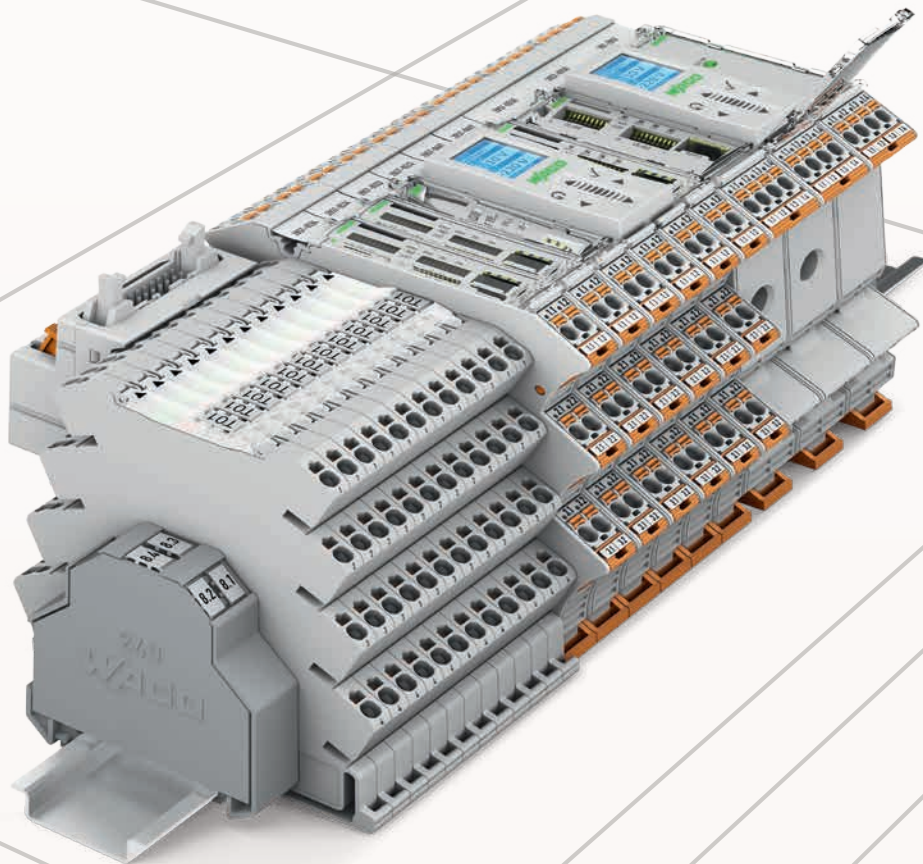


# Interface Electronic

Full Line Catalog, Volume 4 – Edition 2017/2018



# WAGO Full Line Catalogs



## Volume 1, Rail-Mounted Terminal Block Systems

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



## Volume 2, PCB Terminal Blocks and Connectors

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



## Volume 3, Automation Technology

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



## Volume 4, Interface Electronic

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



## Volume 5, *WINSTA®* - The Pluggable Connection System












- Pluggable Connectors
- Snap-In Device Connectors
- Pluggable PCB Connectors
- Distribution Connectors
- Cable Assemblies
- Flat Cable Systems
- Distribution Boxes



## Volume 6, Marking

- Terminal Block Marking
- Cable and Conductor Marking
- Device Marking
- Printer
- Software
- Marker Carriers

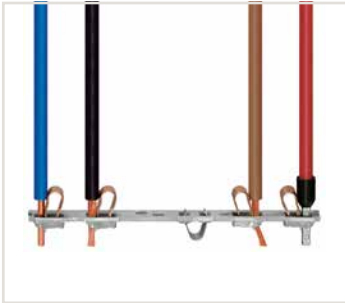
## Volume 4, Interface Electronics

		Page	
	Relay Modules	6	1
	Solid State Relay and Optocoupler Modules	96	2
	<i>JUMPFLEX</i> ® Isolation Amplifiers and Signal Conditioners	168	3
	Current and Energy Measurement Technology	262	4
	<i>EPSITRON</i> ® Power Supply System	308	5
	Interface Modules	432	6
	System Wiring	464	7
	Interface Modules with Specialty Functions	492	8
	Empty Housings	524	9
	Overvoltage Protection	544	10
	Accessories	590	11
	Technical Section	634	12
	Indexes Addresses	672	13

## Operating WAGO Connection Technologies

Please follow the applicable product-specific termination instructions:

### PUSH-IN CAGE CLAMP®



Push-in CAGE CLAMP® terminates the following copper conductors: solid



stranded



fine-stranded, also with tinned single strands



fine-stranded, tip-bonded



fine-stranded, with ferrule (gastight crimped)



fine-stranded, with pin terminal (gastight crimped)

The universal connection with an additional advantage:

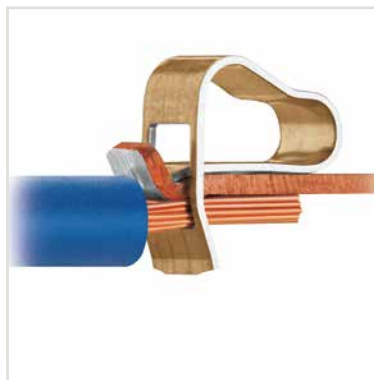
**Push-in connection**

Terminate solid and stranded, as well as ferruled conductors, by simply pushing them in – no tools required.

Termination for all conductor types:

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

### CAGE CLAMP®



CAGE CLAMP® terminates the following copper conductors: solid



stranded



fine-stranded, also with tinned single strands



fine-stranded, tip-bonded



fine-stranded, with ferrule (gastight crimped)



fine-stranded, with pin terminal (gastight crimped)

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

Termination:

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

## Operating WAGO Connection Technologies

Please follow the applicable product-specific termination instructions:

### POWER CAGE CLAMP®



POWER CAGE CLAMP terminates the following copper conductors: solid



stranded



fine-stranded, also with tinned single strands



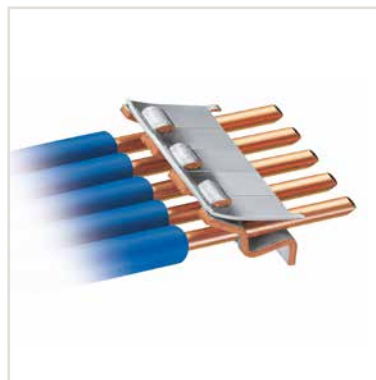
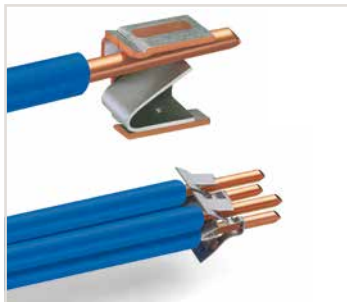
fine-stranded, with ferrule (gastight crimped)

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

Termination:

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

### PUSH WIRE®



PUSH WIRE® terminates the following copper conductors: solid

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

Termination:

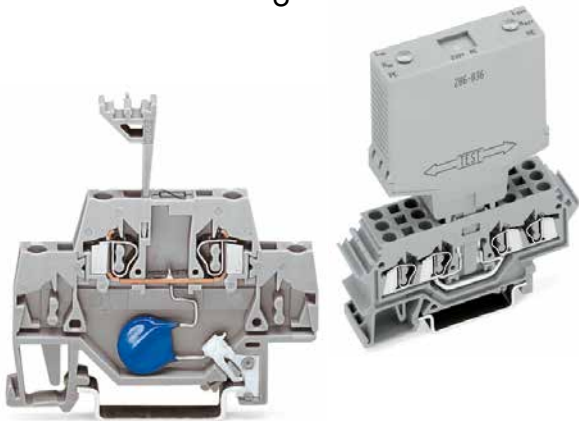
Tool-free, twist-free terminations for solid and rigid stranded conductors – simply push into unit

# An Interface Solution for

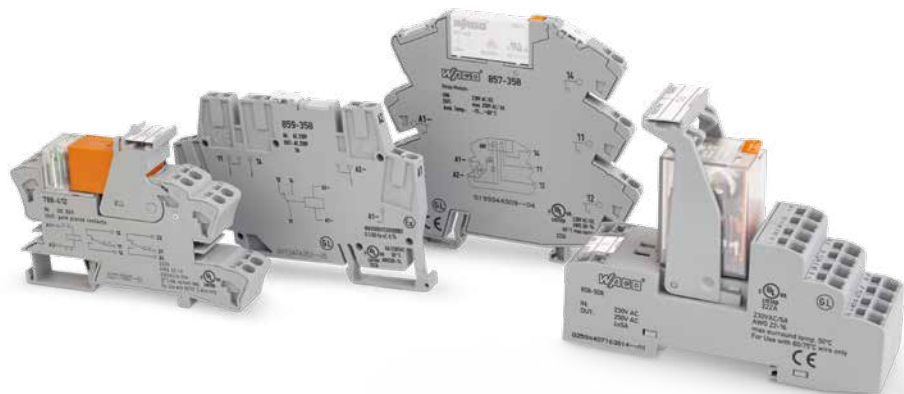
## EPSITRON® Power Supply System



## Overvoltage Protection



## Relay and Optocoupler Modules

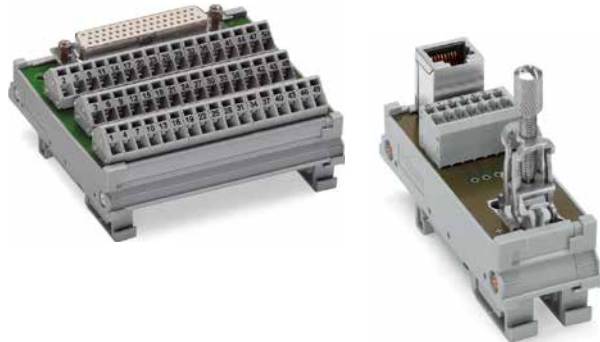


# All Applications

JUMPFLEX® Signal Conditioners



Interface Modules



Current and Energy Measurement Technology





## Relay Modules



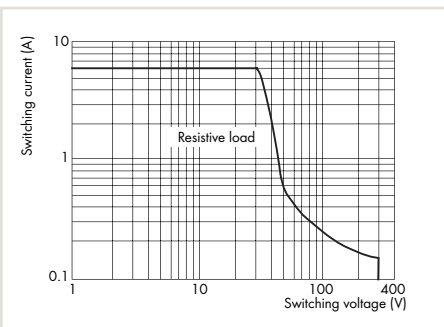
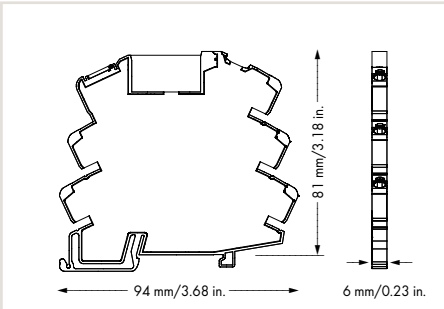
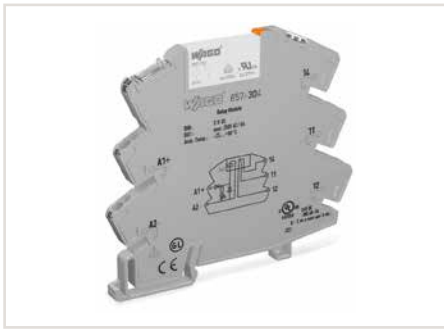
## Relay Modules

	Page	
	<b>Sockets with a Miniature Switching Relay, 857 Series</b>	
	Sockets with a Miniature Switching Relay	8
	Timer Relays	16
	Accessories, 857 Series	20
	<b>Sockets with a Miniature Switching Relay, 788 Series</b>	
	Sockets with a Miniature Switching Relay	24
	Accessories, 788 Series	40
	<b>Sockets with an Industrial Relay, 858 Series</b>	
	Sockets with an Industrial Relay	46
	Accessories, 858 Series	54
	<b>Rail-Mount Terminal Blocks with a Miniature Switching Relay, 859 Series</b>	
	Rail-Mount Terminal Blocks with a Miniature Switching Relay	58
	Accessories, 859 Series	68
	<b>Relay Modules in a DIN-Rail Mount Enclosure, 789 Series</b>	
	Relay Modules in a DIN-Rail-Mount Enclosure	70
	Latching Relay Modules in a DIN-Rail Mount Enclosure	81
	Accessories, 789 Series	82
	<b>DIN-Rail-Mount Carriers with a Miniature Switching Relay, 288 Series</b>	
	DIN-Rail-Mount Carriers with a Miniature Switching Relay	84
	<b>Pluggable Relay Modules, 286 Series</b>	
	Pluggable Relay Modules	90
	Accessories, 286 Series	95

# Sockets with a Miniature Switching Relay

## 857 Series

1



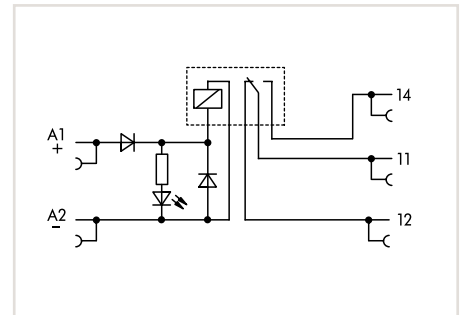
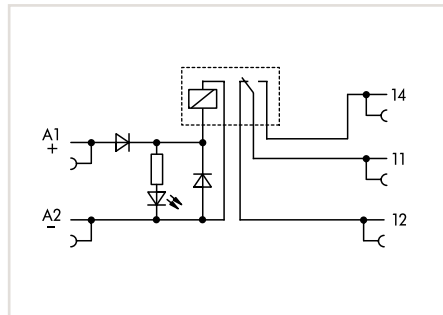
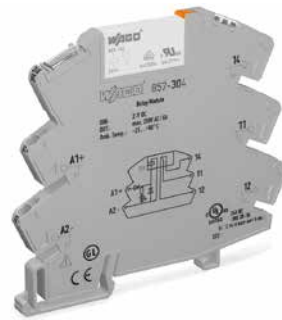
DC load limit curve

### Technical Data

<b>Contacts, standard</b>	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
<b>Contacts, gold</b>	
Contact material	AgNi + Au
Recommended minimum load	1 VDC / 1 mA / 1 mW
<b>Contacts, general</b>	
Max. continuous current	6 A
Max. make current (resistive)	20 ms (AC) 20 A
Max. switching voltage	250 VAC
Max. switching power	1500 VAC / VDC see load limit curve
Switching capacity	AC-15: 3 A / 250 VAC DC-13: 2 A / 24 VDC
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 180 min <sup>-1</sup>
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Ambient operating temperature at U <sub>N</sub>	-40 ... +60 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 81 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0,34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch

### Note

- Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.
- In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.



Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	17 mA	857-303	25
24 VDC	10 mA	857-304	25
48 VDC	6.5 mA	857-305	25
60 VDC	5.2 mA	857-306	25
115 VAC/DC	4 mA	857-357	25
230 VAC/DC	3.5 mA	857-358	25

Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
with gold contacts,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	10 mA	857-314	25

#### Specific Technical Data

##### Coil

Input voltage range

$V_N -15 \dots +20 \%$

##### Contacts

Contact material

AgSnO<sub>2</sub>

Max. continuous current

6 A

Recommended minimum load

10 VDC / 10 mA, 24 VDC / 1 mA

##### General Specifications

Standards/approvals

EN 61010-2-201; EN 61810-1; EN 61373; UL 508;  
(857-303: ATEX, IEC Ex; 857-304: GL, ATEX, IEC Ex)

$V_N -15 \dots +20 \%$

AgNi + Au

6 A

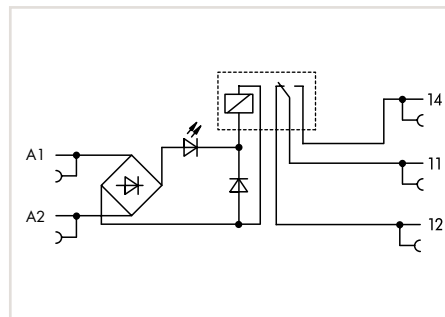
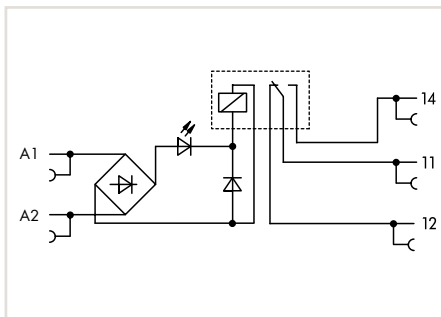
1 VDC / 1 mA / 1 mW

EN 61010-2-201; EN 61810-1; EN 61373; UL 508;  
GL; ATEX; IEC Ex

# Sockets with a Miniature Switching Relay

## 857 Series

1



Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC/DC	8.5 mA	857-354	25
115 VAC/DC	4 mA	857-357	25
230 VAC/DC	3.5 mA	857-358	25

Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
with gold contacts,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC/DC	8.5 mA	857-364	25
115 VAC/DC	4 mA	857-367	25
230 VAC/DC	3.5 mA	857-368	25

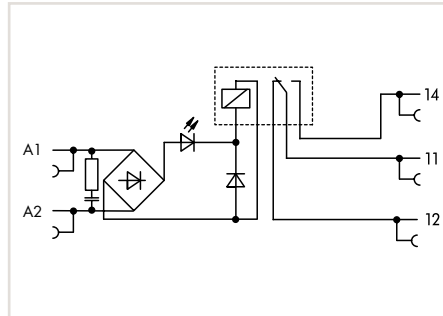
**Specific Technical Data**

Coil	
Input voltage range	$U_N -15 \dots +20 \%$ (857-354, 857-357) $U_N -20 \dots +10 \%$ (857-358)
Contacts	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	6 A
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508; ATEX; IEC Ex (857-358: GL)

Input voltage range	$U_N -15 \dots +20 \%$ (857-364; 857-367) $U_N -20 \dots +10 \%$ (857-368)
Contact material	AgNi + Au
Max. continuous current	6 A
Recommended minimum load	1 VDC / 1 mA / 1 mW
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508; ATEX; IEC Ex (857-368: GL)



Similar to picture

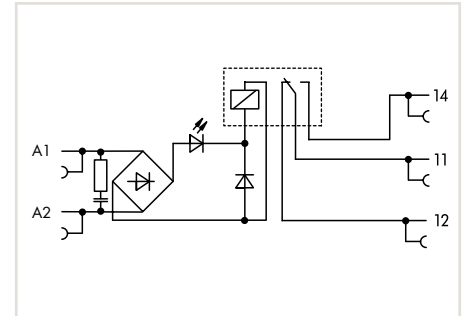


Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
with integrated base load module,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC	16 mA	857-358/006-000	25



Similar to picture



Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
with gold contacts,  
with integrated base load module,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC	16 mA	857-368/006-000	25

#### Specific Technical Data

##### Coil

Input voltage range  $U_N -15 \dots +10 \%$

##### Contacts

Contact material AgSnO<sub>2</sub>

Max. continuous current 6 A

Recommended minimum load 10 VDC / 10 mA, 24 VDC / 1 mA

##### General Specifications

Max. line capacitance 170 nF

Max. line length > 350 m for a line capacitance of 330 nF/km

Standards/approvals EN 61010-2-201; EN 61810-1; EN 61373;

$U_N -15 \dots +10 \%$

AgNi + Au

6 A

1 V / 1 mA / 1 mW

170 nF

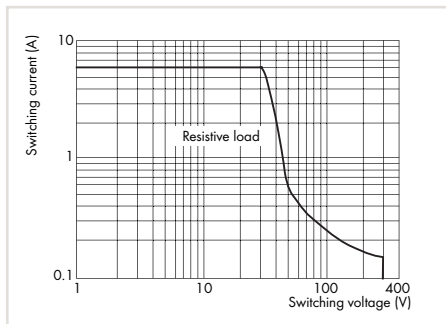
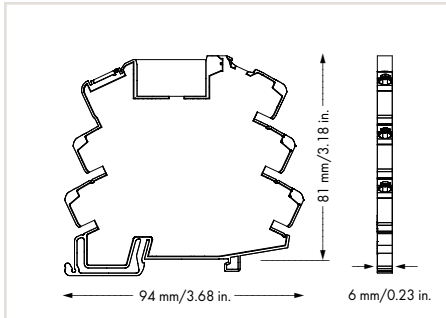
> 350 m for a line capacitance of 330 nF/km

EN 61010-2-201; EN 61810-1; EN 61373;

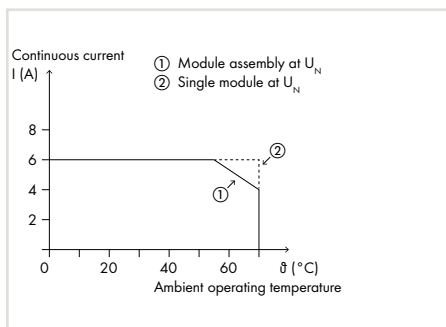
# Sockets with a Miniature Switching Relay

## 857 Series

1



DC load limit curve



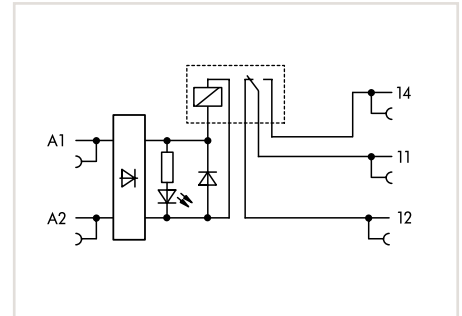
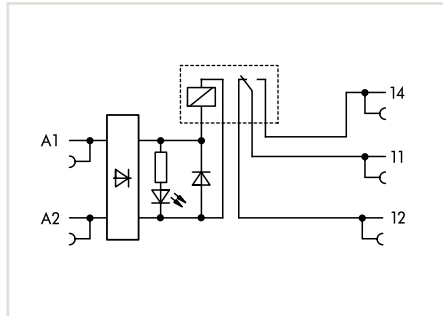
Current resistance curve

### Note

- Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.
- In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

### Technical Data

<b>Contacts, standard</b>	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
<b>Contacts, gold</b>	
Contact material	AgNi + Au
Recommended minimum load	1 VDC / 1 mA / 1 mW
<b>Contacts, general</b>	
Max. continuous current	6 A
Max. make current (resistive)	20 ms (AC) 20 A
Max. switching voltage	250 VAC
Max. switching power	1500 VAC / VDC see load limit curve
Switching capacity	AC-15: 3 A / 250 VAC DC-13: 2 A / 24 VDC
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 180 min <sup>-1</sup>
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Nominal input current I <sub>N</sub>	3.5 mA at 230 VAC ; 20 mA at 24 VDC
Ambient operating temperature at U <sub>N</sub>	-40 ... +60 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 81 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0,34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch



Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
yellow status indicator, 6 mm wide

$U_N$	Item No.	Pack. Unit
24 ... 230 VAC/DC	857-359	25

Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
with gold contacts,  
yellow status indicator, 6 mm wide

$U_N$	Item No.	Pack. Unit
24 ... 230 VAC/DC	857-369	25

#### Specific Technical Data

Coil		
Input voltage range $U_N$	-30 ... +10 %	-30 ... +10 %
Contacts		
Contact material	AgSnO <sub>2</sub>	AgNi + Au
Max. continuous current	6 A	6 A
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA	1 VDC / 1 mA / 1 mW
General Specifications		
Standards/approvals	EN 50121-3-2; EN 61010-2-201; EN 61810-1; EN 61373; UL 508	EN 50121-3-2; EN 61010-2-201; EN 61810-1; EN 61373; UL 508

# Sockets with a Miniature Switching Relay

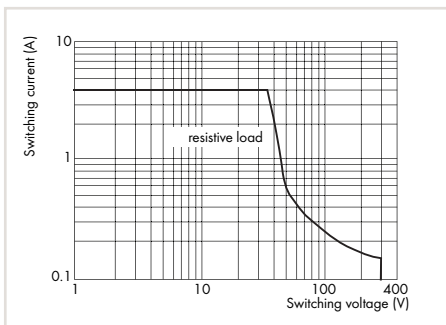
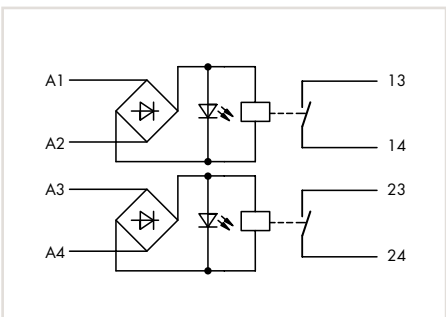
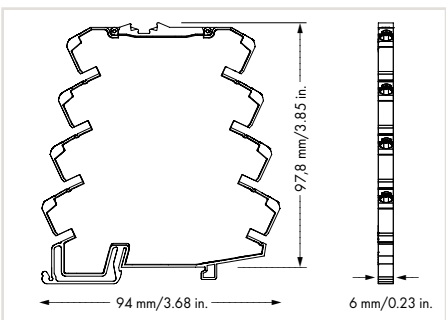
## 857 Series

1



Relay module, 2-channel,  
1 changeover contact,  
max. continuous current: 4 A,  
with gold contacts,  
yellow status indicator, 6 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VAC/DC	10 mA	857-1330	25



DC load limit curve

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

### Technical Data

<b>Contacts, standard</b>	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
<b>Contacts, general</b>	
Max. continuous current	4 A
Max. make current (resistive)	20 ms (AC) 20 A
Max. switching voltage	250 VAC
Max. switching power	AC 1000 VA / DC see load limit curve
<b>Switching capacity</b>	
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 180 min <sup>-1</sup>
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Ambient operating temperature at U <sub>N</sub>	-40 ... +60 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 98 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0,34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; ATEX; IEC Ex; UL 508

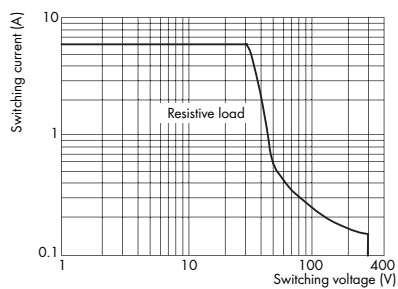
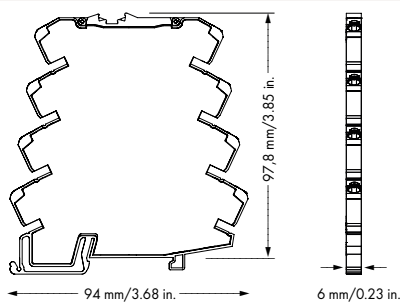
Accessories,  
see page 20



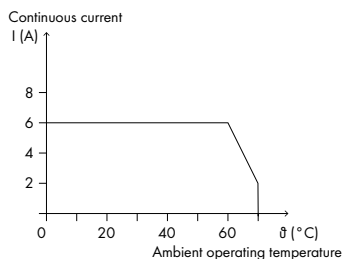


# Multifunction timer relay

## 857 Series



DC load limit curve



Current resistance curve

### Note

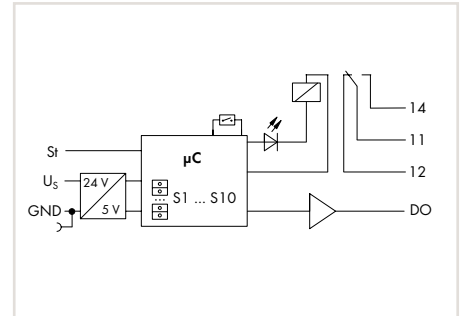
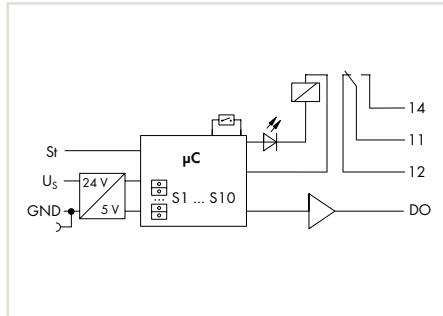
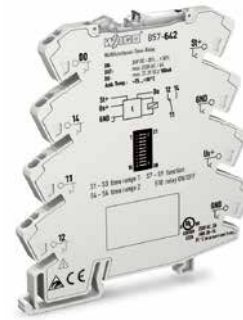
Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

### Technical Data

Power consumption at $U_N$	18 mA (active) / 4.5 mA (passive)
Input voltage range	$U_N - 30 \dots +30 \%$
<b>Contacts, standard</b>	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
<b>Contacts, general</b>	
Max. continuous current	6 A
Max. make current (resistive)	20 ms (AC) 20 A
Max. switching voltage	250 VAC
Max. switching power	1500 VAC / VDC see load limit curve
Switching capacity	AC-15: 3 A / 250 VAC DC-13: 2 A / 24 VDC
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
<b>General Specifications</b>	
Reset time	50 ms
Digital output (DO)	max. 31.2 V, 100 mA
Control input pulse length	min. 10 ms
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Ambient operating temperature at $U_N$	-25 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 98 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0,34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch



Accessories,  
see page 20



Timer relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
railway applications,  
multifunction/multi-time range,  
yellow status indicator, 6 mm wide

Timer relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
railway applications,  
multifunction/multi-time range,  
yellow status indicator, 6 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	18 mA	857-640	1

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	18 mA	857-642	1

**Specific Technical Data**

**General Specifications**

Time range	adjustable: 0.01 ... 0.1 s; 0.1 ... 1 s; 1 ... 10 s; 10 ... 100 s; 1 ... 10 min; 10 ... 100 min; 1 ... 10 h; 10 ... 100 h
Functions	<ul style="list-style-type: none"> <li>• On-delay</li> <li>• On-delay,with control input</li> <li>• Off-delay,with control input</li> <li>• On- and off-delay,with control input</li> <li>• Single-shot leading edge</li> <li>• Single-shot leading edge with control input</li> <li>• Single-shot trailing edge with control input</li> <li>• Single-shot leading and trailing edge with control input</li> <li>• On-delay and single-shot leading edge</li> <li>• On-delay and single-shot leading edge with control input</li> <li>• Step switching</li> <li>• Blinking, pulse start</li> <li>• Blinking, interval start</li> <li>• Relay switching</li> </ul>
Standards/approvals	EN 61812-1; EN 61373; EN 50121-3-2; UL 508

Time range	adjustable: 0.01 ... 0.1 s; 0.1 ... 1 s; 1 ... 10 s; 10 ... 100 s; 1 ... 10 min; 10 ... 100 min; 1 ... 10 h; 10 ... 100 h
Functions	<ul style="list-style-type: none"> <li>• On- and off-delay,with control input</li> <li>• On-delay and single-shot leading edge</li> <li>• On-delay and single-shot leading edge with control input</li> <li>• Single-shot leading and trailing edge with control input</li> <li>• Pulse sequence evaluation with control input</li> <li>• Repeat cycle timer, pulse start</li> <li>• Repeat cycle timer, interval start, control input</li> </ul>
Standards/approvals	EN 61812-1; EN 61373; EN 50121-3-2; UL 508

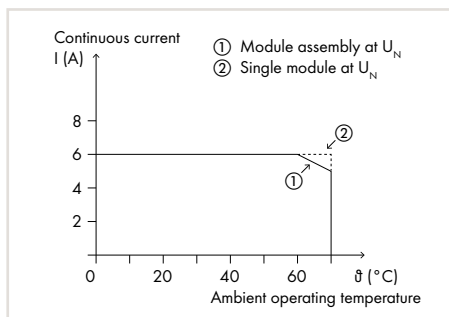
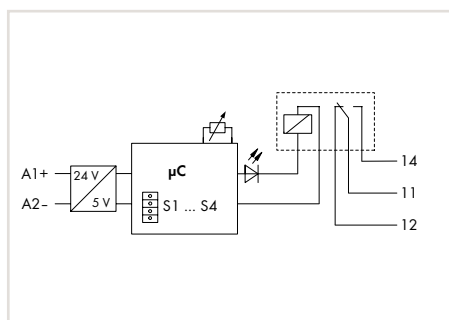
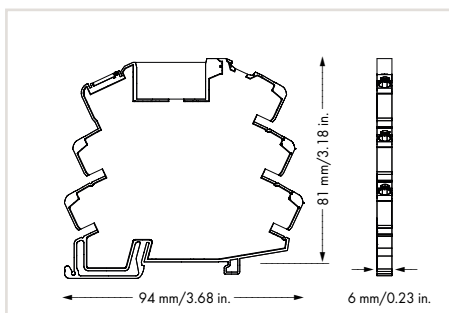
## Multifunction timer relay

### 857 Series



Timer relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
railway applications,  
multifunction/multi-time range,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	17.5 mA	857-604	1



