Cu with tin plating, 125 mm/4.929 in long	**790-115**	25

Suitable shield (screen) clamping saddle or shield (screen) clamps for carrier with grounding foot 790-110 = 790-108;
Carrier with grounding foot 790-112 = 790-108, 790-116, 791-111, 791-117;
Carrier with grounding foot 790-114 = 790-108, 790-116, 790-124, 790-140, 791-107, 791-111, 791-117, 791-124

Carrier rail



Stand off



Shield termination





Description		Item No.	Pack. Unit
Carrier rail	special slotted, 1000 mm/3'.3" long, Cu with tin plating, special lengths on request	**790-145**	1
Stand off	for special slotted carrier rail, use M 5 size screw	**790-144**	200 (2x100)
Shield termination including cable tie for shield			
diameter 5 mm /0.197 in to 10 mm /0.394 in	55 mm/2.169 in long	**709-350**	100 (4x25)
	150 mm/ 5.914 in long	**709-352**	100 (4x25)

Straight busbar



Isolated mounting foot

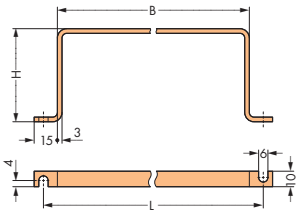


Isolated mounting foot



U-shaped busbar

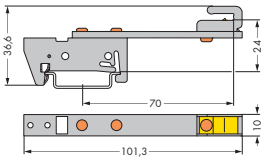




Description		Item No.	Pack. Unit
Straight busbar, 10 mm (0.394 in) x 3 mm (0.118 in), bar – Cu with tin plating	1000 mm/3'.3" long	**210-133**	20 (20x1)
	30 mm/1.181 in long	**790-133**	20 (20x1)
	50 mm/1.969 in long	**790-134**	20 (20x1)
Isolated mounting foot	for busbar, with standard screw M 4 x 8 mm	**790-100**	50 (2x25)
Isolated mounting foot	for busbar, with sheet metal screw (3.5 x 9) mm	**790-101**	50 (2x25)
U-shaped busbar, 10 mm (0.394 in) x 3 mm (0.118 in), Cu with tin plating	Dimensions (W x H x L) mm; 63 x 60 x 83	**790-190**	25 (5x5)
	Dimensions (W x H x L) mm; 100 x 60 x 118	**790-191**	25 (25x1)
	Dimensions (W x H x L) mm; 63 x 35 x 83	**790-192**	25 (5x5)
	Dimensions (W x H x L) mm; 100 x 35 x 118	**790-193**	25 (25x1)

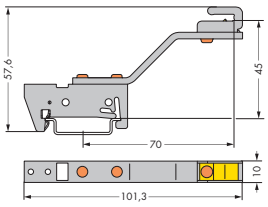
Busbar carrier





Busbar carrier, angulate





Description		Item No.	Pack. Unit
Busbar carrier	for busbars, 10 mm (0.394 in) x 3 mm (0.118 in) – Cu with tin plating	**790-300**	10
Busbar carrier, angulate	for busbars, 10 mm (0.394 in) x 3 mm (0.118 in) – Cu with tin plating	**790-301**	10

WAGO ProServe®

Designing, Assembling and Marking







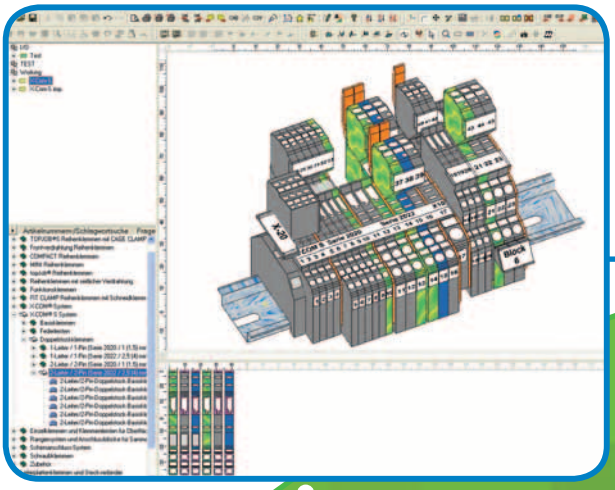
The advantages of ProServe are at your disposal every day. With unique features such as AutoAudit accuracy checking, ProServe performs much of the work for you, saving time and money.

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

smart DESIGNER

smartDESIGNER

productLOCATOR

product LOCATOR

WSCAD electronic GmbH

see electrical CADdy++

RUPLAN

ePLAN

Engineering Base

promis engne sigraph.CAE

AutoCAD ecscad

E3 series

ELEKTROCAD

ELCAD

Comos®

smartDESIGNER and productLOCATOR

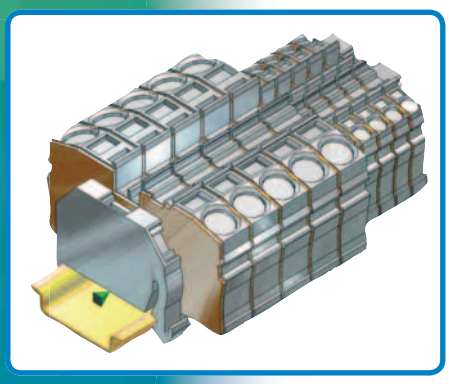
- Interfaces to CAE and M-CAD programs
- Output in PDF and HTML
- Different search functions provide quick item selection
- Creation of part lists including product pictures and custom part numbers
- Complex rail assemblies can be easily designed in 3D
- Easy creation of custom part numbers
- Creation 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

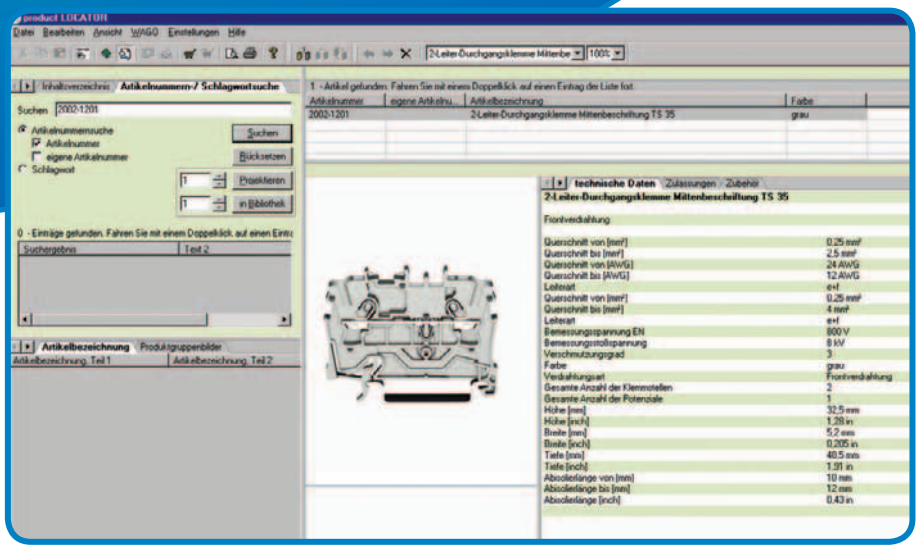
Marking:

- Direct creation and output of marking data to plotter or thermal transfer printer

CAD

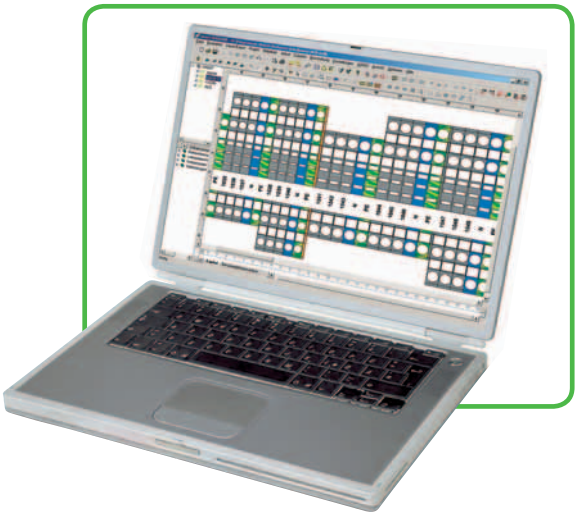
STEP – IGES – DXF – DWG





ProServe: Planning at a New Level

Configuration and marking of rail assemblies and I/O nodes, stand-alone or combined with CAE systems.



Designing:

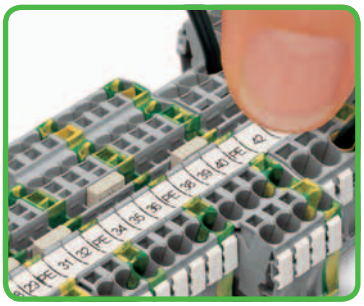
Both custom rail assembly and marking can be easily designed via WAGO ProServe® Software.

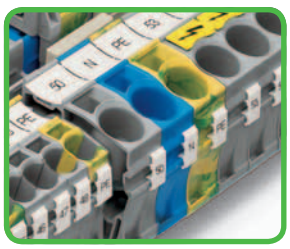




Snapping:

The marking strip is snapped into the center marker receptacle profile.