#### Current resistance curve

- Function and time range adjustable via DIP switch

#### Note

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

Accessories,  
see page 20

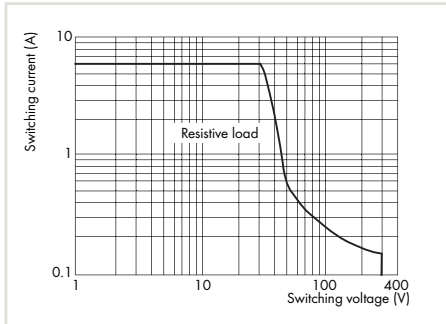
#### Technical Data

Power consumption at $U_N$	18 mA (active) / 4.5 mA (passive)
Input voltage range	$U_N$ -30 ... +30 %
<b>Contacts, standard</b>	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
<b>Contacts, general</b>	
Max. continuous current	6 A
Max. make current (resistive)	20 ms (AC) 20 A
Max. switching voltage	250 VAC
Max. switching power	1500 VAC / VDC see load limit curve
Switching capacity	AC-15: 3 A / 250 VAC DC-13: 2 A / 24 VDC
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
<b>General Specifications</b>	
Reset time	50 ms
Digital output (DO)	max. 31.2 V, 100 mA
Control input pulse length	min. 10 ms
Time range	adjustable: 0.1 ... 10 s; 3 ... 300 s; 0.3 ... 30 min; 3 ... 300 min
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Ambient operating temperature at $U_N$	-25 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 98 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0,34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Dimensions (mm) W x H x D	6 x 81 x 94, height from upper-edge of DIN-rail
Functions	<ul style="list-style-type: none"> <li>On-delay</li> <li>Single-shot leading edge</li> <li>On-delay and single-shot leading edge (1s fixed)</li> <li>Blinking</li> </ul>
Standards/approvals	EN 61812-1; EN 61373; EN 50121-3-2; UL 508



## Accessories

## 857 Series



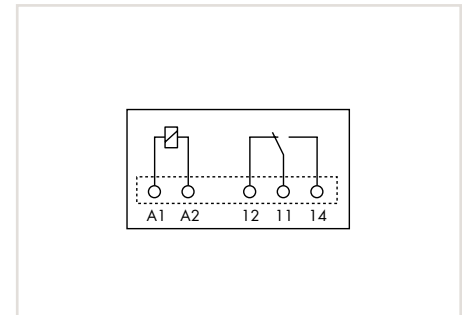
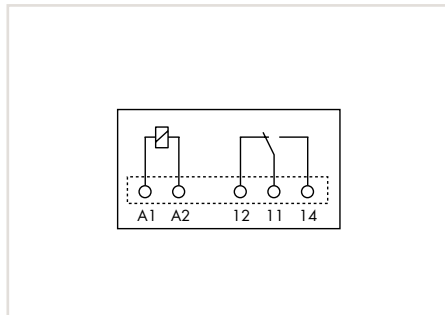
DC load limit curve

**Note**

- The 60 VDC spare relays must be used for 60 VDC, 110 VDC, 220 VDC and 115 VAC/DC, 230 VAC/DC relay modules.
- Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.
- In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

**Technical Data**

<b>Contacts, standard</b>	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
<b>Contacts, gold</b>	
Contact material	AgNi + Au
Recommended minimum load	1 VDC / 1 mA / 1 mW
<b>Contacts, general</b>	
Max. continuous current	6 A
Max. make current (resistive)	20 ms (AC) 20 A
Max. switching voltage	250 VAC
Max. switching power	1500 VAC / VDC see load limit curve
Switching capacity	AC-15: 3 A / 250 VAC DC-13: 2 A / 24 VDC
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 180 min <sup>-1</sup>
<b>General Specifications</b>	
Ambient operating temperature at U <sub>N</sub>	-40 ... +85 °C
Storage temperature	-40 ... +85 °C
Relative humidity	5 ... 85 %
Dimensions (mm) W x H x D	5 x 15 x 28, height from upper-edge of DIN-rail
Max. switching power (resistive)	1500 VA (AC); DC see load limit curve



Elementary relay,  
1 changeover contact,  
max. continuous current: 6 A,  
5 mm wide, 15 mm high

Elementary relay,  
1 changeover contact,  
max. continuous current: 6 A,  
with gold contacts,  
5 mm wide, 15 mm high

U <sub>N</sub>	Item No.	Pack. Unit
12 VDC	857-150	20
24 VDC	857-152	20
48 VDC	857-154	20
60 VDC	857-155	20

U <sub>N</sub>	Item No.	Pack. Unit
24 VDC	857-153	20
60 VDC	857-157	20

**Specific Technical Data**

Contacts	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	6 A
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
General Specifications	
Standards/approvals	EN 61810-1, EN 61373; VDE, UR

Contact material	AgNi + Au
Max. continuous current	6 A
Recommended minimum load	1 VDC / 1 mA / 1 mW
Standards/approvals	EN 61810-1, EN 61373; VDE, UR

Contact material	AgNi + Au
Max. continuous current	6 A
Recommended minimum load	1 VDC / 1 mA / 1 mW
Standards/approvals	EN 61810-1, EN 61373; VDE, UR

## Accessories

## 857 Series

1

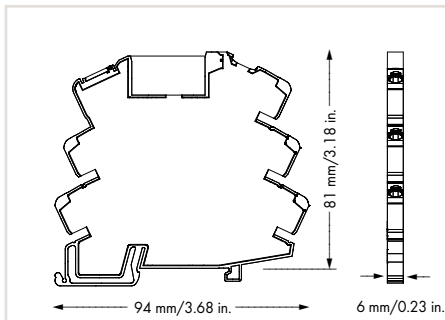


## Technical Data

Max. continuous current	6 A
Status indicator	LED yellow
Ambient operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 81 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	UR 508; EN61010-2-201

Socket for miniature switching relay and opto-coupler

	Item No.	Pack. Unit
24 VAC/DC	857-104	25
115 VAC/DC	857-107	25
230 VAC/DC	857-108	25





## Accessories

### 857 Series

Push-in type jumper bar, light gray, insulated, 18 A



Description	Item No.	Pack. Unit
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. suffixes for colored push-in type jumper bars	yellow	.../000-029
	red	.../000-005
	blue	.../000-006

Comb-style jumper bar, insulated, for conductor entry



Description	Item No.	Pack. Unit
2-way	281-482	100

WMB Multi marking system, 10 strips with 10 markers, white, with black printing



Description	Item No.	Pack. Unit	
plain	793-501	5 cards	
Marking	1 ... 10 (10 x)	793-502	5 cards
	11 ... 20 (10 x)	793-503	5 cards
	21 ... 30 (10 x)	793-504	5 cards
	31 ... 40 (10 x)	793-505	5 cards
	41 ... 50 (10 x)	793-506	5 cards
	1 ... 50 (2 x)	793-566	5 cards

Operating tool with a partially insulated shaft



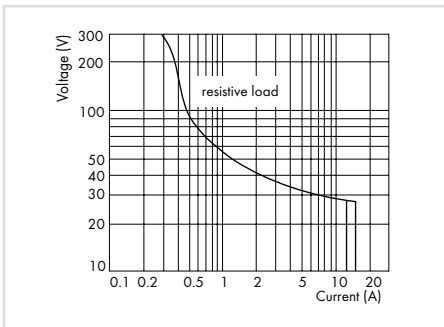
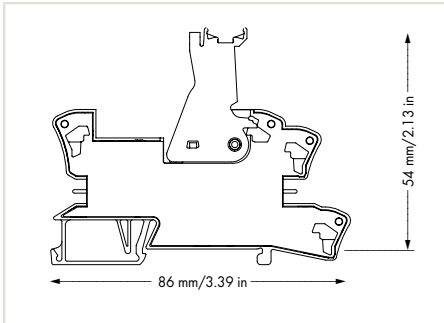
Description	Item No.	Pack. Unit
Type 2, 3.5 x 0.5 mm blade	210-720	1

1

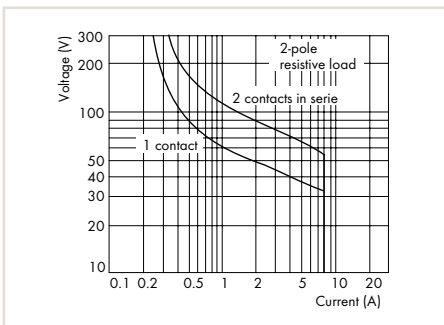
# Sockets with a Miniature Switching Relay

## 788 Series

1



DC load limit curve 1 contact



DC load limit curve (2 contacts)

### Note

- Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.
- In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

### Technical Data

#### Contacts, standard

Contact material

AgNi 90/10

Recommended minimum load

12 VDC / 10 mA

#### Contacts, gold

Contact material

AgNi + Au

Recommended minimum load

5 V / 2 mA / 50 mW

#### Contacts, general

Max. switching voltage

250 VAC

Max. switching power

1 contact:  
4 kVAAC, DC see DC load limit curve  
2 contacts:  
2x 2 kVAAC, DC see DC load limit curve

Switching capacity

1 contact:  
AC-15: 6 A / 250 VAC  
DC-13: 2 A / 24 VDC  
2 contacts:  
AC-15: 3 A / 250 VAC  
DC-13: 2 A / 24 VDC

Dielectric strength, contact-coil (AC, 1 min)

5 kV<sub>rms</sub>

Dielectric strength contact-contact

2.5 kV<sub>rms</sub>

Dielectric strength open contact (AC, 1 min)

1 kV<sub>rms</sub>

Mechanical life

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

Electrical life (N.O., resistive load)

1 contact: 3 x 10<sup>4</sup> switching operations  
2 contacts: 1 x 10<sup>3</sup> switching operations

Max. switching load with load/without load

6 min<sup>-1</sup> / 600 min<sup>-1</sup>

### General Specifications

Nominal voltage

250 V

Rated surge voltage

4 kV

Pollution degree

3

Ambient operating temperature at U<sub>N</sub>

-40 ... +70 °C

Storage temperature

-40 ... +70 °C

Dimensions (mm) W x H x D

15 x 54 x 86, height from upper-edge of DIN-rail

Connection technology

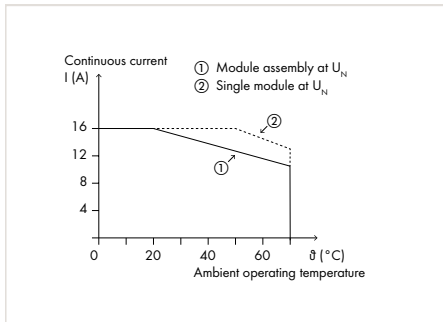
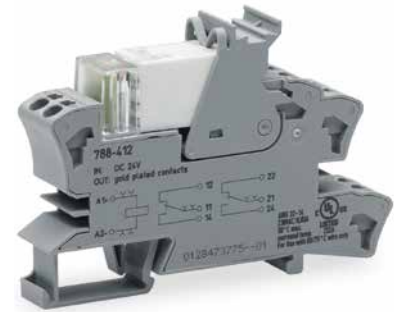
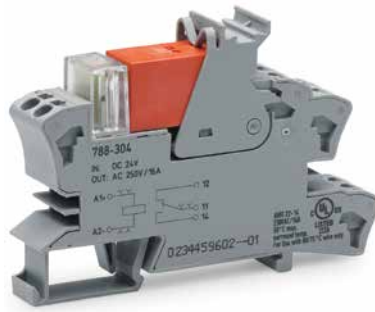
Push-in CAGE CLAMP®

Conductor range

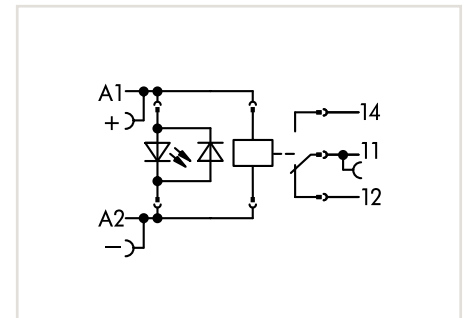
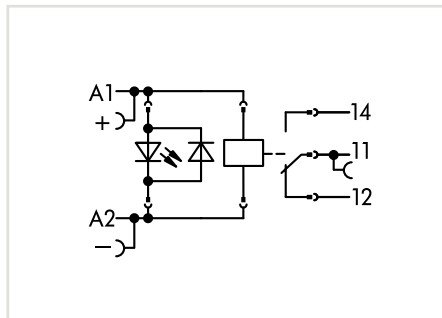
0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch



Current resistance curve



Relay module,  
1 changeover contact,  
max. continuous current: 16 A,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	36 mA	788-303	20
24 VDC	19.1 mA	788-304	20
48 VDC	11 mA	788-305	20
60 VDC	10.5 mA	788-306	20
110 VDC	6 mA	788-307	20

Relay module,  
1 changeover contact,  
max. continuous current: 16 A,  
with gold contacts,  
yellow status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	19.1 mA	788-404	20

### Specific Technical Data

#### Contacts

Contact material	AgNi 90/10
Max. continuous current	16 A
Max. make current (resistive)	4 s (AC) 30 A
Recommended minimum load	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 6 ms

#### General Specifications

Standards/approvals	EN 61010-2-201; EN 61373; EN 61810-1; UL 508 (max. 10 A) (788-307: UL 508, max. 40 °C/10 A)
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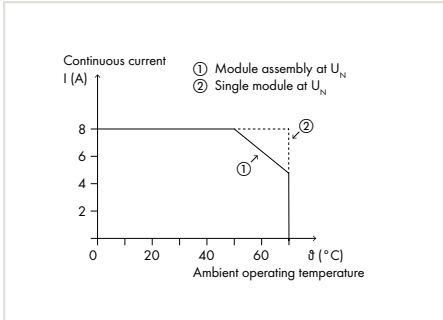
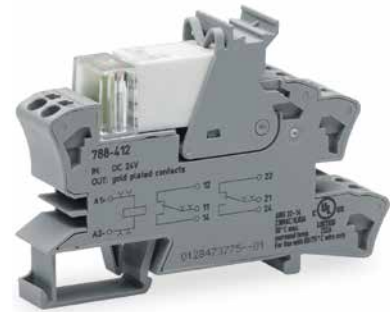
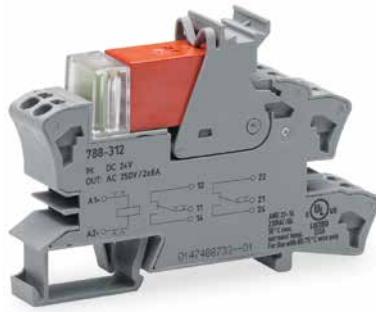
Contact material	AgNi + Au
Max. continuous current	16 A
Max. make current (resistive)	5 V / 2 mA / 50 mW
Recommended minimum load	5 V / 2 mA / 50 mW
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / -

Standards/approvals	EN 61010-2-201; EN 61373; EN 61810-1; UL 508
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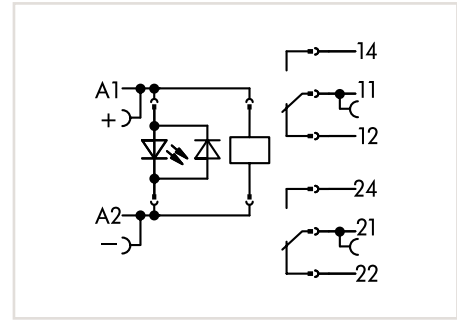
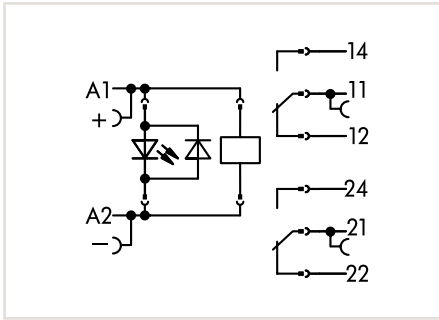
# Sockets with a Miniature Switching Relay

## 788 Series

1



Current resistance curve



Relay module,  
2 changeover contacts,  
max. continuous current: 8 A,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	36 mA	788-311	20
24 VDC	19.1 mA	788-312	20
48 VDC	11 mA	788-313	20
60 VDC	10.5 mA	788-314	20
110 VDC	6 mA	788-315	20

Relay module,  
2 changeover contacts,  
max. continuous current: 8 A,  
with gold contacts,  
red status indicator, 15 mm wide

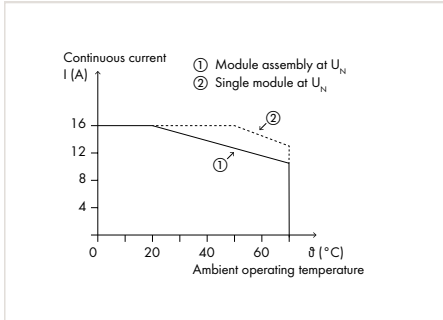
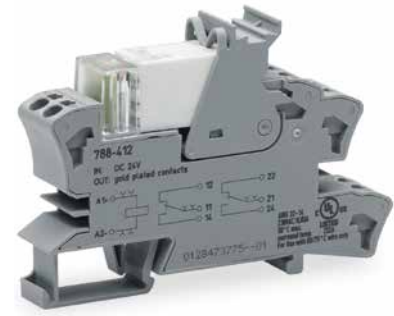
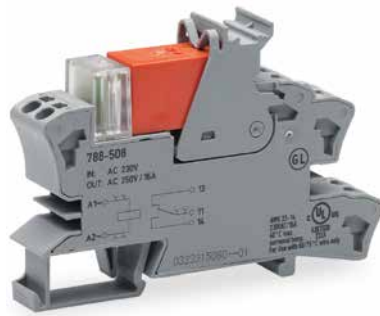
$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	17 mA	788-412	20

**Specific Technical Data**

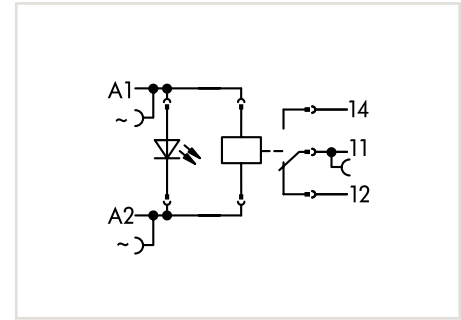
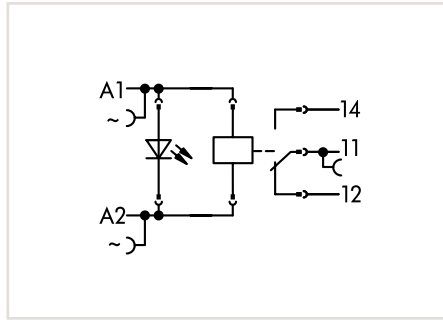
Contacts	
Contact material	AgNi 90/10
Max. continuous current	8 A
Max. make current (resistive)	15 A / 4 s (AC)
Recommended minimum load	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 10 ms
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508 (788-315: UL 508, max. 40 °C)

Contact material	AgNi + Au
Max. continuous current	8 A
Max. make current (resistive)	15 A / 4 s (AC)
Recommended minimum load	5 V / 2 mA / 50 mW
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / -
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508

Contact material	AgNi + Au
Max. continuous current	8 A
Max. make current (resistive)	15 A / 4 s (AC)
Recommended minimum load	5 V / 2 mA / 50 mW
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / -
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508



Current resistance curve



Relay module,  
1 changeover contact,  
max. continuous current: 16 A,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC	34 mA	788-506	20
115 VAC	8 mA	788-507	20
230 VAC	3.5 mA	788-508	20

Relay module,  
1 changeover contact,  
max. continuous current: 16 A,  
with gold contacts,  
yellow status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
115 VAC	8.2 mA	788-607	20
230 VAC	5 mA	788-608	20

**Specific Technical Data**

**Contacts**

Contact material	AgNi 90/10
Max. continuous current	16 A
Max. make current (resistive)	4 s (AC) 30 A
Recommended minimum load	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 6 ms

Contact material	AgNi + Au
Max. continuous current	16 A
Recommended minimum load	5 V / 2 mA / 50 mW
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / -

**General Specifications**

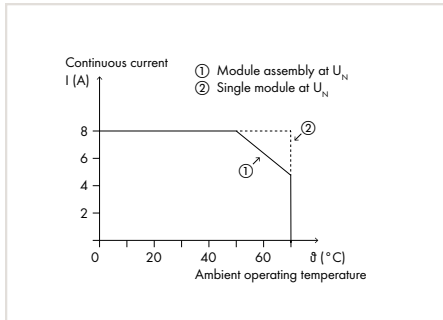
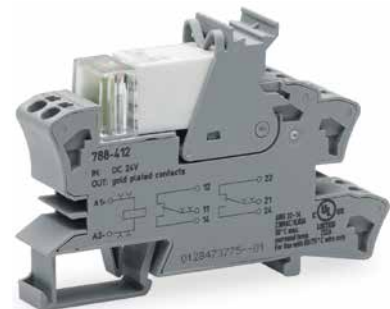
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; GL; UL 508 (788-507, 788-508: UL 508, max. 40 °C/10 A)
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Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508
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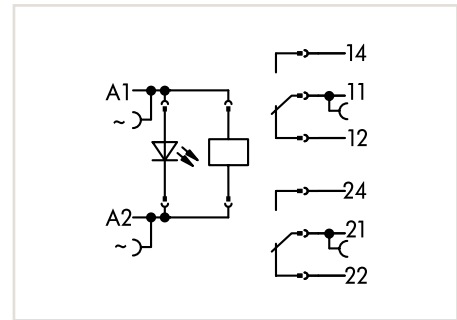
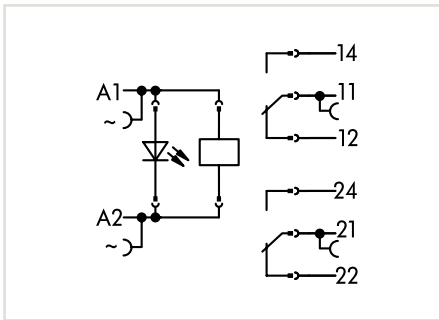
# Sockets with a Miniature Switching Relay

## 788 Series

1



Current resistance curve



Relay module,  
2 changeover contacts,  
max. continuous current: 8 A,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC	34 mA	788-512	20
115 VAC	8 mA	788-515	20
230 VAC	3.5 mA	788-516	20

Relay module,  
2 changeover contacts,  
max. continuous current: 8 A,  
with gold contacts,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
115 VAC	8.2 mA	788-615	20
230 VAC	5 mA	788-616	20

### Specific Technical Data

Contacts	
Contact material	AgNi 90/10
Max. continuous current	8 A
Max. make current (resistive)	15 A / 4 s (AC)
Recommended minimum load	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 10 ms
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; GL; UL 508

Contact material	AgNi + Au
Max. continuous current	8 A
Max. make current (resistive)	15 A / 4 s (AC)
Recommended minimum load	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 10 ms
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508

Contact material	AgNi + Au
Max. continuous current	8 A
Max. make current (resistive)	15 A / 4 s (AC)
Recommended minimum load	12 VDC / 10 mA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 10 ms
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508



# Sockets with a Miniature Switching Relay

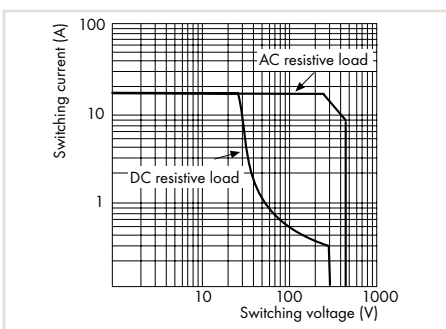
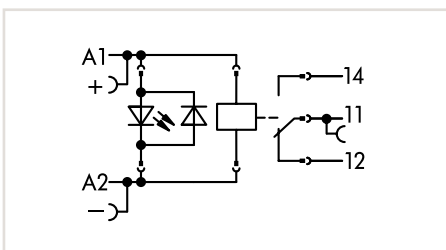
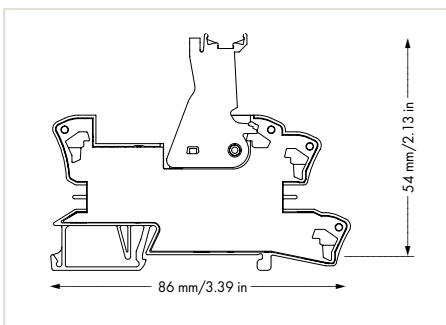
## 788 Series

1



Relay module,  
1 changeover contact,  
max. continuous current: 16 A,  
for lamp loads,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	35 mA	788-353	20
24 VDC	19 mA	788-354	20



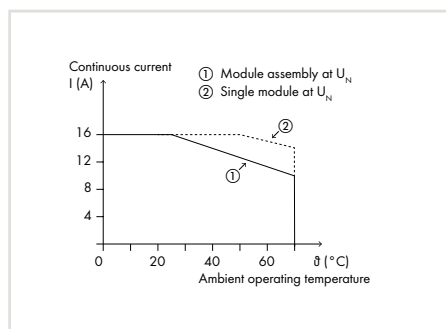
Load limit curve

### Technical Data

<b>Coil</b>	
Input voltage range	$V_N -15 \dots +20 \%$
<b>Contacts</b>	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current (resistive)	120 A / 50 ms
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	100 mA / 5 VDC
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Mechanical life	10 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	3
Ambient operating temperature at $U_N$	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	15 x 54 x 86, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508 (max. 10 A)

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



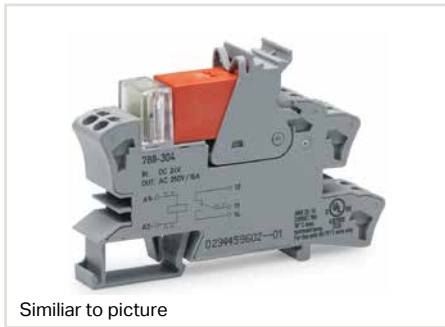
Current resistance curve

### Note

- Reinforced insulation between coil and contacts
- A separator plate (e.g., 209-191) must be used for voltages greater than 250 V between adjacent relay modules and for compliance with the reinforced insulation requirements.
- To protect the relay coils and contacts, inductive loads must be dampened with an effective protection circuit.

Accessories,  
see page 40

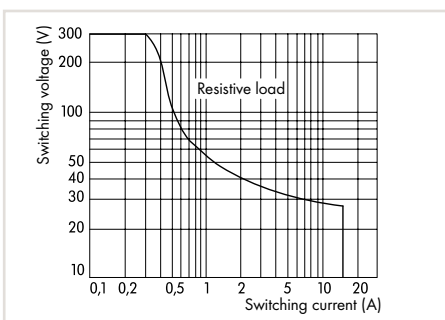
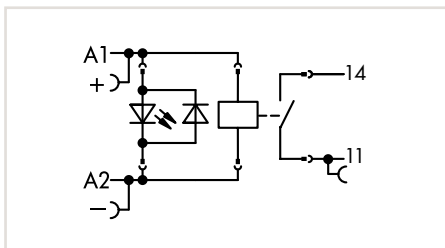
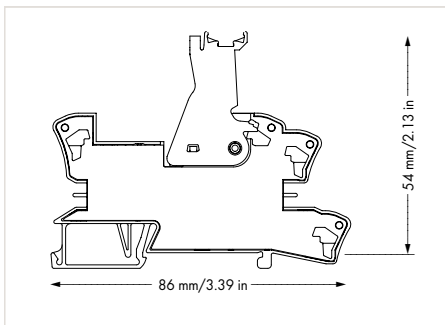




Similar to picture

Relay module,  
1 make contact,  
max. continuous current: 16 A,  
for lamp loads,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	19 mA	788-356	20

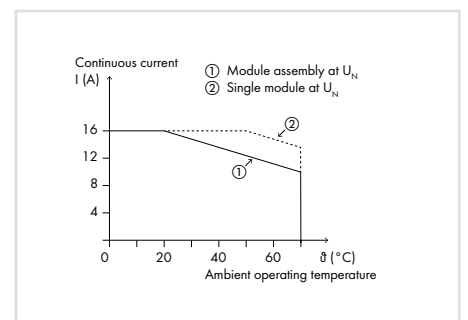


DC load limit curve

### Technical Data

<b>Coil</b>	
Input voltage range	$V_N -15 \dots +20 \%$
<b>Contacts</b>	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current (resistive)	30 A / 4 s (AC); 80 A / 20 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	12 V / 100 mA
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	9 ms / 6 ms / 3 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	50 x 10 <sup>3</sup> switching operations
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	3
Ambient operating temperature at $U_N$	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	15 x 53 x 86, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508 (max. 10 A)

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



Current resistance curve

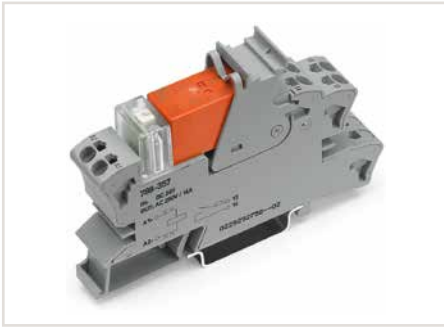
### Note

- Reinforced insulation between coil and contacts
- A separator plate (e.g., 209-191) must be used for voltages greater than 250 V between adjacent relay modules and for compliance with the reinforced insulation requirements.
- To protect the relay coils and contacts, inductive loads must be dampened with an effective protection circuit.

# Sockets with a Miniature Switching Relay

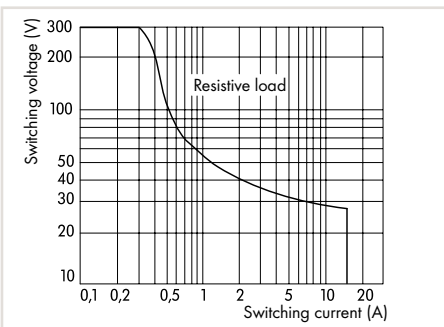
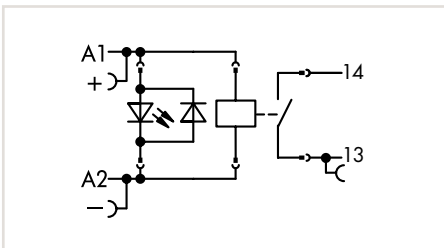
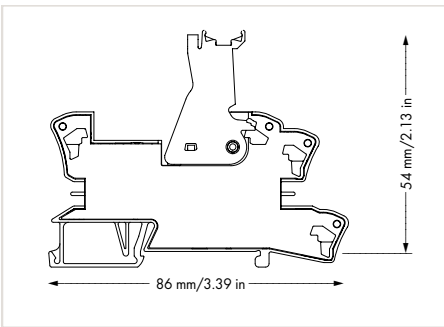
## 788 Series

1



Relay module,  
1 make contact,  
max. continuous current: 16 A,  
for lamp loads,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	17 mA	788-357	20



DC load limit curve

**Note**

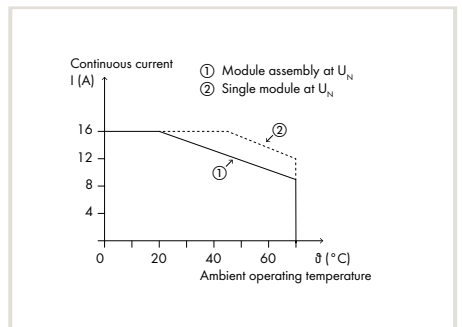
- Reinforced insulation between coil and contacts
- A separator plate (e.g., 209-191) must be used for voltages greater than 250 V between adjacent relay modules and for compliance with the reinforced insulation requirements.
- To protect the relay coils and contacts, inductive loads must be dampened with an effective protection circuit.

**Technical Data**

<b>Coil</b>	
Input voltage range	$U_N -10 \dots +20 \%$
<b>Contacts</b>	
Contact material	AgSnO <sub>2</sub> , pre-make contact W
Max. continuous current	16 A
Max. make current (resistive)	165 A / 20 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	12 V / 100 mA
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.25 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	10 ms / 5 ms / 4 ms
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>3</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 60 min <sup>-1</sup>
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	3
Ambient operating temperature at $U_N$	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	15 x 53 x 86, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373

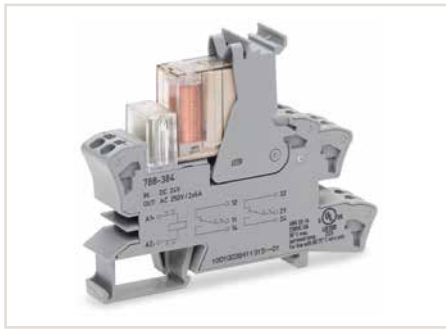
Contact life, type of load	Electrical life
3000 W, incandescent lamp, 230 VAC, OT 8.3 % ①, 5 min <sup>-1</sup>	12,000
620 W, gas discharge lamp, CCG ②, 120/277 VAC, UL 508, 50 °C	6,000
1200 W, tungsten lamp, 120/277 VAC, UL 508, 50 °C	6,000
16 A, 250 VAC, cos φ = 1, 85 °C, IEC 61810	5,000

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



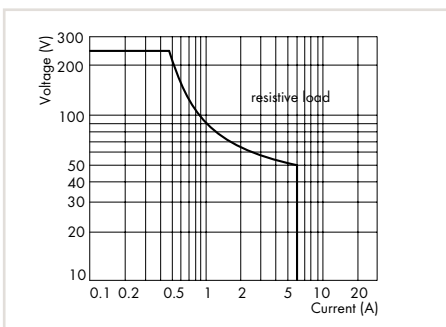
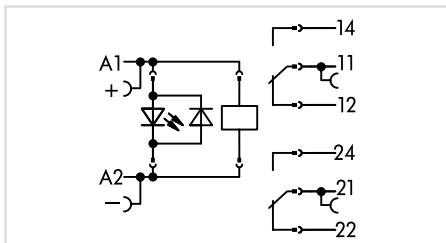
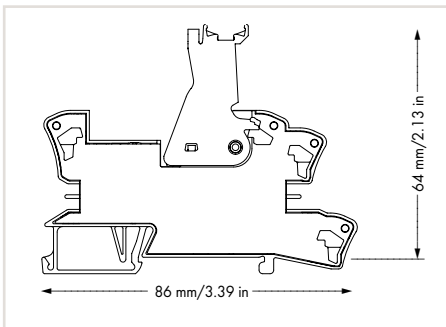
Current resistance curve

Accessories, see page 40



Relay module with forced operated contacts, 2 changeover contacts, max. continuous current: 6 A, red status indicator, 15 mm wide

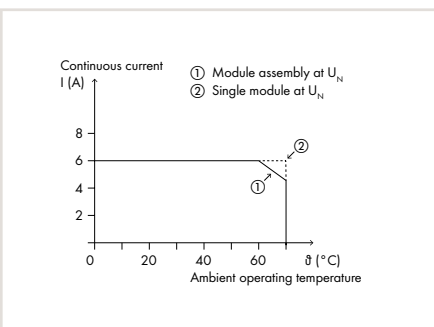
$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	31 mA	788-384	10



DC load limit curve

### Technical Data

Coil	
Input voltage range	$U_N - 15 \dots + 10 \%$
Contacts	
Contact material	AgNi
Max. continuous current	6 A
Max. make current (resistive)	4 s (AC) 14 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA (AC), DC see load limit curve
Switching capacity	AC-15: 3 A / 250 VAC DC-13: 3 A / 24 VDC
Recommended minimum load	5 V / 10 mA
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	3 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	10 ms / 4 ms / -
Mechanical life	10 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 300 min <sup>-1</sup>
General Specifications	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	3
Ambient operating temperature at $U_N$	-25 ... +75 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	15 x 64 x 86, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Forced operation	Type A
Standards/approvals	EN 61010-2-201, EN 61810-3; EN 50205; UL 508



Current resistance curve

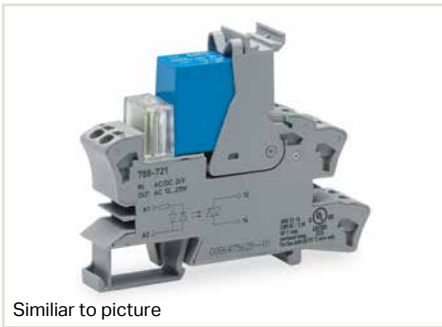
### Note

- 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).
- Reinforced insulation between coil and contacts
- A separator plate (e.g., 209-191) must be used for voltages greater than 250 V between adjacent relay modules and for compliance with the reinforced insulation requirements.
- To protect the relay coils and contacts, inductive loads must be dampened with an effective protection circuit.