Combining marking strips with individual WMB markers

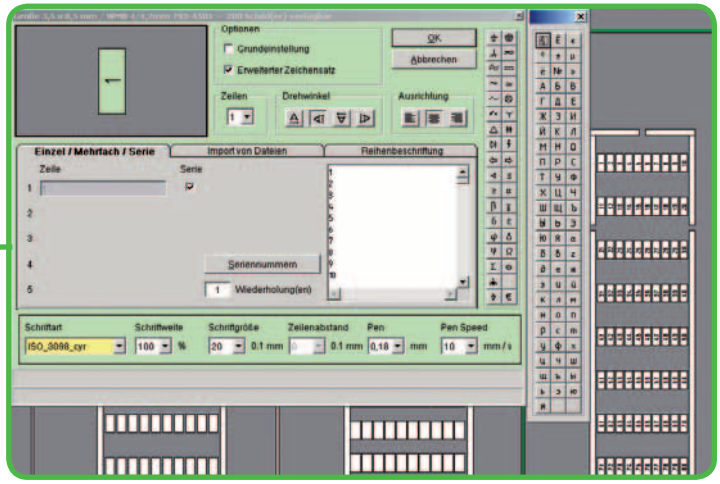


Alternative:
Miniature WSB markers can be printed on a plotter



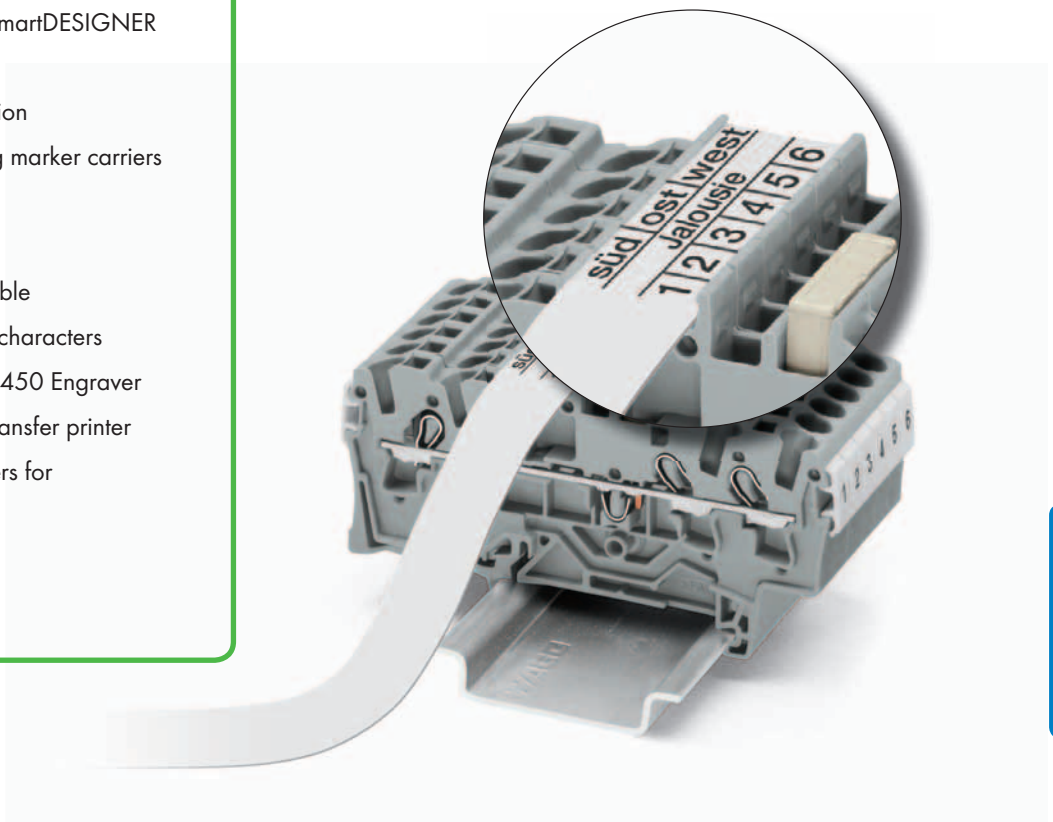
WMB Inline markers on continuous reel can be used in three positions:
In the center and on each side





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.

Mobile Printer

DYMO RHINO 6000





Print-out preparation:
First, insert the label cartridge. To do this, open the cover on the device and insert the cartridge as shown. Ensure the cartridge visibly and audibly locks into place. The two blue catches must latch on to the top edge of the cartridge. Then close the cover.
Turn the unit on. A query will appear in the display about setting the material width. Select your current label width and confirm it with "OK." The unit is now ready for use.
Note: You can also work with the unit while it is charging.
Please use the latest driver.
Download: www.wago.com under SERVICE / Download / ProServe



Description	Item No.	Pack. Unit
DYMO RHINO 6000 Mobile Printer Includes: Hard carrying case, AC adapter, battery, RHINO CONNECT software and two marking cartridges with 9 mm and 24 mm adhesive strips	**258-6000**	1
WAGO supplementary set for DYMO RHINO 6000 Includes: ProServe CD, ProServe flyer and quick installation guide for adding on to an existing manual printer	**258-6100**	1

Technical Data	
Resolution	180 dpi
Tape sizes	9 mm, 11 mm, 19 mm, 24 mm (other sizes upon request)
Tape styles	Permanent polyester, flexible nylon, vinyl, heat shrink tube
Keyboard style	ABC
Tape cutter	yes
Shock protection	yes
Memory	1000 labels (1 MB)
Symbols	yes
Barcodes	yes (e.g., Code 39, Code 128, EAN 8 + 13)
Number of font styles	4
Number of font sizes	7
Number of printed lines	5
Print preview	yes
PC connection	USB
Display	65 mm x 35 mm
Weight	3500 g
Operating time	8 hours
Battery charge indicator	yes

Thermal Transfer Printers

WAGO TP 343 and TP 298





Description	Item No.	Pack. Unit
	258-343	1
TP 343 Thermal Transfer Printer		
Resolution 300 dpi, incl. ProServe software; for 2009 and 709 Series marking strips		
Technical Data		
Printing method	Thermal/thermal transfer	
Printhead system	Thin-film transfer head	
Print resolution	300 dpi	
Print speed	up to 76 mm/sec.	
Print width	6 - 104 mm (0.25" - 4.09")	
Print length	up to 990 mm (39")	
RAM memory	2 MB DRAM, 1 MB Flash	
Interfaces	Parallel Centronics (LPT), RS-232 (COM),	
	USB, ETHERNET 10/100 Base T	
Sensors	Label sensor (material end, foil end, bottom	
	reflective sensor)	
Other	2 cardboard cores (104 mm) for ink ribbon	
	rewinder; operating instructions in German	
	and Englisch	
Power supply	Universal power supply unit	
Operating voltage	100 V ... 240 V AC /	
	50 Hz ... 60 Hz	
Dimensions (mm) W x H x L	230 x 200 x 290	
	(Length with unwinder: approx. 450 mm)	
Enclosure	Double-walled plastic	
Weight	1000 g	
Safety approvals	CE, FCC Class A, UL, CUL, TUV	
Accessories	1 x USB cable; 1 x ETHERNET cable;	
	unwinder set;	
	marking strips (1 x 2009-110);	
	ink ribbon (1 x 258-145)	

Description	Item No.	Pack. Unit
	258-298	1
TP 298 Thermal Transfer Printer		
Resolution 300 dpi, incl. ProServe software and 258-178 print roller for WMB Inline and 2009 and 709 Series marking strips		
Technical Data		
Printing method	Thermal/thermal transfer	
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	
	rewinder, CompactFlash memory card	
	16-512 MB	
Operating voltage	100 V ... 240 V AC /	
	50 Hz ... 60 Hz, PFC	
Dimensions (mm) W x H x L	242 x 274 x 446	
Weight	10000 g	
Operating temperature	10°C ... 35°C	
Rel. humidity	30 % ... 85 %	
Safety approvals	CE, FCC class 1	
Accessories	1 x USB cable; 1 x serial cable;	
	marking strips (1 x 2009-110);	
	ink ribbon (1 x 258-149)	

Application table for ink ribbon/marking accessories/printer

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-xxx	TP 343
258-149	50 mm	resin	Marking Strip Series 2009 2009-xxx Marking Strip Series 709 709-xxx	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 3M PL300 Mobile Printer

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	**211-611**
Adhesive strips	white, 9 mm width x 7 m	**211-612**
Adhesive strips	white, 19 mm width x 7 m	**211-613**
Heat shrink tube	white, 9 mm width x 1,5 m	**211-614**
Heat shrink tube	white, 19 mm width x 1.5 m	**211-615**

Accessories for TT Printer

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 and TP 343 printers. For detailed ordering information, please refer to the **"Application table for ink ribbon/marking 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	(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**
Carrying case for TP 343		**258-342**
Retractable handle for carrying case TP 298 / TP 343		**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 reel	white, 1,500 markers	**2009-115**
WMB Inline, pitch 5 mm, stretchable, 5 mm ... 5.2 mm, on reel	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 (12 mm) for TT Printer



Marker card (12 mm) for plotters



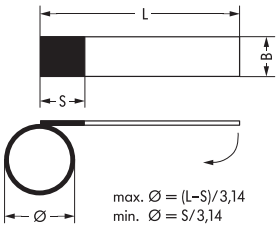
Labels on roll



Labels on DIN A4 sheets



Dimensions of self-laminating label

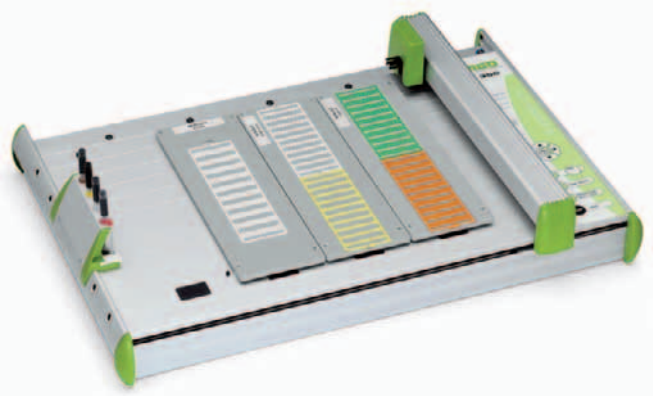


Description		Item No.
Marker card for thermal transfer printer	12 mm	**211-121**
	23 mm	**211-111**
Marker card for plotter	12 mm	**211-120**
(258-370 carrier plates are required for plotting)	23 mm	**211-110**
Cable tie marker	25 x 10 mm, white, 3,500 pieces per roll	**211-135**
Labels on roll for thermal transfer printer	Marker surface: "S"=8 mm, "B"=18 mm, "L"=35 mm for max. 9 mm cable Ø,	**211-155**
	9,000 labels per roll	
	Marker surface: "S"=13 mm, "B"=23 mm, "L"=51 mm for max. 12 mm cable Ø,	**211-156**
	5,000 labels per roll	
Wire marker for thread-on mounting	for 0.75 - 1.5 mm², 2,000 markers per roll	**211-161**
	for 2.5 - 6 mm², 2,000 markers per roll	**211-162**
Labels on DIN A4 sheets for laser printer	Marker surface: "S"=9 mm, "B"=17 mm, "L"=35 mm for max. 8 mm cable Ø,	**211-150**
(258-383 carrier plates are required for plotting)	70 labels per roll	
	Marker surface: "S"=13 mm, "B"=21 mm, "L"=56 mm for max. 14 mm cable Ø,	**211-151**
	32 labels per roll	
Marking sleeve 12 mm, for wire Ø	1.6 mm ... 3.2 mm or 0.25 mm² ... 1.5 mm²	**211-112**
	2.2 mm ... 4.5 mm or 0.5 mm² ... 4 mm²	**211-113**
	3.7 mm ... 5.9 mm or 2.5 mm² ... 6 mm²	**211-114**
	4.8 mm ... 7.5 mm or 6 mm² ... 16 mm²	**211-115**
Marking sleeve 23 mm, for wire Ø	1.6 mm ... 3.2 mm or 0.25 mm² ... 1.5 mm²	**211-122**
	2.2 mm ... 4.5 mm or 0.5 mm² ... 4 mm²	**211-123**
	3.7 mm ... 5.9 mm or 2.5 mm² ... 6 mm²	**211-124**
	4.8 mm ... 7.5 mm or 6 mm² ... 16 mm²	**211-125**
Marking sleeve for cable tie	23 mm, for 10 mm² wires and larger	**211-129**
Cable tie (2.5 x 100) mm		**807-090/101-100**
Label for I/O marking	Plotter, 12 x 7 mm	**211-211**
(258-371 carrier plates are required for plotting)		
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**
Continuous label	3 mm, white 12 lengths at 25 m	**210-732**
Label roll	70 x 100 mm, white 500 labels/reel	**210-703**
	70 x 100 mm, silver 500 labels/reel	**210-704**
	6 x 15 mm, white 3000 labels/reel	**210-705**
	6 x 15 mm, yellow 3000 labels/reel	**210-705/000-002**
	9 x 15 mm, white 3000 labels/reel	**210-706**
	9 x 15 mm, yellow 3000 labels/reel	**210-706/000-002**
	8 x 20 mm, white 3000 labels/reel	**210-707**
	8 x 20 mm, yellow 3000 labels/reel	**210-707/000-002**
	9.5 x 25 mm, white 3000 labels/reel	**210-708**
	35 x 5 mm, white, 4,000 labels/roll	**210-710**

More labels at www.marschall-pw.de

Plotters with EG 450 Engraver

IP 350 A3 Plotter / IP 350 A4 Plotter





Description	Item No.	Pack. Unit
IP 350 A3 Plotter	**258-350**	1
incl. ProServe software		
IP 350 A4 Plotter	**258-451**	1
incl. ProServe software		

Technical Data	
Plotting area	440 mm x 305 mm (258-350)
	220 mm x 305 mm (258-451)
Interfaces	paralell (centronics); USB 1.1
Language	based on HP-GL 7475A
Data buffer	16 MB
Speed	max. 400 mm/sec.
Drive system	Two-phase stepper motor
Pen storage unit	max. 4 pens (optimum seal)
Plotter pen	Special plotter pens with HP receptacle
Addressable resolution	0.01 mm
Repeat accuracy	0.05 mm
Repeatability after changing the pen	0.05 mm using high-quality pens
Power supply	via separate desktop power supply unit
	equipped with exchangeable supply line
Operating voltage	120 V ... 240 V AC / 50 Hz ... 60 Hz
Voltage range	90 V ... 264 V AC
Current consumption (internal)	0.3 A max. at 220 V AC
Dimensions (mm) W x H x L	125 x 660 x 440
Weight	11,069 g
Operating temperature	10°C ... 35°C
Rel. humidity	35 % ... 75 %
Safety approvals	acc. to UL-UL1950 CSA-950/VDE
	EN60950
Immunity to interference	acc. to FCC Class B FCC Part 15 and VDE
	Class B EN 55022

Description	Item No.	Pack. Unit
EG 450 Engraver	**258-450**	1
Extension module for IP 350 Flat Plotter. Consists of "EC 450" Control Unit and "VC 450" Vacuum Cleaner, including graver 0.3 mm + 0.4 mm		

Technical Data	
1. Engraving spindle	
Speed	min. 5,000 rpm, max. 50,000 rpm
Torque	6 Ncm
Frequency	83 - 830 Hz
Energy consumption	max. 60 W
Collets	3 mm shaft diameter
Clamping mechanism	Head clamping
Run-out with collet	0.03 mm
Motor type	three-phase, asynchronous, brushless
Enclosure	Aluminium
Clamping diameter	25 mm
Ball bearing type	permanent lubrication, double
Cooling	Internal air via integrated fan
Application	Engraving only
Guaranteed bearing operation	min. 1,000 hrs if handled properly
Notice: Never clean engraving spindle using compressed air, do not use lubricants when engraving.	
2. VEB 500 Control Unit	
Operating voltage	100 V ... 240 V AC / 50 Hz ... 60 Hz
3. VC Vacuum Cleaner	
Vacuum cleaner bag	Type Y98
General Specifications	
Dimensions (mm) W x H x L	Control unit + vacuum cleaner (an top of each other): 240 x 290 x 315
Weight	Engraving spindle + control unit + vacuum cleaner + accessories: 8,000 g

Flatbed Plotter

IP200



- Rugged, aluminum construction
- Plotting area, A4: 220 mm x 305 mm
- Easy replacement of marker receptacles
- Auto calibration
- Up to 10.5 mm wide markers can be plotted
- Special solutions for up to 15 mm wide markers are available
- Universal power supply, 100-240 VAC
- Neat plotting right from the very first marker
- PC interfaces: USB ports
- Command language: HPGL
- IP200 firmware can be updated via PC and Internet

Description	Item No.	Pack. Unit
IP200 Flatbed Plotter	**258-200**	1

Technical Data	
Plotting area	200 mm x 305 mm
Interfaces	USB Level 1.1
Language	Based on HP-GL 7475A
Data buffer	16 MB
Speed	max. 40 mm/s
Drive system	Two-phase step motor
Plotter pen	Special plotter pens with HP receptacle
Addressable resolution	0.01 mm
Repeat accuracy	0.05 mm
Repeat accuracy after pen change	0.05 mm with optimun pen
Power supply	Separate power supply with exchangeable plug adapters
Operating voltage	100 V ... 240 V AC / 50 Hz ... 60 Hz
Current consumption (internal)	0.7 A max. at 220 V AC
Dimensions (mm) W x H x L	125 x 440 x 440
Operating temperature	10 °C ... 35 °C
Rel. humidity	35 % ... 75 %
Safety approvals	EN 60950-1
Immunity to interference	EN 55022 B
Included:	IP200 Plotter, power supply, USB data cable, operating manual + ProServe software

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	0.18 mm line width	**258-226**
	0.25 mm line width	**258-227**
	0.35 mm line width	**258-228**
	0.50 mm line width	**258-229**
WAGO ink cartridges	black, for permanent marking, not refillable (5 x 1 ml)	**258-141**
WAGO plotter pen (disposable)	0.18 mm line width	**258-326**
	0.25 mm line width	**258-327**
	0.35 mm line width	**258-328**
	0.50 mm line width	**258-329**
Cover		**258-146**
Service kit	(4 spare pen stations)	**258-147**
WAGO cleaning set	suitable for cleaning all EKS Pens	**258-139**
WAGO pen cleaner		**258-140**
Calibration aid		**258-453**
Graver set	0.2/0.3/0.4/0.5/0.7/1.0 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**
	1.0 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**
	0.25 mm line width, for inside marking only	**258-427**
	0.35 mm line width, for inside marking only	**258-428**
	0.50 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**
	0.25 mm line width, for inside marking only	**258-427/000-005**
	0.35 mm line width, for inside marking only	**258-428/000-005**
	0.50 mm line width, for inside marking only	**258-429/000-005**

WAGO plotter pens are suitable for any kind of smooth surfaces. No additional adapter is required.