## Sockets with a Miniature Switching Relay

## 788 Series

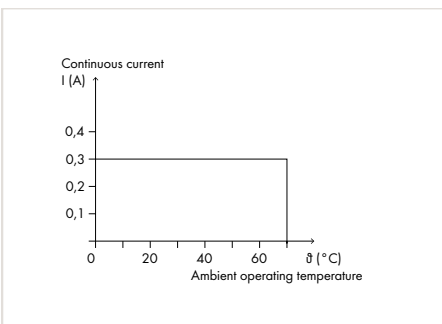
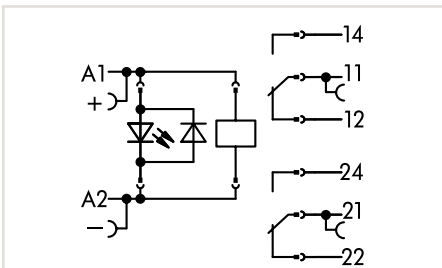
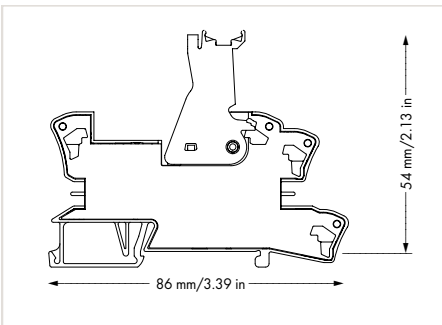
1



Similar to picture

Relay module with forced operated contacts, 2 changeover contacts, max. continuous current: 0.3 A, with gold contacts, green status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	30 mA	788-906	10



Current resistance curve

## Note

- Reinforced insulation between coil and contacts
- A separator plate (e.g., 209-191) must be used for voltages greater than 250 V between adjacent relay modules and for compliance with the reinforced insulation requirements.
- To protect the relay coils and contacts, inductive loads must be dampened with an effective protection circuit.

Accessories,  
see page 40

## Technical Data

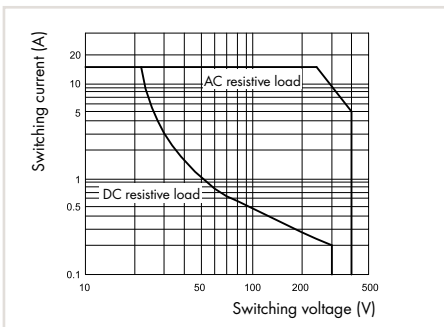
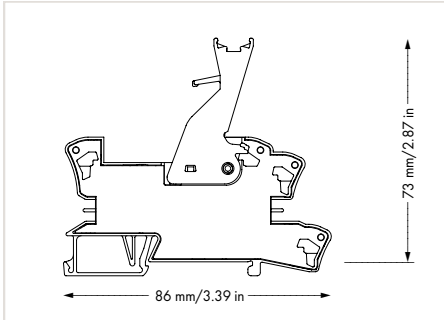
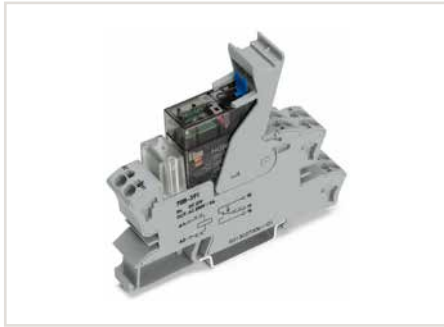
Coil	
Input voltage range	$U_N -15 \dots +10 \%$
Contacts	
Contact material	AgNi + Au
Max. continuous current	0.3 A
Max. switching voltage	60 V
Max. switching power (resistive)	18 W (max.)
Recommended minimum load	0.1 V / 1 mA / 1 mW
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	15 ms / 12 ms / -
Mechanical life	50 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>6</sup>
Max. switching load with load/without load	6 min <sup>-1</sup> / 600 min <sup>-1</sup>
General Specifications	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Ambient operating temperature at $U_N$	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	15 x 54 x 86, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.37 inch
Forced operation	Type A
Standards/approvals	EN 61010-2-201, EN 50205, EN 61810-3; UL 508 (max. 40 °C)



# Sockets with a Miniature Switching Relay

## 788 Series

1



DC load limit curve

### Note

- Reinforced insulation between coil and contacts
- A separator plate (e.g., 209-191) must be used for voltages greater than 250 V between adjacent relay modules and for compliance with the reinforced insulation requirements.
- To protect the relay coils and contacts, inductive loads must be dampened with an effective protection circuit.

### Technical Data

#### Contacts, standard

Contact material

AgNi

Recommended minimum load

10 mA / 12 VAC/DC

#### Contacts, general

Max. make current

1 contact: 24 A  
2 contacts: 12 A

Max. switching voltage

250 VAC

Max. switching power

1 contact: 4 kVA  
2 contacts: 2 x 2 kVA

#### Switching capacity

1 contact:  
AC-15: 3 A / 240 VAC  
DC-13: 2 A / 24 VDC  
2 contacts:  
AC-15: 1.5 A / 240 VAC  
DC-13: 1 A / 24 VDC

Dielectric strength, contact-coil (AC, 1 min)

5 kV<sub>rms</sub>

Dielectric strength open contact (AC, 1 min)

1 kV<sub>rms</sub>

Dielectric strength contact-contact

2.5 kV<sub>rms</sub>

Mechanical life

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

Electrical life (N.O., resistive load)

1 contact: 1 x 10<sup>4</sup> switching operations  
2 contacts: 1 x 10<sup>4</sup> switching operations

Max. switching load with load/without load

6 min<sup>-1</sup> / 300 min<sup>-1</sup>

#### General Specifications

Nominal voltage

250 V

Rated surge voltage

4 kV

Pollution degree

3

Ambient operating temperature at U<sub>N</sub>

-40 ... +70 °C

Storage temperature

-40 ... +70 °C

Dimensions (mm) W x H x D

15 x 73 x 86, height from upper-edge of DIN-rail

Connection technology

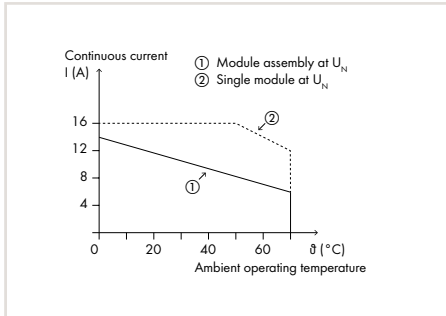
Push-in CAGE CLAMP®

Conductor range

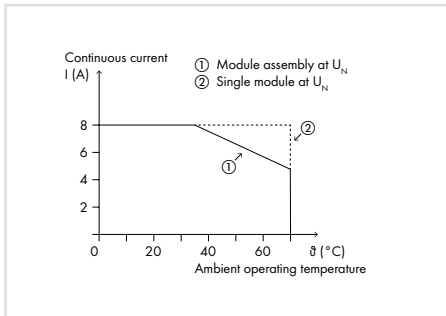
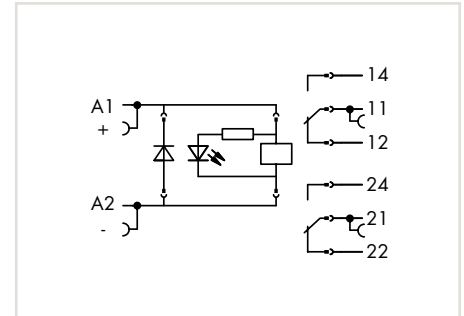
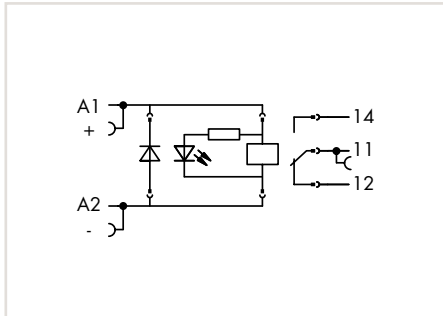
0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch



Current resistance curve, for 788-341



Current resistance curve, for 788-346

Relay module, 1 changeover contact, max. continuous current: 16 A, manual operation, red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	16.7 mA	788-341	10

Relay module, 2 changeover contacts, max. continuous current: 8 A, manual operation, red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	16.7 mA	788-346	10

**Specific Technical Data**

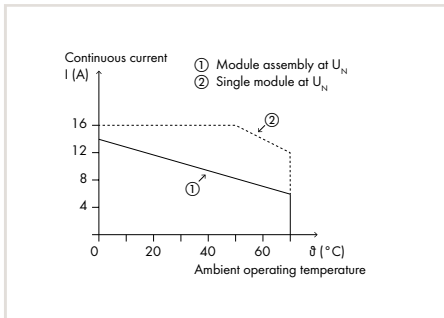
Coil	
Input voltage range	$V_N \pm 10\%$
Contacts	
Contact material	AgNi
Max. continuous current	16 A
Pull-in/drop-out/bounce time typ.	15 ms / 8 ms / 6 ms
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508 (max. 10 A)

EN 61010-2-201; EN 61810-1; EN 61373; UL 508

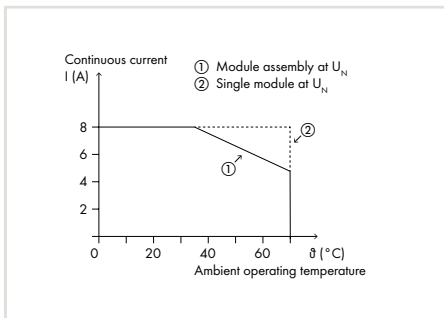
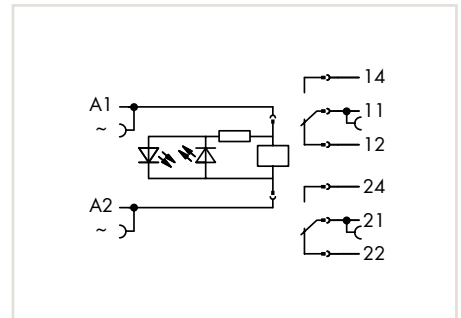
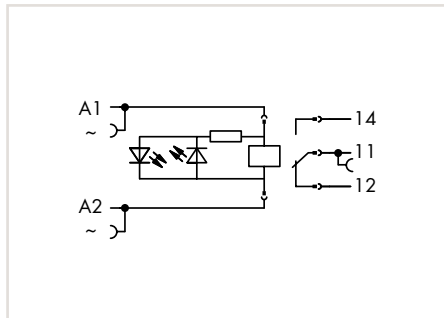
# Sockets with a Miniature Switching Relay

## 788 Series

1



Current resistance curve, for 788-541



Current resistance curve, for 788-546

Relay module,  
1 changeover contact,  
max. continuous current: 16 A,  
manual operation,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC	31.6 mA	788-541	10
115 VAC	6.6 mA	788-543	10
230 VAC	3.2 mA	788-544	10

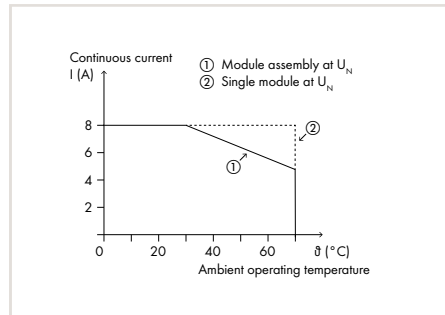
Relay module,  
2 changeover contacts,  
max. continuous current: 8 A,  
manual operation,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC	31.6 mA	788-546	10
115 VAC	6.6 mA	788-548	10
230 VAC	3.2 mA	788-549	10

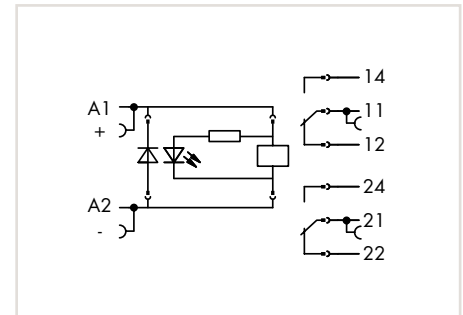
### Specific Technical Data

Coil	
Input voltage range	$V_N \pm 10\%$
Contacts	
Contact material	AgNi
Max. continuous current	16 A
Pull-in/drop-out/bounce time typ.	15 ms / 8 ms / 6 ms
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508 (max. 10 A)





Current resistance curve, for 788-390



Relay module,  
2 changeover contacts,  
max. continuous current: 3 A,  
manual operation, railway applications,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	19.1 mA	788-390	10

#### Specific Technical Data

##### Coil

Input voltage range

$U_N -30 \dots +25 \%$

##### Contacts

Contact material

AgNi

Max. continuous current

2 x 8 A

Max. make current

2 x 12 A

Max. switching power (resistive)

2 kVA

Pull-in/drop-out/bounce time typ.