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)	**258-368**
	T-marking strips (209-290)	**258-365**
	Marker 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 Conta-Clip	Universal	**258-398**
	PK2 PVC	**258-393**
	PA+ 2	**258-399**

Marking System

WMB Multi marking system



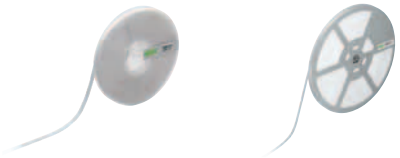
Miniature quick marking card



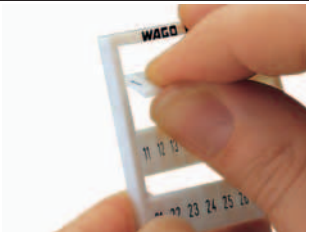
Colored marker cards



WMB Inline



Description		Item No.	Item No.	Pack. Unit
WMB Multi marking system for terminal block width 3.5 mm	plain	**793-3501**		5 cards
WMB Multi marking system for terminal block width 4 - 4.2 mm, strechable 4 - 4.2 mm	plain	**793-4501**		5 cards
WMB Multi marking system for terminal block width 5 - 17.5 mm, strechable 5 - 5.2 mm	plain	**793-5501**		5 cards
Miniature WSB quick marking system for terminal block width 5 - 17.5 mm	plain	**248-501**		5 cards
WSB Quick marking system for module width 5 - 17.5 mm	plain	**209-501**		5 cards
Item number suffix for colored marker cards	yellow		**.../000-002**	5 cards
	red		**.../000-005**	5 cards
	blue		**.../000-006**	5 cards
	gray		**.../000-007**	5 cards
	orange		**.../000-012**	5 cards
	light green		**.../000-017**	5 cards
	green		**.../000-023**	5 cards
	violet		**.../000-024**	5 cards
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**		1 Coil
WMB Inline, pitch 5 mm, stretchable, 5 mm ... 5.2 mm, on roll	white, 8,000 markers	**2009-135**		1 Coil

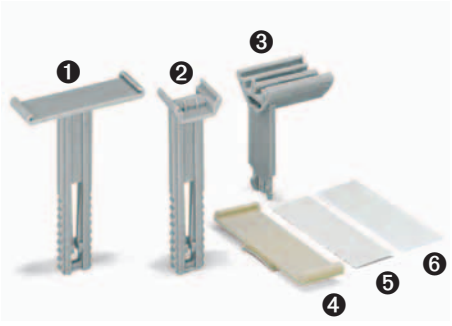


Separation of a strip from the WMB Marker card



Stretching of a strip, stretchable from 4 mm up to 4.2 mm, stretchable from 5 mm up to 5.2 mm

Group marker carrier



249-118 height-adjustable group marker carrier for end stops



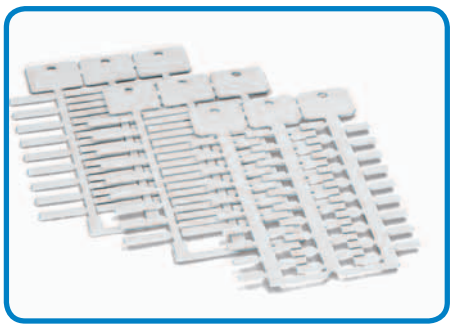
209-112 group marker carrier for 788 Series relay sockets with pluggable miniature switching relay



Description		Item No.	Pack. Unit
Height-adjustable group marker carrier (43.5 mm ... 60 mm), for end stops 249-116 and 249-117	for 1 marker or self-adhesive label and transparent protection cover	249-119 ❶	50 (2x25)
	for 2 WSB Quick markers or 1 x continuous marking strip	249-118 ❷	100 (4x25)
	with marker surface 41 mm/1.61 in, 6 mm/0.23 in wide	249-120	50 (2x25)
Group marker carrier	for up to 3 WMB markers, 15 mm/0.591 in wide	209-140 ❸	50 (2x25)
Group marker carrier	for snapping into screwless end stops, 10 mm/0.394 in wide	209-112 ❹	100 (2x50)
Marker card	from white cardboard, for self-marking, 100 markers per sheet	209-113 ❺	1 (1x1)
Protection cover	transparent	209-114 ❻	50 (1x50)

WAGO Wire and Cable Marking

Wire marking



The following marker cards are available:
Marker cards for plotter marking ...



... or marker cards on roll
for thermal transfer printing



Slide the marker card into the marking sleeve receptacle.
Changing the marking is also
possible after the wire has been connected



Remove the rest of the card by twisting it off





Fix the 211-129 marking sleeve using cable ties to
individual wire or cable



Cable marking



Self-laminating labels are available on A4 sheets
for the laser printer (plotter) ...



... or are supplied on roll for the thermal transfer
printer



Remove the printed label from the sheet or roll and wrap
it around the wire or cable.
The transparent laminate protects the marking

WAGO Wire and Cable Marking

Marking sleeve 12 mm



Marking sleeve 23 mm



Marking sleeve 23 mm, for cable tie



Description		Item No.	Pack. Unit
Marking sleeve 12 mm, for wire Ø	1.6 mm ... 3.2 mm or 0.25 mm² ... 1.5 mm²	**211-112**	2000
	2.2 mm ... 4.5 mm or 0.5 mm² ... 4 mm²	**211-113**	2000
	3.7 mm ... 5.9 mm or 2.5 mm² ... 6 mm²	**211-114**	1000
	4.8 mm ... 7.5 mm or 6 mm² ... 16 mm²	**211-115**	1000
Marking sleeve 23 mm, for wire Ø	1.6 mm ... 3.2 mm or 0.25 mm² ... 1.5 mm²	**211-122**	2000
	2.2 mm ... 4.5 mm or 0.5 mm² ... 4 mm²	**211-123**	2000
	3.7 mm ... 5.9 mm or 2.5 mm² ... 6 mm²	**211-124**	1000
	4.8 mm ... 7.5 mm or 6 mm² ... 16 mm²	**211-125**	1000
Marking sleeve for cable tie	23 mm, for wires from 10 mm²	**211-129**	1000
Cable tie (2.5 x 100) mm		**807-090/101-100**	1000

Marker card (12 mm) for Printer



Marker card (12 mm) for Plotter



Marker card (23 mm) for Printer



Marker card (23 mm) for Plotter



Description		Item No.	Pack. Unit
Marker card for TT Printer	12 mm	**211-121**	1
	23 mm	**211-111**	1
Marker card for Plotter	12 mm	**211-120**	30
	(258-370 Carrier Plates are required for plotting)		
	23 mm	**211-110**	18
	(258-370 Carrier Plates are required for plotting)		

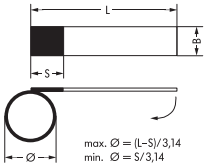
Labels on roll



Labels on DIN A4 sheets



Dimensions of self-laminating label

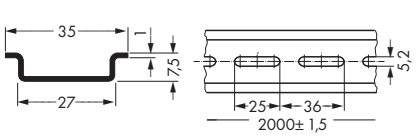


Description		Item No.	Pack. Unit
Labels on roll for thermal transfer printer	Marker surface "S"=8 mm, "B"=18 mm, "L"=35 mm for max. cable Ø 9 mm, 9.000 labels per roll	**211-155**	1
	Marker surface "S"=13 mm, "B"=23 mm, "L"=51 mm for max. cable Ø 12 mm, 5.000 labels per roll	**211-156**	1
Labels on DIN 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. cable Ø 8 mm, 70 labels per roll	**211-150**	20
	Marker surface "S"=13 mm, "B"=21 mm, "L"=56 mm for max. cable Ø 14 mm, 32 labels per roll	**211-151**	25

Carrier Rails

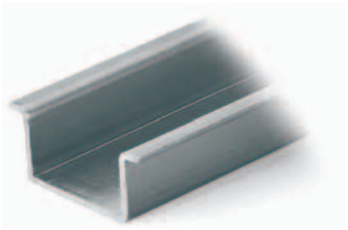
Steel carrier rail acc. to EN 60715

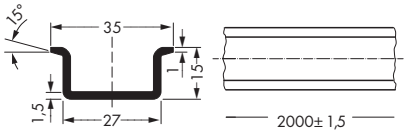




Item No.	Pack. Unit
Steel rail, I_N 76 A (referred to a length of 1 m)	
35 x 7.5 mm, 1 mm/0.039 in thick, 2 m long, unslotted	
210-113	10
Hole width 25 mm; hole spacing 36 mm, slotted	
210-112	10
Hole width 18 mm; hole spacing 25 mm, slotted	
210-115	1

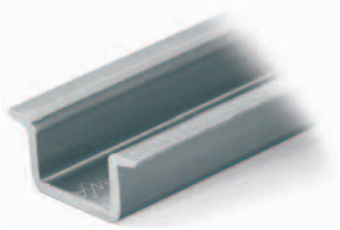
Steel carrier rail

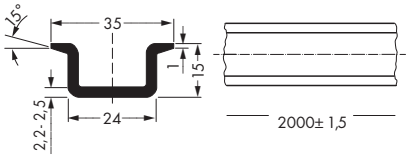




Item No.	Pack. Unit
Steel rail, I_N 125 A (referred to a length of 1 m)	
35 x 15 mm, 1.5 mm/0.059 in thick, 2 m long, unslotted	
210-114	10
Steel rail, I_N 125 A (referred to a length of 1 m)	
35 x 15 mm, 1.5 mm/0.059 in thick, 2 m long, slotted	
210-197	10

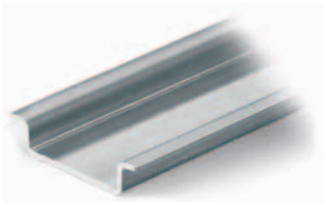
Steel carrier rail acc. to EN 60715

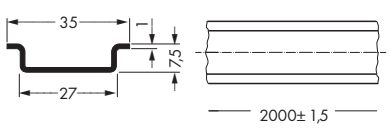




Item No.	Pack. Unit
Steel rail, I_N 125 A (referred to a length of 1 m)	
35 x 15 mm, 2.3 mm/0.091 in thick, 2 m long, unslotted	
210-118	10

Steel carrier rail galvanized

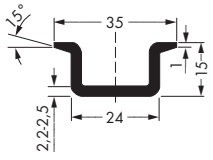




Item No.	Pack. Unit
Steel rail,	
35 x 7.5 mm, 1 mm/0.039 in thick, 2 m long, unslotted	
210-505	1
35 x 7.5 mm, 1 mm/0.039 in thick, 2 m long, slotted	
210-504	1
35 x 15 mm, 1.5 mm/0.059 in thick, 2 m long, unslotted	
210-506	1
35 x 15 mm, 1.5 mm/0.059 in thick, 2 m long, slotted	
210-508	1

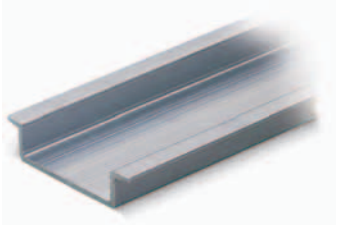
Copper carrier rail

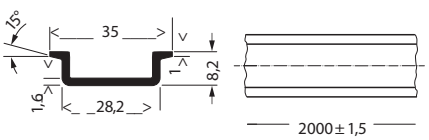




Item No.	Pack. Unit
Aluminum carrier rail, I_N 76 A (referred to a length of 1 m)	
35 x 8.2 mm, 1.5 mm/0.059 in thick, 2 m long, unslotted	
210-196	20

Aluminum carrier rail

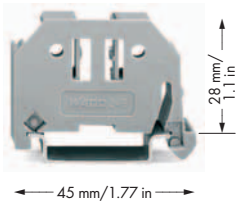




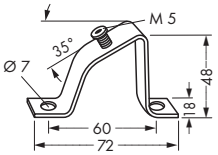
Item No.	Pack. Unit
Angled support bracket,	
without screw	
210-148	10
Screw M 5 x 8	
210-149	100

Accessories for Carrier Rails

End stop for DIN 35 rail End stop width 6 mm / 0.236 in	Angled support bracket	Rail end cap, for DIN 35 rail (7.5 mm/0.29 in high)





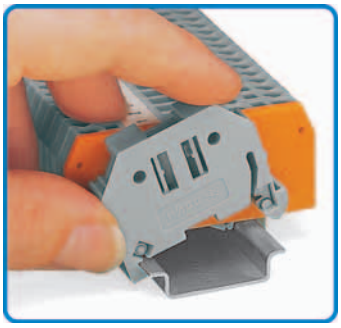


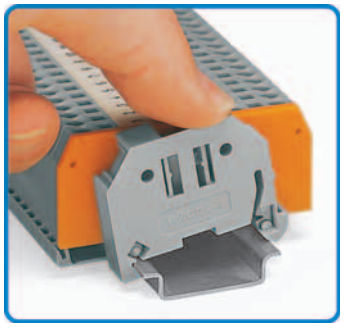


Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
End stop, for DIN 35 rail		**Angled support bracket,**		**Rail end cap,**	
6 mm/0.236 in wide		without screw		for DIN 35 rail (7.5 mm/0.29 in high)	
249-116	100 (4 x 25)	**210-148**	10	**209-109**	50
End stop, for DIN 35 rail		**Screw M 5 x 8**			
249-117	50 (2 x 25)	**210-149**	100		

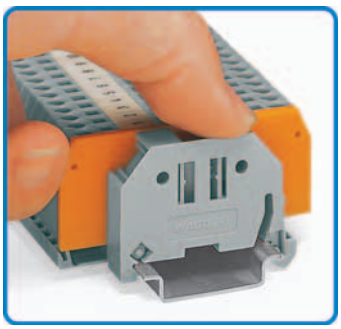
Snap on - That's it!
Assembling the WAGO screwless end stops is as simple and quick as snapping a WAGO railmounted terminal block onto the rail.
Without any tools!
This way rail-mounted terminal blocks are safely secured at low cost against any mouvement on all carrier rails DIN 35 acc. to DIN EN 50022 (35 x 7.5 mm; 35 x 15 mm).
Entirely without screws!
The „secret" of the excellent tight fit lies in the two small clamping plates which keep the end stop in position, even if the rails are mounted vertically.
Simply snap on - and forget!

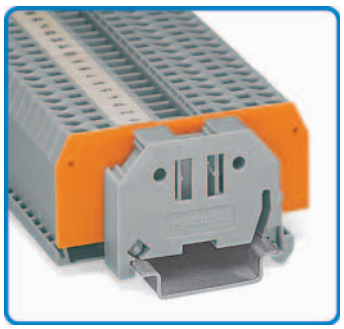
In addition, costs are considerably reduced when using large numbers of end stops.
A further advantage is that three marker receptacles for all WAGO marker systems for rail-mount terminal blocks and a snap-in hole for WAGO adjustable height group marker carriers offer individual marking possibilities.





Snap on ...



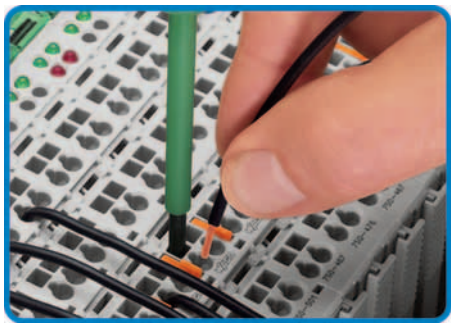


... that's it!!

Operating tool

Operating tool with partially insulated shaft for optimum handling of terminal blocks	Operating tool with partially insulated shaft – Set –	Operating tool with partially insulated shaft, short for optimum handling of terminal blocks
		

Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Operating tool, with partially insulated shaft,		Operating tool, with partially insulated shaft,		**Operating tool, type 1, short, straight blade**	
type 1, blade (2.5 x 0.4) mm		– Set –		**(2.5 x 0.4) mm**, with partially insulated shaft	
210-719	1	**210-722**	1	**210-647**	1
Operating tool, with partially insulated shaft,				**Operating tool, type 2, short, straight blade**	
type 2, blade (3.5 x 0.5) mm				**(3.5 x 0.5) mm**, with partially insulated shaft	
210-720	1			**210-657**	1
Operating tool, with partially insulated shaft,				**Operating tool, type 1, short, angled blade**	
type 3, blade (5.5 x 0.8) mm				**(2.5 x 0.4) mm**, with partially insulated shaft	
210-721	1			**210-648**	1
				Operating tool, type 2, short, angled blade	
				(3.5 x 0.5) mm, with partially insulated shaft	
				210-658	1



Wiring example showing WAGO-I/O-SYSTEM 750

The operating tool are particularly appropriate for the operation of front-entry terminal blocks and connectors. (The picture shows the WAGO-I/O-SYSTEM 750)

Cable Strippers

Cable stripper for round cables with an outer diameter from 2.5 mm to 11 mm Ø	Cable stripper for round cables with an outer diameter from 4.5 mm to 40 mm Ø	





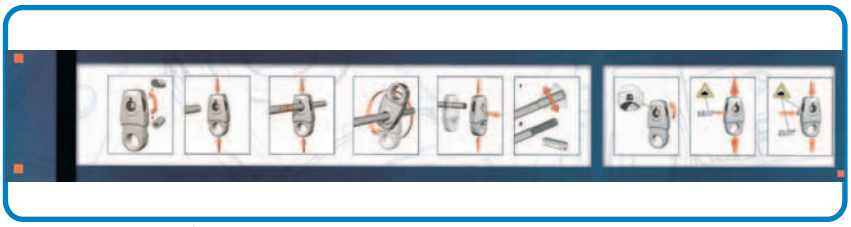
Item No.	Pack. Unit	Item No.	Pack. Unit
Cable stripper for round cables with an outer diameter from 2.5 mm to 11 mm Ø		Cable stripper for round cables with an outer diameter from 4.5 mm to 40 mm Ø	
206-171	1	**206-174**	1
Item No.	**Pack. Unit**	**Item No.**	**Pack. Unit**
Spare blade for 2.5 mm to 11 mm Ø		Spare blade for 4.5 mm to 40 mm Ø	
 **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/0.43 inch diameter
- Safe and easy to use through closed stripping cavity

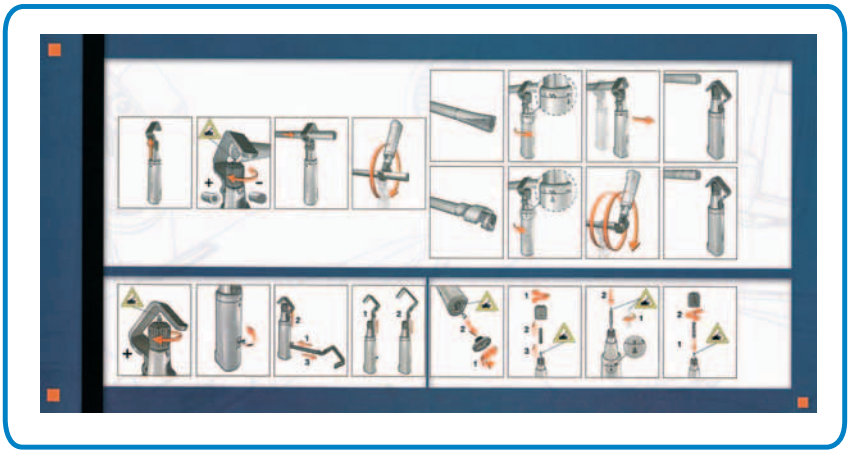
206-174 Cable Stripper:

- Safe and easy to use: Three locking positions for circular, longitudinal and spiral cuts
- High cable stripping capacity of up to 40 mm/1.57 inch diameter
- Well balanced, ergonomic design features rests for thumb, index and pinky fingers to ease raising of the cable retention hook
- Replacement blades can be stored within the tool body