15 ms / 8 ms / 7 ms

##### General Specifications

Dielectric strength contact-contact  
(AC, 1 min)

2.5 kV<sub>rms</sub>

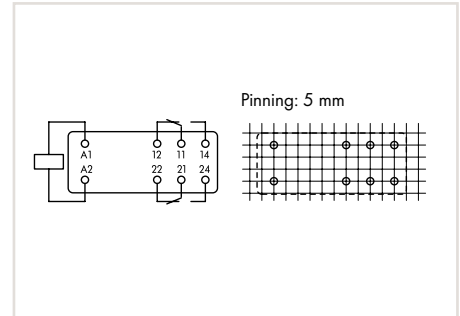
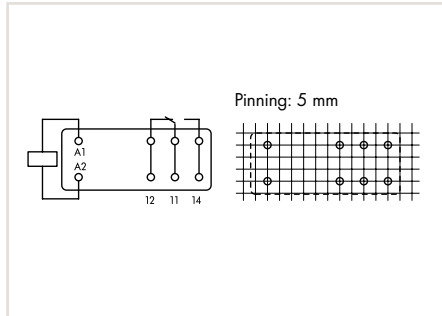
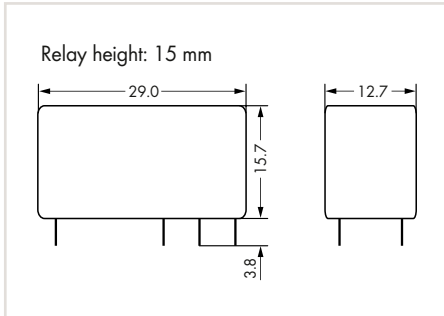
Standards/approvals

EN 61010-2-201; EN 61810-1; EN 61373

# Accessories

## 788 Series

1



Elementary relay,  
1 changeover contact,  
max. continuous current: 16 A,  
13 mm wide, 15 mm high

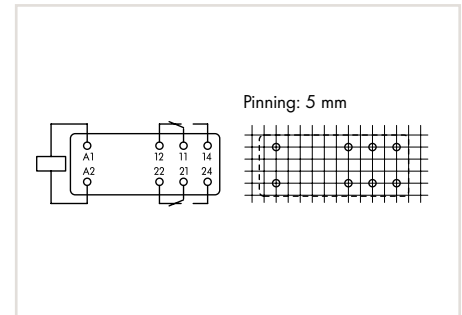
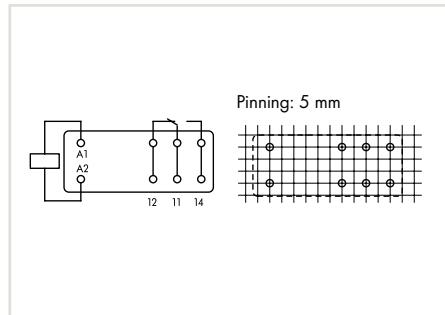
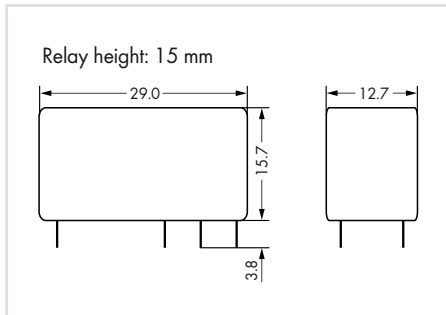
$U_N$	Item No.	Pack. Unit
12 VDC	788-150	20
24 VDC	788-154	20
48 VDC	788-158	20
60 VDC	788-162	20
110 VDC	788-166	20
24 VAC	788-170	20
115 VAC	788-174	20
230 VDC	788-178	20

Elementary relay,  
2 changeover contacts,  
max. continuous current: 8 A,  
13 mm wide, 15 mm high

$U_N$	Item No.	Pack. Unit
12 VDC	788-152	20
24 VDC	788-156	20
48 VDC	788-160	20
60 VDC	788-164	20
110 VDC	788-168	20
24 VAC	788-172	20
115 VAC	788-176	20
230 VDC	788-180	20

### Technical Data

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

**Note**

In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

Elementary relay,  
1 changeover contact,  
max. continuous current: 16 A,  
with gold contacts,  
13 mm wide, 15 mm high

$U_N$	Item No.	Pack. Unit
24 VDC	788-155	20
115 VDC	788-175	20
230 VDC	788-179	20

Elementary relay,  
2 changeover contacts,  
max. continuous current: 8 A,  
with gold contacts,  
13 mm wide, 15 mm high

$U_N$	Item No.	Pack. Unit
24 VDC	788-157	20
115 VDC	788-177	20
230 VDC	788-181	20

**Technical Data****Contacts**

Parameter	12-pin Relay (788-155)	14-pin Relay (788-157)
Contact material	AgNi + Au	AgNi + Au
Max. continuous current	16 A	2 x 8 A
Max. switching voltage	250 VAC	250 VAC
Max. switching power (resistive)	4 kVA (AC)	2 x 2 kVA (AC)
Recommended minimum load	5 V / 2 mA / 50 mW	5 V / 2 mA / 50 mW
Pull-in/drop-out/bounce time typ.	7 ms / 3 ms / -	7 ms / 3 ms / -
Mechanical life	> 3 x 10 <sup>7</sup> switching operations	> 3 x 10 <sup>7</sup> switching operations

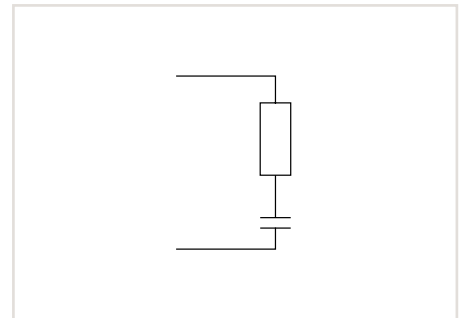
**General Specifications**

Parameter	12-pin Relay (788-155)	14-pin Relay (788-157)
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)		2.5 kV <sub>rms</sub>
Ambient operating temperature at $U_N$	-40 ... +85 °C	-40 ... +85 °C
Dimensions (mm) W x H x D	12.7 x 15.7 x 29	12.7 x 15.7 x 29

## Accessories

## 788 Series

1

**Note**

- To guarantee safe operation, residual voltages (due to the cable capacitance of long connection lines or leakage currents of semi-conductor switches and their protective circuits) must be lower than the release voltage of the relays.
- For DC relays, the release voltage is specified with  $\leq 5\%$  of the nominal voltage; for AC relays, it is 15 % of the nominal voltage (per VDE 0435).
- The relay may not reset if a high residual voltage exists. Depending on the reason for the residual voltage, changing the cable routing or a parallel connection of an RC element could remedy this situation.

Suppressor module, for pluggable miniature switching relay, for 788 and 858 Series Relay Sockets

$U_N$	Item No.	Pack. Unit
230 VAC	788-148	50

**Technical Data****Operating data**

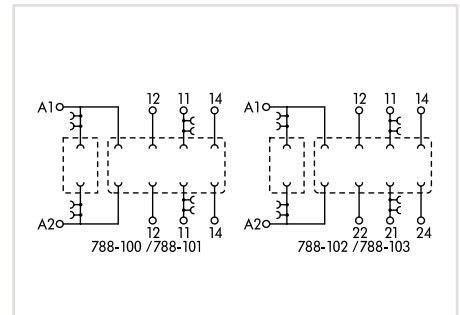
Operating voltage	max. 230 VAC, 50 ... 60 Hz
Operating current	3.6 mA at 115 VAC, 50 Hz 7.2 mA at 230 VAC, 50 Hz

**Module Characteristics**

Resistance	470 $\Omega$
Capacitance	100 nF

**General Specifications**

Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	15 x 15 x 10
Standards/approvals	EN 60664-1



Socket for miniature switching relay,  
1 changeover contact/2 changeover contacts,  
for DIN-35 rail

Description	Item No.	Pack. Unit
1 changeover contact (relay height: 15 mm)	788-100	20
2 changeover contacts (relay height: 15 mm)	788-102	20
1 changeover contact (relay height: 25 mm)	788-101	10
2 changeover contacts (relay height: 25 mm)	788-103	10

#### Specific Technical Data

Contacts	
Max. continuous current	16 A / 2 x 8 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA / 2 x 2 kVA AC
General Specifications	
Nominal input voltage ( $U_N$ )	depending on relay; max. 250 VAC
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	3
Dielectric strength, contact-coil (AC, 1 min)	6 kV <sub>rms</sub> (depending on relay)
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub> (depending on relay)
Dielectric strength contact-contact (AC, 1 min)	3.5 kV <sub>rms</sub> (depending on relay)
Storage temperature	-40 ... +80 °C
Ambient operating temperature	-40 ... +70 °C (depending on relay)
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1

## Accessories

### 788 Series

Operation status indicator



Description	Power consumption at $U_N$	Item No.	Pack. Unit
Operation status indicator with recovery diode, 24 VDC (12 ... 24 V)	2.4 mA	788-120	50 (2x25)
Operation status indicator, with recovery diode, 48 VDC (48 ... 60 V)	1.9 mA	788-121	50 (2x25)
Operation status indicator, 110 VDC	1.9 mA	788-122	50 (2x25)
Operation status indicator, 24 VAC	2.1 mA	788-123	50 (2x25)
Operation status indicator, 115 VAC	1.7 mA	788-124	50 (2x25)
Operation status indicator, 230 VAC	1.6 mA	788-125	50 (2x25)

Push-in type jumper bar,  $I_{max}$  18 A



Description	Item No.	Pack. Unit
2-way (module/module)	788-113	200 (8x25)
3-way	788-114	100 (4x25)
4-way	788-115	100 (4x25)
5-way	788-116	100 (4x25)
6-way	788-117	100 (4x25)

Push-in type jumper bar, light gray, insulated, 18 A

Description	Item No.	Pack. Unit
2-way (internal)	859-402	200 (8x25)

WMB Multi marking system, 10 strips with 10 markers, white, with black printing



Description	Item No.	Pack. Unit	
plain	793-501	5 cards	
Marking	1 ... 10 (10 x)	793-502	5 cards
	11 ... 20 (10 x)	793-503	5 cards
	21 ... 30 (10 x)	793-504	5 cards
	31 ... 40 (10 x)	793-505	5 cards
	41 ... 50 (10 x)	793-506	5 cards
	1 ... 50 (2 x)	793-566	5 cards

Group marker carriers



Item No.	Pack. Unit
209-145	100 (50)

Operating tool with a partially insulated shaft



Description	Item No.	Pack. Unit
Type 2, 3.5 x 0.5 mm blade	210-720	1

Twin ferrule, red, insulated, 12 mm long



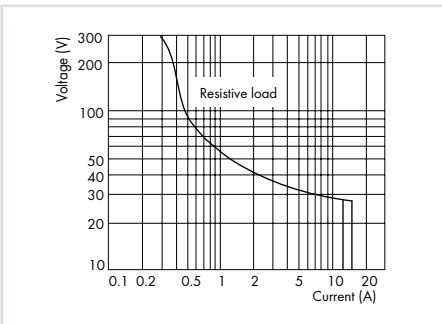
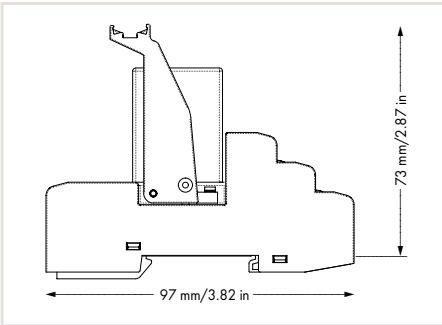
Sleeve for mm <sup>2</sup> / AWG	Item No.	Pack. Unit
2 x 1 mm <sup>2</sup> / 2 x 18	216-542	500



## Sockets with an Industrial Relay

## 858 Series

1



DC load limit curve

**Note**

- Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.
- In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

**Technical Data****Contacts, standard**

Contact material

AgCe

Recommended minimum load

100 mA / 12 VAC/DC

**Contacts, gold**

Contact material

AgCe + Au

Recommended minimum load

1 mA / 5 VDC / 50 mW

**Contacts, general**

Max. continuous current

5 A

Max. make current (resistive)

15 A (4 s)

Max. switching voltage

250 VAC

Max. switching power (resistive)

AC 1250 VA, DC see load limit curve

Dielectric strength, contact-coil (AC, 1 min)

1.5 kV<sub>rms</sub>

Dielectric strength open contact (AC, 1 min)

1 kV<sub>rms</sub>

Dielectric strength contact-contact (AC, 1 min)

1.5 kV<sub>rms</sub>

Pull-in/drop-out/bounce time typ.

25 ms / 25 ms / 4 ms

Mechanical life

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

Electrical life (N.O., resistive load)

1 x 10<sup>5</sup> switching operations**General Specifications**

Nominal voltage

250 V

Rated surge voltage

2.5 kV

Pollution degree

2

Ambient operating temperature at U<sub>N</sub>

-25 ... +70 °C

Storage temperature

-40 ... +80 °C

Dimensions (mm) W x H x D

31 x 73 x 97, height from upper-edge of DIN-rail

Connection technology

Push-in CAGE CLAMP®

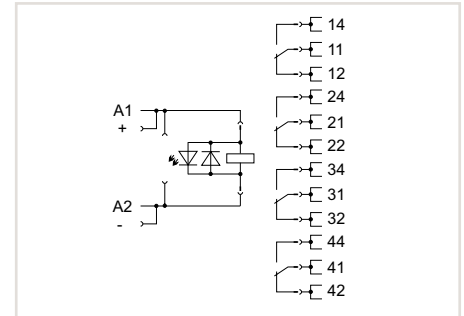
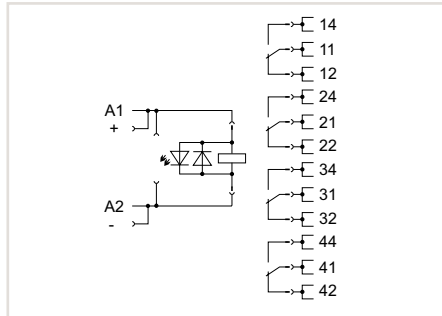
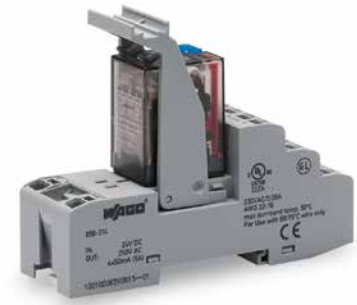
Conductor range

2 x 0.34 ... 2 x 1.5 mm<sup>2</sup> / 1 x 2.5 mm<sup>2</sup> /  
2 x 22 ... 2 x 16 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch





Relay module,  
4 changeover contacts,  
max. continuous current: 5 A,  
manual operation,  
red status indicator, 31 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	75 mA	858-303	5
24 VDC	36.9 mA	858-304	5
48 VDC	18.5 mA	858-305	5
110 VDC	10 mA	858-307	5
220 VDC	4.1 mA	858-308	5

Relay module,  
4 changeover contacts,  
max. continuous current: 5 A,  
with gold contacts,  
manual operation,  
red status indicator, 31 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	36.9 mA	858-314	5

**Specific Technical Data**

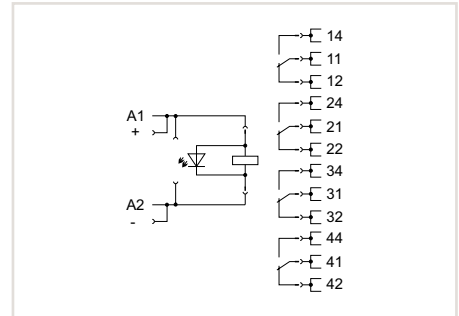
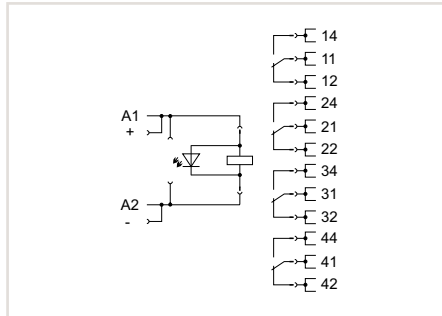
Coil	
Input voltage range	$U_N -20 \dots +10 \%$
Contacts	
Contact material	AgCe
Recommended minimum load	100 mA / 12 VAC/DC
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61373; EN 61810-1; UL 508 (max. 50 °C) (858-304: GL)

$U_N -20 \dots +10 \%$	
AgCe + Au	
1 mA / 5 VDC / 50 mW	
EN 61010-2-201; EN 61373; EN 61810-1; GL; UL 508 (max. 50 °C)	

# Sockets with an Industrial Relay

## 858 Series

1



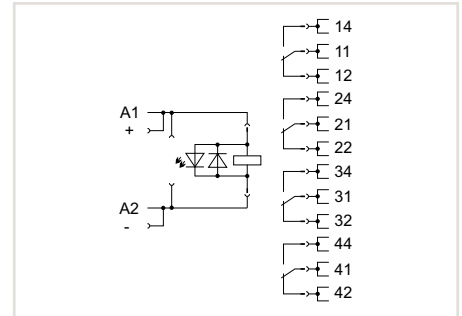
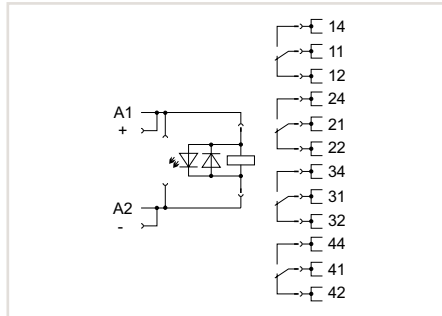
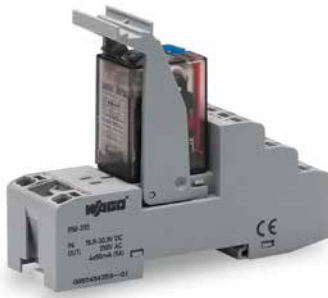
Relay module,  
4 changeover contacts,  
max. continuous current: 5 A,  
manual operation,  
red status indicator, 31 mm wide

Relay module,  
4 changeover contacts,  
max. continuous current: 5 A,  
with gold contacts,  
manual operation,  
red status indicator, 31 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC	50 mA	858-504	5
115 VAC	10 mA	858-507	5
230 VAC	8.3 mA	858-508	5

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC	50 mA	858-514	5
115 VAC	10 mA	858-517	5
230 VAC	8.3 mA	858-518	5