Handling instructions for 206-171 cable stripper





Handling instructions for 206-174 cable stripper



Wire Strippers

Microstrip wire stripper 0.14 mm² ... 1.5 mm²/AWG 24 ... 16 "solid" and "stranded" Wire cutter up to 1.5 mm²/AWG 16 "solid" and "stranded"	Quickstrip 10 wire stripper 0.02 mm² ... 10 mm²/AWG 28 ... 8 "stranded" (6 mm²/AWG 10 "solid") Wire cutter up to 10 mm²/AWG 8 "stranded" (1.5 mm²/AWG 16 "solid")	Quickstrip 16 wire stripper 4 mm² ... 16 mm² Wire cutter up to 10 mm²/AWG 12 ... 6 "stranded" (1.5 mm²/AWG 16 "solid")







Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Microstrip wire stripper		**Quickstrip 10 wire stripper**		**Quickstrip 10 wire stripper**	
206-501	1	**206-124**	1	**206-125**	1
Spare stripping complete		**Standard blade cassette** 0.02 mm² ... 10 mm²/AWG 34 ... 8		**Blade cassette 16 mm²** 4.0 mm² ... 16 mm²/AWG 12 ... 6	
 **206-502**	1	 **206-126**	1	 **206-128**	1
Spare blade for wire cutter		**"V" blade cassette** 0.02 mm² ... 4 mm²/AWG 34 ... 12 for PTFE			
 **206-503**	1	 **206-127**	1		

- Automatic adjustment to wire size.
- No damage to wire strands.
- Gripping pressure of jaws adjusts automatically to wire insulation diameter.
- Full cycle strip - jaws open after stripping, ensures no nicked strands.
- Exact strip length may be set by sliding of red setting stop.
- Replaceable stripping jaw assembly.
- Self-sharpening, fully protected wire cutter, also replaceable.*
- Glass fiber reinforced polyamide tool body.

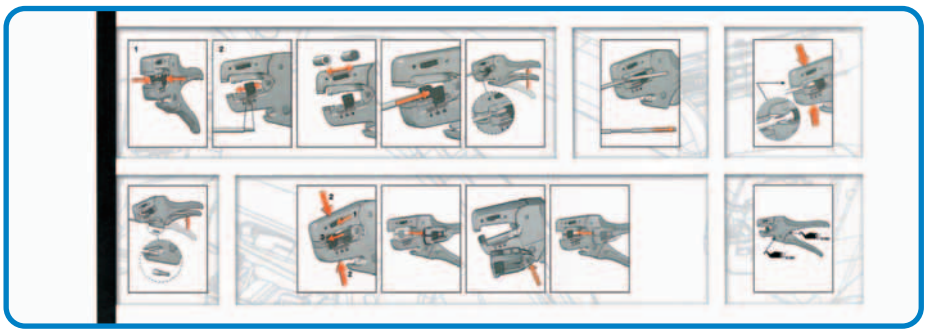
* for Microstrip



Cutting of wire.



Stripping of wire.



Operating instructions are enclosed in the packaging.

Cable Cutter and Crimping Tools

Cable cutter acc. to VDE for copper and aluminum wires up to 35 mm²/AWG 2 Weight 200 g	**"Variocrimp 4" Crimping Tool 0,25 mm² - 4 mm² / AWG 22 - 12 Weight 400,5 g**	**"Variocrimp 16" Crimping Tool 6 mm² - 16 mm² / AWG 10 - 6 Weight 579,5 g**



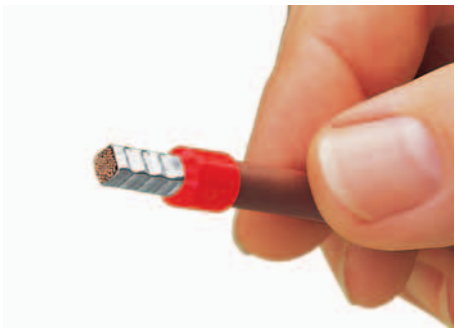




Item No.	Pack. Unit	Item No.	Pack. Unit	Item No.	Pack. Unit
Cable cutter		**"Variocrimp 4" crimping tool**, for insulated and		**"Variocrimp 16" crimping tool,** for insulated and	
206-118	1	uninsulated ferrules, crimping range of 0.25 – 4 mm²		uninsulated ferrules, crimping range of 6 – 16 mm²	
		206-204	1	**206-216**	1



Cutting



A perfect gastight crimp, both electrically and mechanically reliable.

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 on 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 gas-tight crimp connection.
- Crimping tools open automatically after crimping operation is complete.
- Ergonomical handles.

What is a "gas-tight" connection?

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 can be considered to be closed off on account of the 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. Oxidation leads 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.

Test and Measurement Tools

WAGO Profi LCD+ 2-pole voltage tester with LCD display 6 - 1000 V AC/DC	WAGO Profi LED+ 2-pole voltage tester with LED display 6 - 1000 V AC/DC	





Item No.	Pack. Unit	Item No.	Pack. Unit
WAGO Profi LCD+		**WAGO Profi LED+**	
2-pole voltage tester with LCD display		2-pole voltage tester with LED display	
Measuring range: 6 V ... 1000 V AC/DC		Measuring range: 6 V ... 1000 V AC/DC,	
Degree of protection: IP65		Degree of protection: IP65	
Resistance measurement: up to 2000 Ω ,		Resistance measurement: up to 2000 Ω ,	
removable test probes, 4 mm Ø		removable test probes, 4 mm Ø	
206-807	1	**206-806**	1
Item No.	**Pack. Unit**	**Item No.**	**Pack. Unit**
Replacement test probes, 4 mm (2 pcs)		**Replacement test probes**, 4 mm (2 pcs)	
 **206-808**	25	 **206-808**	25

Additional product features for WAGO 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
- TÜV/GS tested and approved
- IEC/EN 61243-3 (DIN VDE 0682-401)

Additional product features for WAGO Profi LED+:

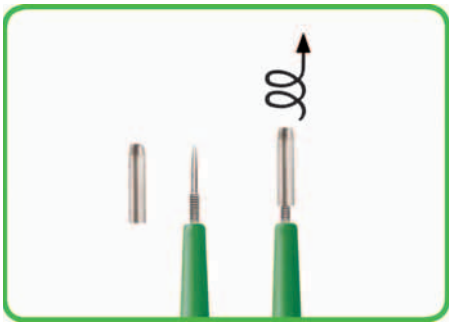
- Automatic measurement range selection
- Single-pole phase testing AC >100 V
- Two-pole sequence testing (R and L)
- Continuity testing
- FI/RCD testing (30 mA) via buttons
- One-hand operation for SCHUKO and CEE sockets
- LED torch lamp function
- CAT IV 1000 V
- TÜV/GS tested and approved
- IEC/EN 61243-3 (DIN VDE 0682-401)

WAGO Profi LCD+ and WAGO Profi LED+

- Improved socket contact via 4 mm test probes
- Removable test probes for small test ports (suitable for all WAGO terminal blocks)







WAGO Multi Tester Digital multimeter 600 V AC/DC 10 A AC/DC	WAGO Amp Tester Digital clamp meter 0.01 - 200 A AC/DC	Testboy







Item No.	Pack. Unit
WAGO Multi Tester	
Digital multimeter with contact-less voltage tester	
Measuring range: 600 V AC/DC	
10 A AC/DC	
Resistance measurement: up to 20 MΩ	
Includes: carrying case	
206-810	1

Item No.	Pack. Unit
WAGO Amp Tester	
Digital clamp meter	
Measuring range: 0.01 A ... 200 A AC/DC	
Degree of protection: IP44	
True RMS measuring method	
Includes: carrying case	
206-815	1

Item No.	Pack. Unit
Testboy,	
with integrated flashlight	
Voltage range 120 V to 1000 V AC	
206-804	1

Item No.	Pack. Unit
Replacement test leads, red/black	
206-811	1

Additional product features for WAGO 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)

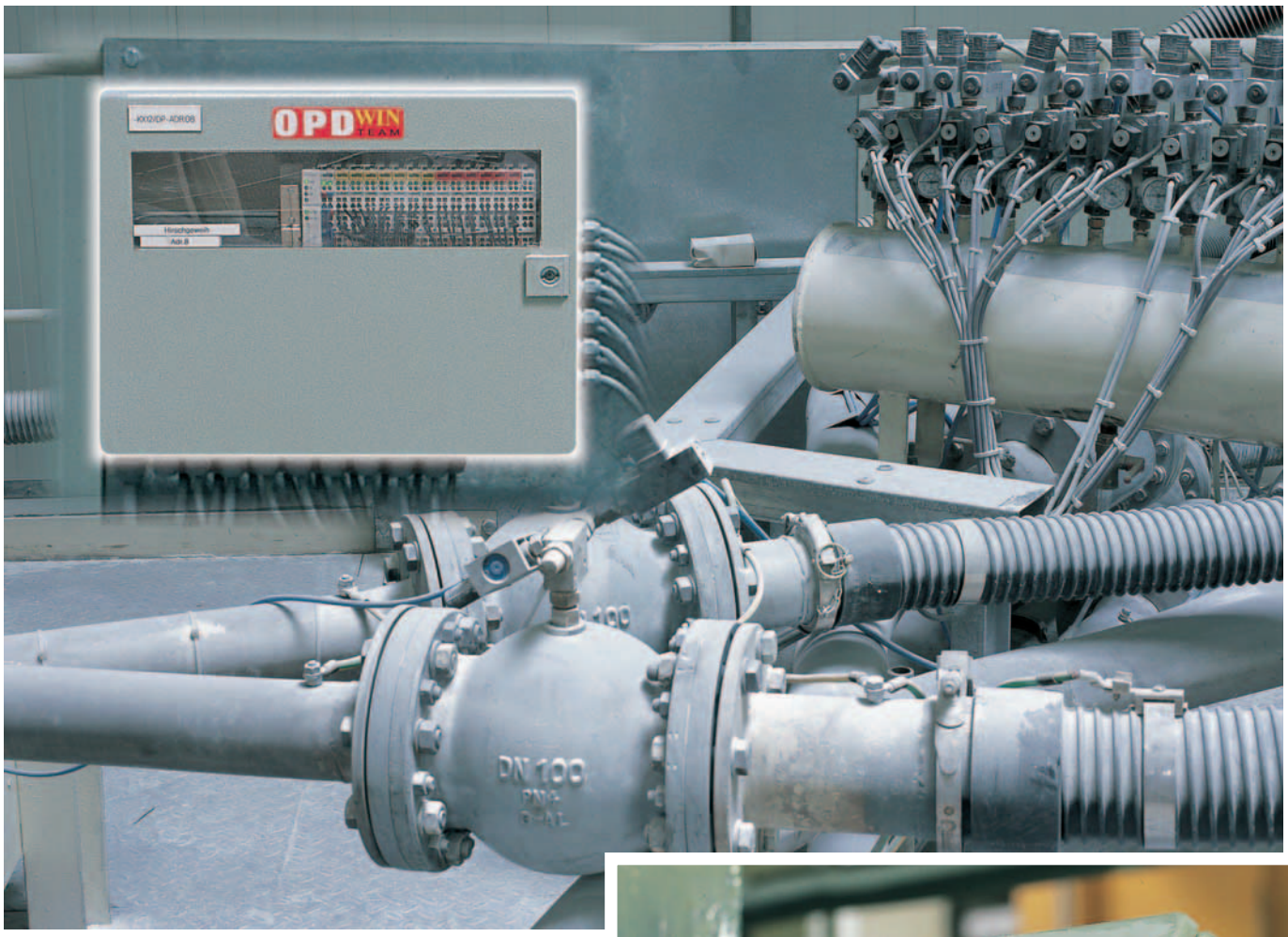
Additional product features for WAGO Amp Tester:
- AC and DC current measurement
- True RMS measurement
- Data hold function
- Maximum jaw opening: 21 mm Ø
- Compact design for measuring in tight spaces
- Resolution: 0.01 A at 40 A
- Resolution: 0.1 A at 200 A
- Sampling rate: 3 times per second
- Auto power-off function
- CAT III 300 V
- TÜV/GS tested and approved
- IEC/EN 61010-1 (DIN VDE 0411)

A device that will reliably detect AC voltage in cables, sockets, fuses, switches, outlets, etc.
The voltage tester detects:
· Live conductors
· Cable breaks
· Blown fuses
· Defective switches
· Defective lamps











WAGO Application: Opdenhoff Technologie GmbH in Hennef, Germany
Control Systems for Weighing, Mixing and Conveyance of Bulk Material and Liquids

WAGO Products:
WAGO-I/O-SYSTEM with PROFIBUS Couplers, Rail-Mounted Terminal Blocks

9



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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





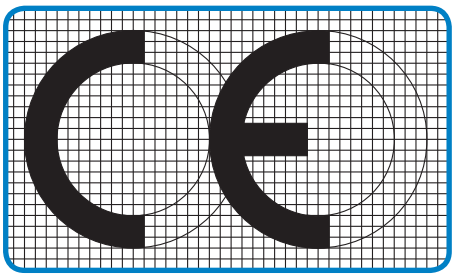
We will help you

- 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.

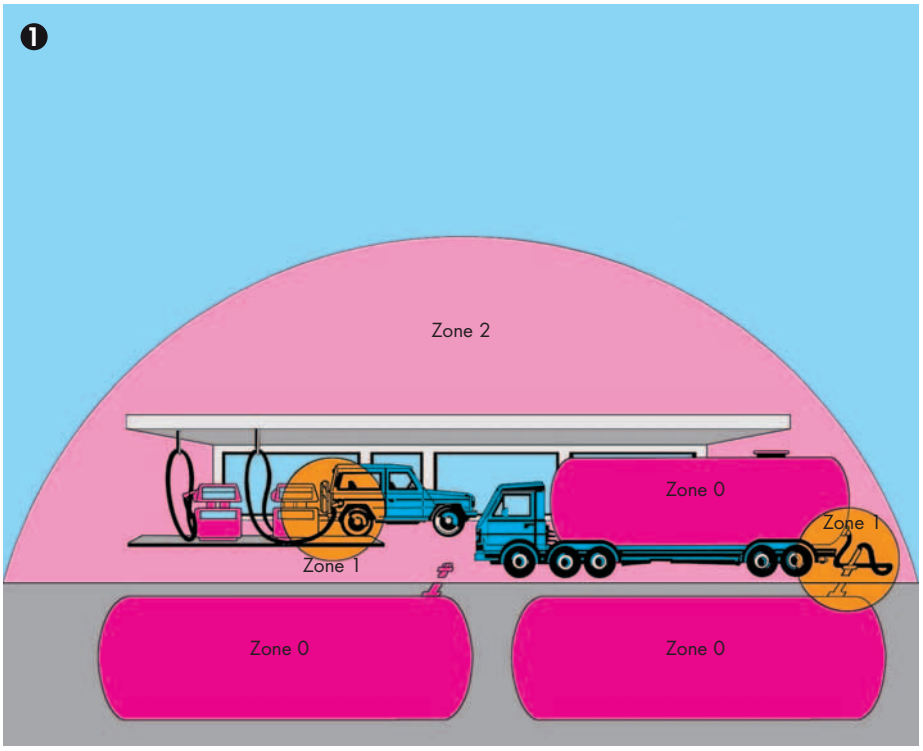
94/9/EC Ex Protection Directive, ATEX 100a

General technical information for electrical equipment in hazardous environments.

General Technical Information for Electrical Equipment in Hazardous Environments

Harzardous 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:

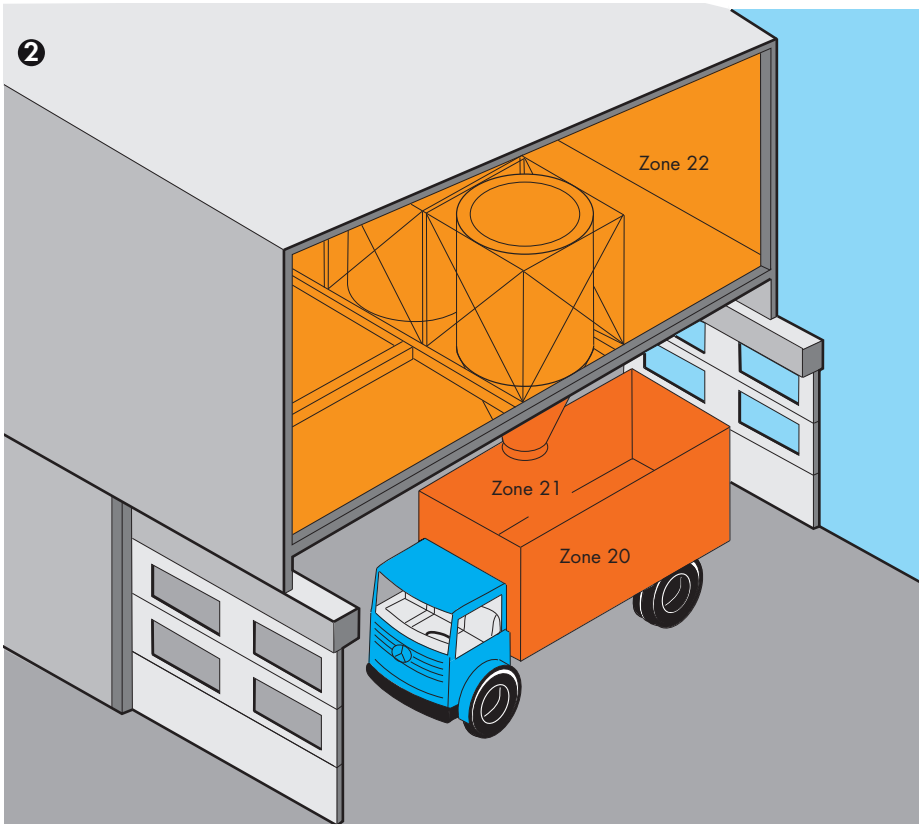


❶ Hazardous environments as a result of combustible gases, vapors or mist.