Specific Technical Data	
<b>Coil</b>	
Input voltage range	$U_N -20 \dots +10 \%$
<b>Contacts</b>	
Contact material	AgCe
Recommended minimum load	100 mA / 12 VAC/DC
<b>General Specifications</b>	
Standards/approvals	EN 61010-2-201; EN 61373; EN 61810-1; UL 508 (max. 50 °C) (858-508: GL)
	$U_N -20 \dots +10 \%$
	AgCe + Au
	1 mA / 5 VDC/ 50 mW
	EN 61010-2-201; EN 61373; EN 61810-1; UL 508 (max. 50 °C) (858-518: GL)



Relay module,  
4 changeover contacts,  
max. continuous current: 5 A,  
manual operation, railway applications,  
red status indicator, 31 mm wide

Relay module,  
4 changeover contacts,  
max. continuous current: 5 A,  
with gold contacts,  
manual operation,  
railway applications,  
red status indicator, 31 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	42 mA	858-354	5

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	42 mA	858-355	5

**Specific Technical Data**

Coil	
Input voltage range	$U_N -30 \dots +25 \%$
Contacts	
Contact material	AgCe
Max. switching power (resistive)	1 kVA AC, DC see load limit curve
Recommended minimum load	100 mA / 12 VAC/DC
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508

Input voltage range	$U_N -30 \dots +25 \%$
Contact material	AgCe + Au
Max. switching power (resistive)	1 kVA AC, DC see load limit curve
Recommended minimum load	1 mA / 5 VDC / 50 mW
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508

Input voltage range	$U_N -30 \dots +25 \%$
Contact material	AgCe + Au
Max. switching power (resistive)	1 kVA AC, DC see load limit curve
Recommended minimum load	1 mA / 5 VDC / 50 mW
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; UL 508

## Sockets with an Industrial Relay

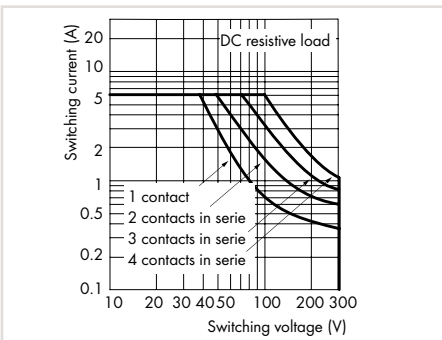
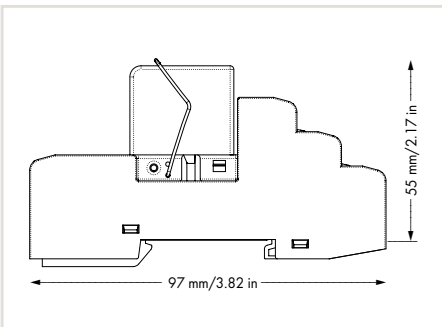
## 858 Series

1

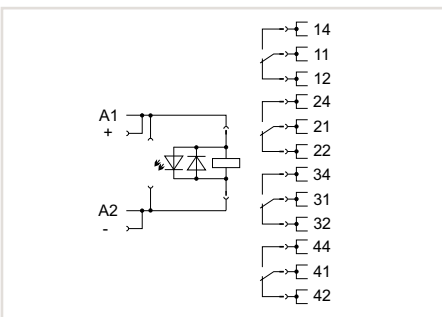


Relay module,  
4 changeover contacts,  
max. continuous current: 6 A,  
manual operation,  
red status indicator, 31 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	31.5 mA	858-390	5
110 VDC	7.7 mA	858-392	5
220 VDC	4.3 mA	858-391	5



DC load limit curve

**Note**

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

**Technical Data**

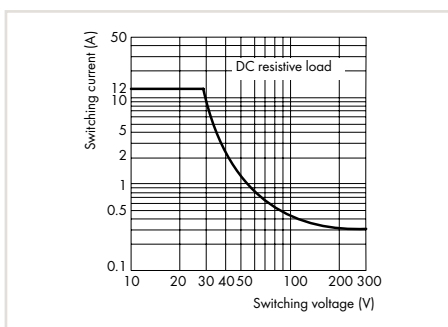
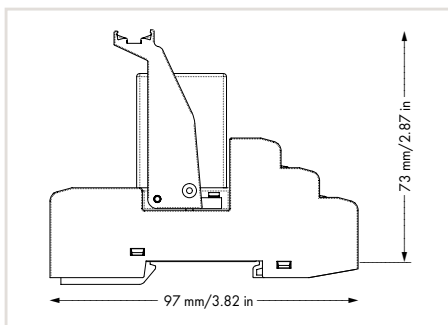
<b>Coil</b>	
Input voltage range	$V_N - 10 \dots +30 \%$
<b>Contacts, standard</b>	
Contact material	AgNi 90/10
Recommended minimum load	10 mA / 12 VAC/DC
<b>Contacts, general</b>	
Max. continuous current	6 A
Max. make current (resistive)	12 A (20 ms)
Max. switching voltage	240 VAC
Max. switching power (resistive)	1440 VA (AC), DC see load curve
Dielectric strength, contact-coil (AC, 1 min)	2.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.2 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	2 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	15 ms / 18 ms / 8 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	10 x 10 <sup>4</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 60 min <sup>-1</sup>
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	2.5 kV
Pollution degree	2
Ambient operating temperature at $U_N$	-40 ... +70 °C
Storage temperature	-40 ... +85 °C
Dimensions (mm) W x H x D	31 x 55 x 97, height from upper-edge of DIN-rail
Conductor range	2 x 0.34 ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / 2 x 22 ... 2 x 16 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 61010-2-201, EN 61810-1; (858-390, 858-391: UL 508, max. 50 °C)



# Sockets with an Industrial Relay

## 858 Series

1



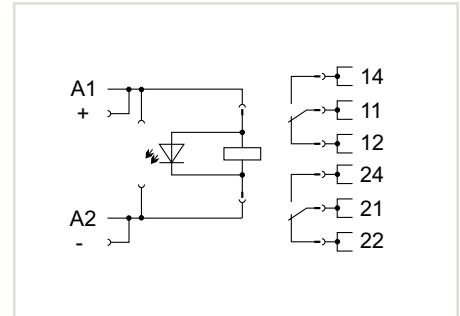
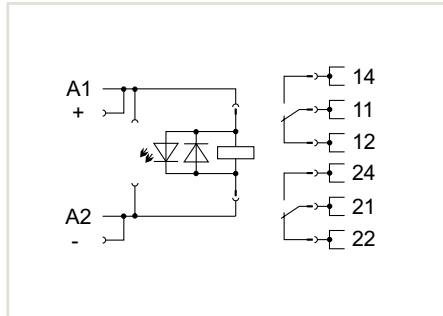
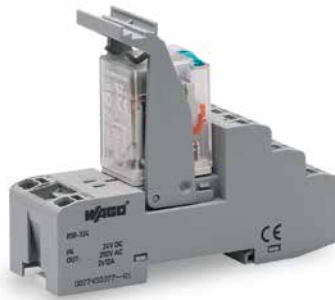
DC load limit curve

### Note

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

### Technical Data

<b>Coil</b>	
Input voltage range	$U_N - 20 \dots + 10 \%$
<b>Contacts, standard</b>	
Contact material	AgNi
Recommended minimum load	10 V / 5 mA
<b>Contacts, general</b>	
Max. continuous current	2 x 12 A
Max. make current (resistive)	24 A (4 s)
Max. switching voltage	250 VAC
Max. switching power (resistive)	2 x 3000 VAAC, DC see load limit curve
Max. switching capacity	AC-15: 1.5 A / 240 VAC DC-13: 0.1 A / 250 VDC
Dielectric strength, contact-coil (AC, 1 min)	2.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	2.5 kV <sub>rms</sub>
Mechanical life	2 x 10 <sup>7</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Max. switching load with load/without load	20 min <sup>-1</sup> / 200 min <sup>-1</sup>
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	2.5 kV
Pollution degree	2
Ambient operating temperature at $U_N$	-40 ... +55 °C
Storage temperature	-40 ... +85 °C
Dimensions (mm) W x H x D	31 x 73 x 97, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	2 x 0.34 ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / 2 x 22 ... 2 x 16 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch



Relay module,  
2 changeover contacts,  
max. continuous current: 12 A,  
manual operation,  
red status indicator, 31 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	37.5 mA	858-324	5
48 VDC	18.5 mA	858-325	5
110 VDC	8.1 mA	858-327	5
220 VDC	4.1 mA	858-328	5

Relay module,  
2 changeover contacts,  
max. continuous current: 12 A,  
manual operation,  
red status indicator, 31 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC	11 mA	858-528	5

**Specific Technical Data**

**Contacts**

Contact material	AgNi
Recommended minimum load	5 V / 5 mA / 0.3 W
Pull-in/drop-out/bounce time typ.	13 ms / 3 ms / -

**General Specifications**

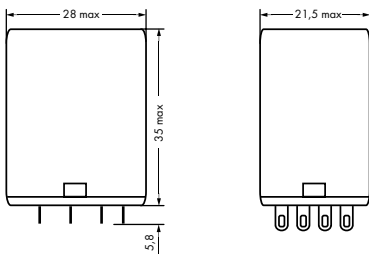
Standards/approvals	EN 61010-2-201; EN 61810-1; UL 508
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Contact material	AgNi
Recommended minimum load	5 V / 5 mA / 0.3 W
Pull-in/drop-out/bounce time typ.	10 ms / 8 ms / -

Standards/approvals	EN 61010-2-201; EN 61810-1 ; UL 508
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## Accessories

### 858 Series



#### Note

In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

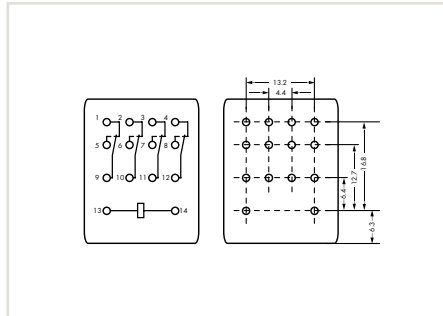
#### Technical Data

<b>Coil</b>	
Input voltage range	$U_N - 20 \dots + 10 \%$
<b>Contacts, standard</b>	
Contact material	AgCe
Recommended minimum load	100 mA / 12 VAC/DC
<b>Contacts, gold</b>	
Contact material	AgCe + Au
Recommended minimum load	1 mA / 5 VDC / 50 mW
<b>Contacts, general</b>	
Max. continuous current	5 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1250 VA (AC)
Dielectric strength, contact-coil (AC, 1 min)	1.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	25 ms / 25 ms / 4 ms
Mechanical life	20 x 10 <sup>6</sup> switching operations
<b>General Specifications</b>	
Ambient operating temperature at $U_N$	-25 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	21.5 x 35 x 28
Standards/approvals	UR, VDE





Similar to picture



Elementary relay module,  
4 changeover contacts,  
max. continuous current: 5 A,  
manual operation,  
red status indicator, 22 mm wide,  
25 mm high

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	75 mA	858-164	3
24 VDC	36.9 mA	858-150	3
24 VAC	50 mA	858-154	3
230 VAC	8.3 mA	858-151	3

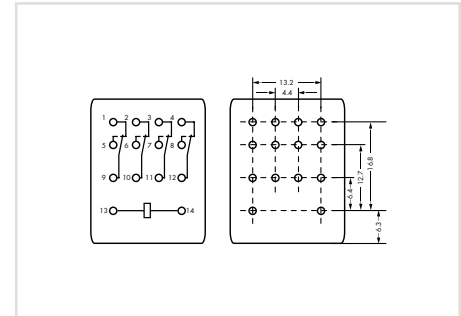
**Specific Technical Data**

**Contacts**

Contact material	AgCe
Recommended minimum load	100 mA / 12 VAC/DC



Similar to picture



Elementary module,  
4 changeover contacts,  
max. continuous current: 5 A,  
with gold contacts,  
manual operation,  
red status indicator, 22 mm wide,  
25 mm high

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	36.9 mA	858-152	3
230 VAC	8.3 mA	858-153	3

Contact material	AgCe + Au
Recommended minimum load	1 mA / 5 VDC / 50 mW

## Accessories

## 858 Series

1

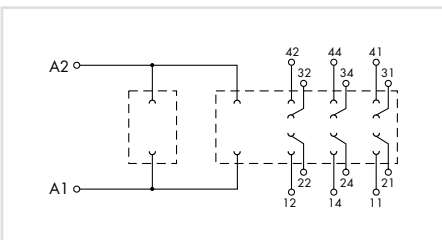
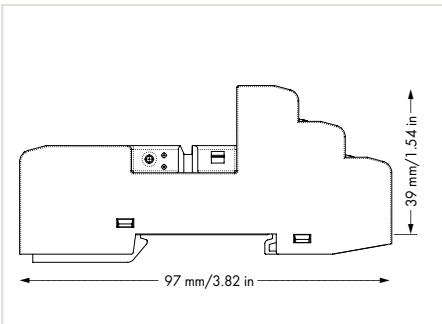


Relay socket,  
4 changeover contacts,  
max. continuous current: 6 A,  
manual operation,  
31 mm wide

Item No.	Pack. Unit
858-100	10

## Technical Data

Contacts	
Max. switching voltage	250 VAC
Max. continuous current	4 x 6 A (4 changeover contacts); 2 x 12 A (2 changeover contacts)
General Specifications	
Nominal input voltage ( $U_N$ )	Depending on relay, max. 250 VAC
Dielectric strength, contact-coil (AC, 1 min)	2.5 kV <sub>rms</sub> (depending on relay)
Dielectric strength open contact (AC, 1 min)	1.5 kV <sub>rms</sub> (depending on relay)
Dielectric strength contact-contact (AC, 1 min)	2 kV <sub>rms</sub> (depending on relay)
Storage temperature	-40 ... +80 °C
Ambient operating temperature	-40 ... +70 °C (depending on relay)
Dimensions (mm) W x H x D	31 x 39 x 97, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	2 x 0.34 ... 2 x 1.5 mm <sup>2</sup> / 1 x 2.5 mm <sup>2</sup> / 2 x 22 ... 2 x 16 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1; UR



## Accessories

### 858 Series

Holding bracket



Description	Item No.	Pack. Unit
Holding bracket for industrial relays (33.5 ... 35.5 mm high)	858-110	8 (1)

Push-in type jumper bar



Description	Item No.	Pack. Unit
Push-in type jumper bar, for commoning a potential on the control and load side $I_N$ 12 A	858-402	200 (8x25)

Operation status indicator



Description	Power consumption at $U_N$	Item No.	Pack. Unit
Operation status indicator with recovery diode, 24 VDC (12 ... 24 V)	2.4 mA	788-120	50 (2x25)
Operation status indicator, with recovery diode, 48 VDC (48 ... 60 V)	1.9 mA	788-121	50 (2x25)
Operation status indicator, 110 VDC	1.9 mA	788-122	50 (2x25)
Operation status indicator, 24 VAC	2.1 mA	788-123	50 (2x25)
Operation status indicator, 115 VAC	1.7 mA	788-124	50 (2x25)
Operation status indicator, 230 VAC	1.6 mA	788-125	50 (2x25)

Operating tool with a partially insulated shaft



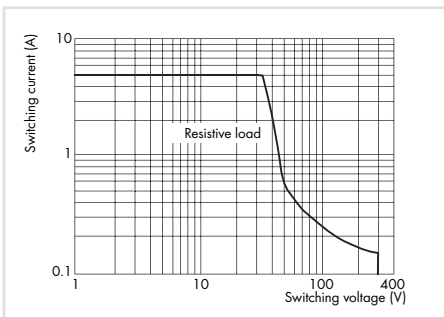
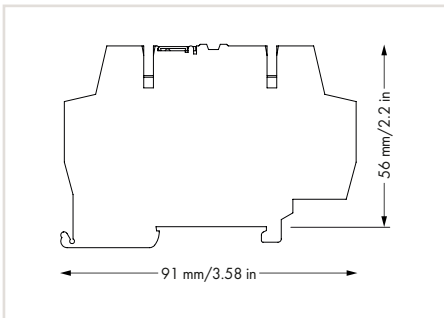
Description	Item No.	Pack. Unit
Type 1, 2.5 x 0.4 mm blade	210-719	1

1

# Rail-Mount Terminal Blocks with a Miniature Switching Relay

## 859 Series

1



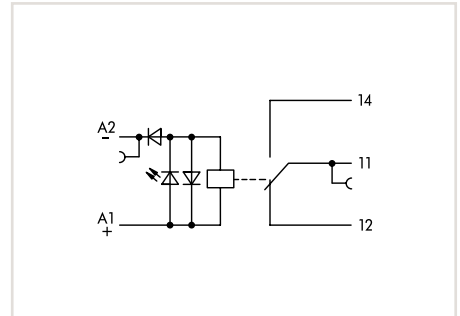
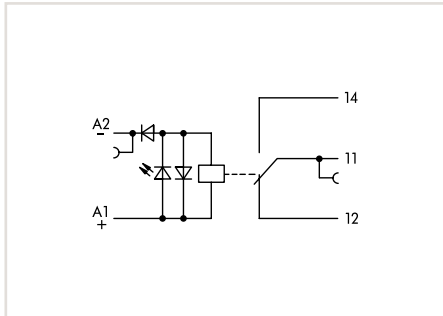
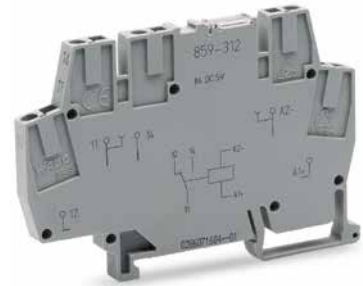
DC load limit curve