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 distrurbances	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/	79 dB(µV)	150 kHz ... 500 kHz	
EN 55016-1-2	data, conducted	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/	84 ... 74 dB(µV)	150 kHz ... 500 kHz	
	Mains connection	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/	97 ... 87 dB(µV)	150 kHz ... 500 kHz	
	Mains connection	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 positve 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 distrurbances	10 V 80 % AM (0.15 ... 80 MHz)	A
Type Test	AF distrurbances (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	96 ... 50 dB(µV)	10 kHz ... 150 kHz	
	(allows for ship bridge	60 ... 50 dB(µV)	150 kHz ... 350 kHz	
	control applications)	50 dB(µV)	350 kHz ... 30 MHz	
Type Test	EMC 1, radiated	80 ... 52 dB(µV/m)	150 kHz ... 300 kHz	3 m
	(allows for ship bridge	52 ... 34 dB(µV/m)	300 kHz ... 30 MHz	3 m
	control applications)	54 dB(µV/m)	30 MHz ... 2 GHz	3 m
	except for:	24 dB(µV/m)	156 MHz ... 165 MHz	3 m
Type Test	EMC 2, conducted	120 ... 69 dB(µV)	10 kHz ... 150 kHz	
	(allows for machine room	79 dB(µV)	150 kHz ... 350 kHz	
	applications)	73 dB(µV)	350 kHz ... 30 MHz	
Type Test	EMC 2, radiated	80 ... 50 dB(µV/m)	150 kHz ... 30 MHz	3 m
	(allows for machine room	60 ... 54 dB(µV/m)	30 MHz ... 100 MHz	3 m
	applications)	54 dB(µV/m)	100 MHz ... 2 GHz	3 m
	except for:	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 Hz ≤ f < 13,2 Hz	±1.0 mm Amplitude (permanent)
		13.2 Hz ≤ f < 100 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 Hz ≤ f < 25 Hz	±1.6 mm Amplitude (permanent)
		25 Hz ≤ f < 100 Hz	4 g (permanent)
		Note on vibration test: a) Frequency change: max. 1 octave/minute b) Vibration direction: 3 axes	

Specifications and Test Results

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

EN 50110-1:2004
VDE 0105-1:2005-06
Operation of electrical installations

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 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 60204-1:2005 (modified)
EN 60204-1:2006
VDE 0113-1:2007-06
Safety of machinery - Electrical equipment of machines - Part 1: General requirements

EN 50178:1997
VDE 0160:1998-04
Electronic equipment for use in power installations

IEC 62305-1:2006
EN 62305-1:2006
VDE 0185-305-1:2006-10
Protection against lightning - Part 1: General principles

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 60085:2007
EN 60085:2008
VDE 0301-1:2008-08
Electrical insulation - Thermal evaluation and designation

IEC 60529:1989 + A1:1999
EN 60529:1991 + A1:2000
VDE 0470-1:2000-09
Degrees of protection provided by enclosures (IP code)

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 61984:2001
EN 61984:2001
VDE 0627:2002-09
Connectors - Safety 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^2 up to 35 mm^2

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 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 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 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 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

IEC 60947-1:2007
EN 60947-1:2007
VDE 0660-100:2008-04
Low-voltage switchgear and controlgear - Part 1: General rules

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 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 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

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 60950-1:2005, modified
EN 60950-1:2006
VDE 0805-1:2006-11
Information technology equipment - Safety - Part 1: General requirements

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

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"

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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 ≤ 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 Number1-1996

RINA (Registro Italiano Navale)
Rules for the classification of ships
Part C – Machinery, systems and fire protection Ch.3, Sect.6, Table1
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
Enviromental Tests on Marine Equipment

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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.

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- Greater transparency
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Vibration- and shock-resistance testing





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Frankfurt, 2009-12-22

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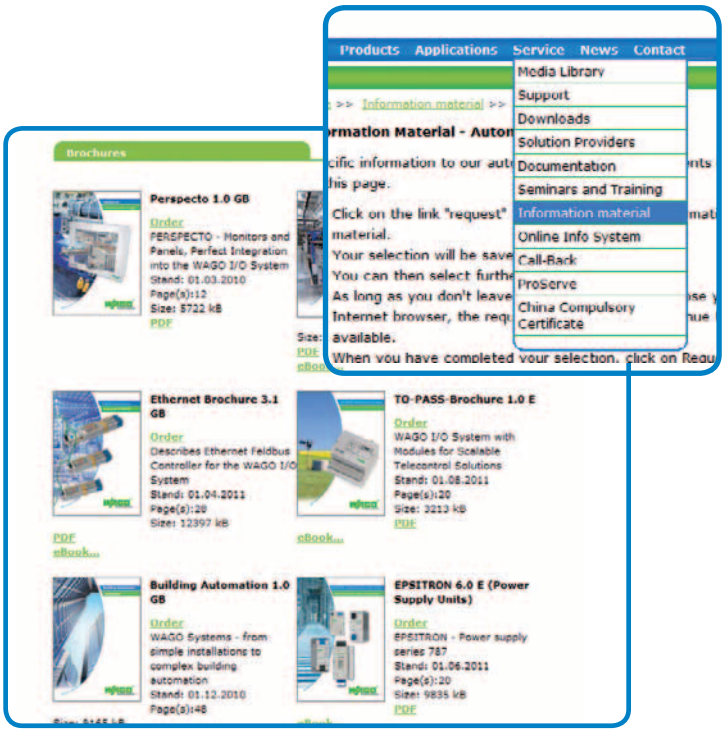

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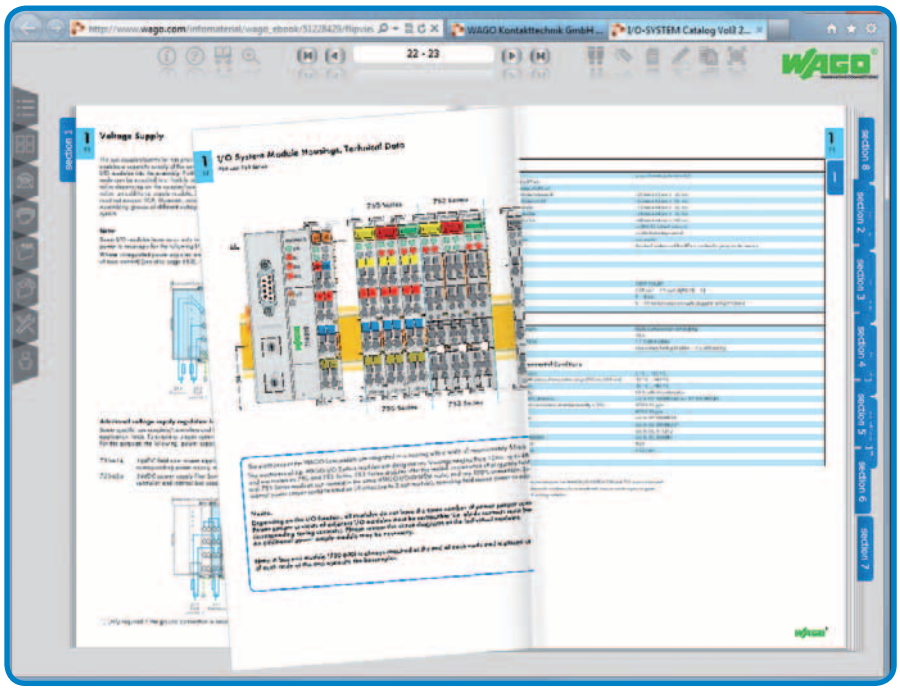

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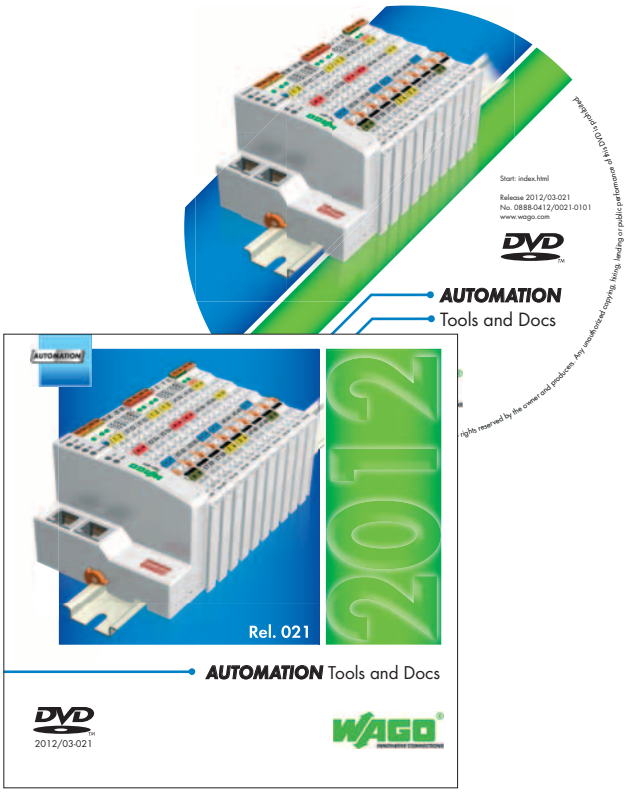

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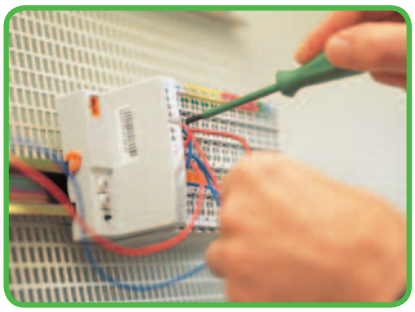

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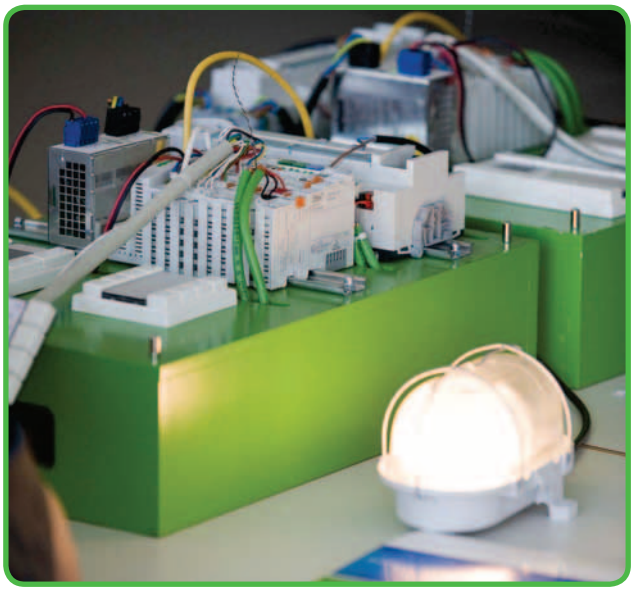

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