### Note

- Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.
- In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

### Technical Data

<b>Coil</b>	
Input voltage range	$V_N - 15 \dots + 20 \%$
<b>Contacts, standard</b>	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
<b>Contacts, gold</b>	
Contact material	AgNi + Au
Recommended minimum load	1 VDC / 1 mA / 1 mW
<b>Contacts, general</b>	
Max. continuous current	5 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	AC 1250 VA, DC see load limit curve
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 180 min <sup>-1</sup>
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Ambient operating temperature at U <sub>N</sub>	-25 ... +50 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Relay module,  
 1 changeover contact,  
 max. continuous current: 5 A,  
 red status indicator, 6 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
5 VDC	31 mA	859-302	10
12 VDC	17 mA	859-303	10
24 VDC	10 mA	859-304	10
48 VDC	6.5 mA	859-305	10
220 VDC	3.2 mA	859-308	10

Relay module,  
 1 changeover contact,  
 max. continuous current: 5 A,  
 with gold contacts,  
 red status indicator, 6 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
5 VDC	31 mA	859-312	10
24 VDC	10 mA	859-314	10
220 VDC	3.2 mA	859-318	10

**Specific Technical Data**

**Contacts**

Contact material

Recommended minimum load

**General Specifications**

Standards/approvals

AgSnO<sub>2</sub>  
 10 VDC / 10 mA, 24 VDC / 1 mA

EN 61010-2-201; EN 61810-1; EN 61373; GL;  
 UL 508

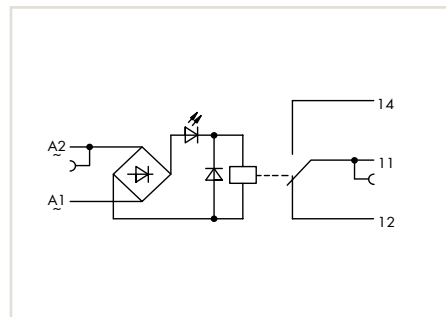
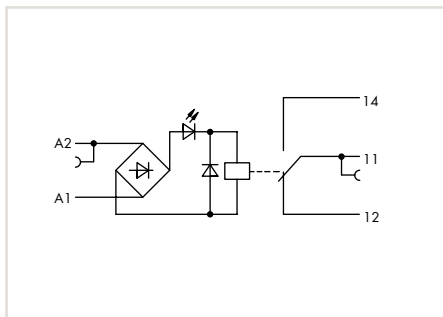
AgNi + Au  
 1 VDC / 1 mA / 1 mW

EN 61010-2-201; EN 61810-1; EN 61373; GL;  
 UL 508

# Rail-Mount Terminal Blocks with a Miniature Switching Relay

## 859 Series

1



Relay module,  
1 changeover contact,  
max. continuous current: 5 A,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VAC/DC	15 mA	859-353	10
24 VAC/DC	8 mA	859-354	10
48 VAC/DC	5.3 mA	859-355	10
60 VAC/DC	4.1 mA	859-356	10
115 VAC/DC	3.5 mA	859-357	10
230 VAC/DC	3.5 mA	859-358	10

Relay module,  
1 changeover contact,  
max. continuous current: 5 A,  
with gold contacts,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
115 VAC	3.5 mA	859-360	10
230 VAC	3.5 mA	859-359	10

**Specific Technical Data**

**Contacts**

Contact material

AgSnO<sub>2</sub>

AgNi + Au

Recommended minimum load

10 VDC / 10 mA, 24 VDC / 1 mA

1 VDC / 1 mA / 1 mW

**General Specifications**

Standards/approvals

EN 61010-2-201; EN 61810-1; EN 61373; GL; UL 508

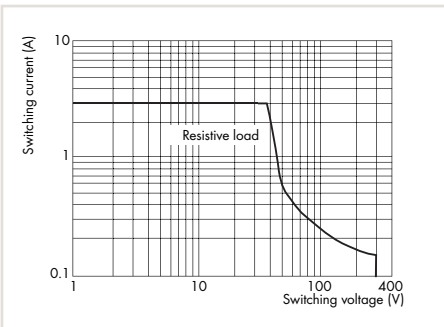
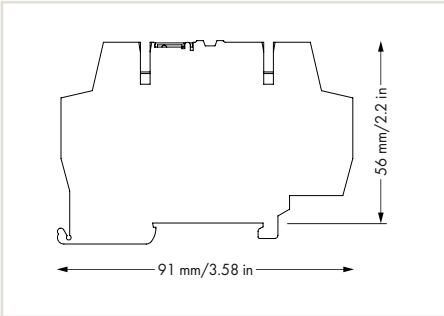
EN 61010-2-201; EN 61810-1; EN 61373; GL; UL 508



# Rail-Mount Terminal Blocks with a Miniature Switching Relay

## 859 Series

1



DC load limit curve

### Note

- Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.
- In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

### Technical Data

#### Contacts, standard

Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA

#### Contacts, gold

Contact material	AgNi + Au
Recommended minimum load	1 VDC / 1 mA / 1 mW

#### Contacts, general

Max. continuous current	3 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	750 VA (AC), DC see load limit curve
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -

Mechanical life 5 x 10<sup>6</sup> switching operations

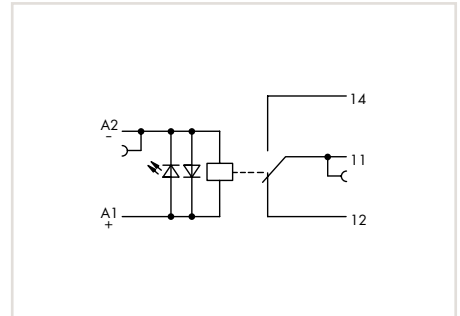
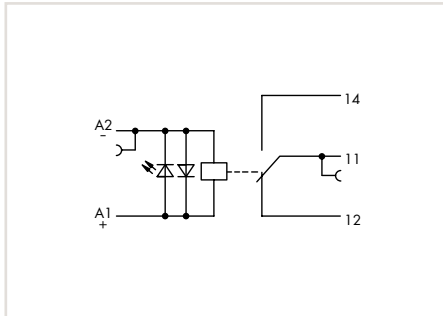
Electrical life (N.O., resistive load) 5 x 10<sup>4</sup> switching operations

Max. switching load with load/without load 6 min<sup>-1</sup> / 180 min<sup>-1</sup>

#### General Specifications

Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Ambient operating temperature at U <sub>N</sub>	-25 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch





Relay module,  
1 changeover contact,  
max. continuous current: 3 A,  
railway applications,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	12 mA	859-390	10

Relay module,  
1 changeover contact,  
max. continuous current: 3 A,  
with gold contacts,  
railway applications,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	10 mA	859-392	10
36 VDC	10.1 mA	859-386	10
48 VDC	7.9 mA	859-384	10
110 VDC	3.1 mA	859-317	10

**Specific Technical Data**

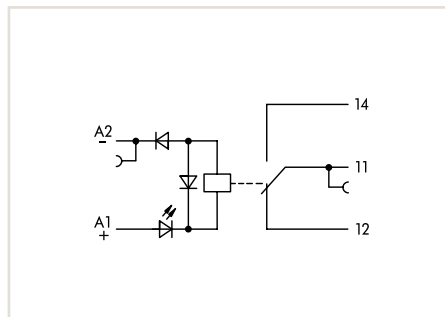
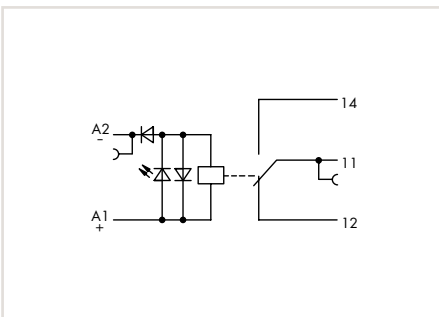
Coil	
Input voltage range	$U_N -30 \dots +25 \%$
Contacts	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; GL; UL 508

$U_N -30 \dots +25 \%$	
AgNi + Au	
1 VDC / 1 mA / 1 mW	
EN 61010-2-201; EN 61810-1; EN 61373 (859-392, 859-317: GL; UL 508)	

# Rail-Mount Terminal Blocks with a Miniature Switching Relay

## 859 Series

1



Relay module,  
1 changeover contact,  
max. continuous current: 3 A,  
railway applications,  
red status indicator, 6 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
110 VDC	2.7 mA	859-391	10

Relay module,  
1 changeover contact,  
max. continuous current: 3 A,  
railway applications,  
red status indicator, 6 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	14.4 mA	859-398	10
48 VDC	7.9 mA	859-397	10
110 VDC	3.1 mA	859-399	10

### Specific Technical Data

Coil	
Input voltage range	U <sub>N</sub> ± 30 %
Contacts	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; GL; UL 508

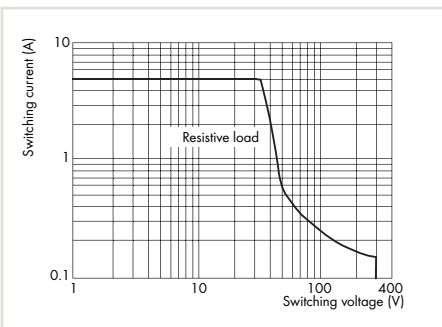
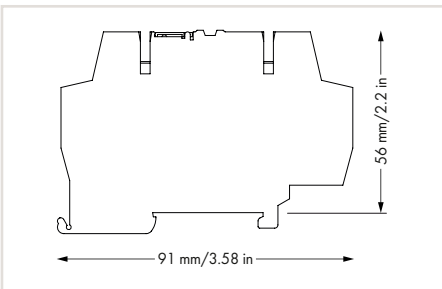
Coil	
Input voltage range	U <sub>N</sub> ± 40 %
Contacts	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; GL



# Rail-Mount Terminal Blocks with a Miniature Switching Relay

## 859 Series

1



DC load limit curve

### Note

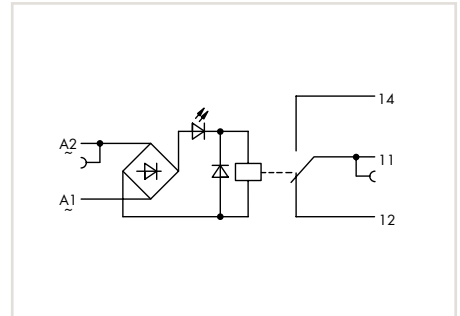
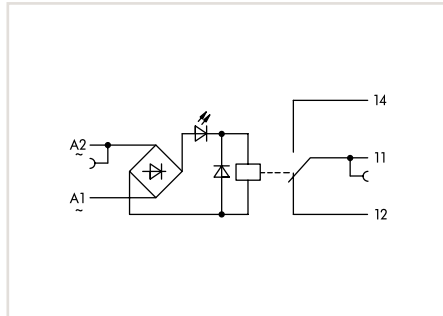
Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

### Technical Data

<b>Coil</b>	
Input voltage range	$V_N \pm 10\%$
<b>Contacts, standard</b>	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
<b>Contacts, general</b>	
Max. continuous current	5 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	AC 1250 VA, DC see load limit curve
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Pull-in/drop-out/bounce time typ.	8 ms / 4 ms / -
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
Max. switching load with load/without load	6 min <sup>-1</sup> / 180 min <sup>-1</sup>
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Ambient operating temperature at U <sub>N</sub>	-25 ... +50 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Accessories,  
see page 68



Relay module,  
1 changeover contact,  
max. continuous current: 5 A,  
with defined turn-on threshold,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
115 VAC	4.2 mA	859-367	10

Relay module,  
1 changeover contact,  
max. continuous current: 5 A,  
with defined turn-on threshold,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC	4.2 mA	859-368	10

**Specific Technical Data**

Coil	
Turn-on threshold relay/LED	95 VAC / 80 VAC
Turn-off threshold relay/LED	60 VAC / 60 VAC
Contacts	
Contact material	AgSnO <sub>2</sub>
Recommended minimum load	10 VDC / 10 mA, 24 VDC / 1 mA
General Specifications	
Standards/approvals	EN 61010-2-201; EN 61810-1; EN 61373; GL; UL 508

## Accessories

### 859 Series

1

Operating tool with a partially insulated shaft



Description	Item No.	Pack. Unit
Type 2, 3.5 x 0.5 mm blade	210-720	1

Felt-tip pen



Description	Item No.	Pack. Unit
for permanent marking	210-110	1

Test pin



Description	Item No.	Pack. Unit
Test pin, 1 mm Ø, with solder connection for test cable	859-500	1

End and intermediate plate



Description	Item No.	Pack. Unit
End and intermediate plate, 1 mm thick, gray	859-525	100 (4x25)

Push-in type jumper bar, light gray, insulated, 18 A



Description	Item No.	Pack. Unit
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. suffixes for colored push-in type jumper bars	yellow	... /000-029
	red	... /000-005
	blue	... /000-006

Miniature WSB Quick marking system,  
10 strips with 10 markers,  
white, with black printing

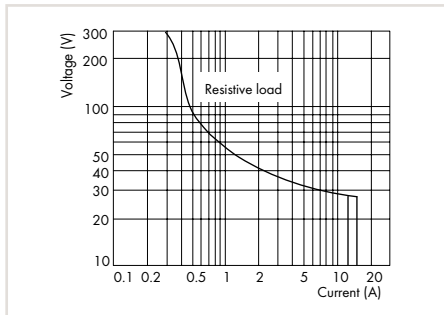


Description	Item No.	Pack. Unit	
plain	248-501	5 cards	
Marking	1 ... 10 (10 x)	248-502	5 cards
	11 ... 20 (10 x)	248-503	5 cards
	21 ... 30 (10 x)	248-504	5 cards
	31 ... 40 (10 x)	248-505	5 cards
	41 ... 50 (10 x)	248-506	5 cards
	1 ... 50 (2 x)	248-566	5 cards
	K 1 ... K 10 (10 x)	248-450	5 cards
	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	

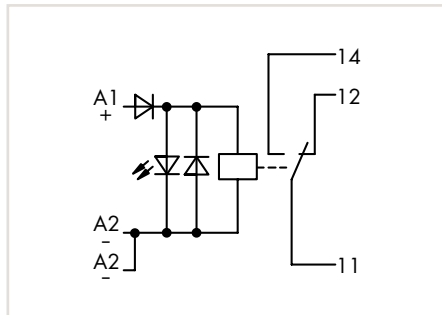
## Relay Modules in a DIN-Rail-Mount Enclosure

## 789 Series

1

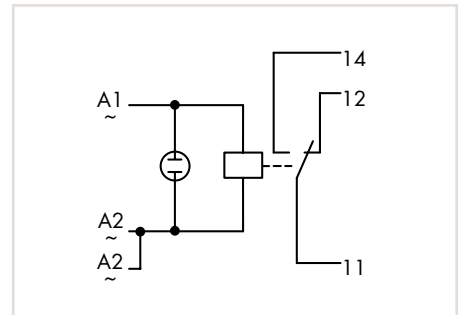


DC load limit curve



Relay module,  
1 changeover contact,  
max. continuous current: 12 A,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	19 mA	789-304	10



Relay module,  
1 changeover contact,  
max. continuous current: 12 A,  
red status indicator, 18 mm wide

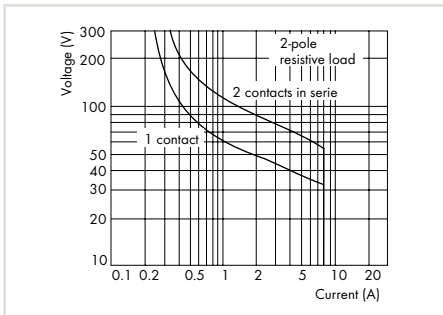
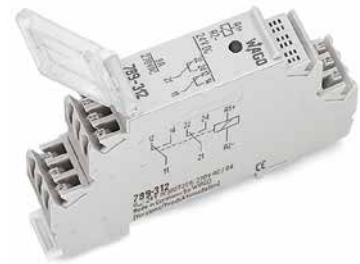
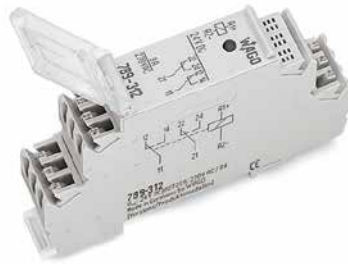
$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC	4.2 mA	789-508	10

## Technical Data

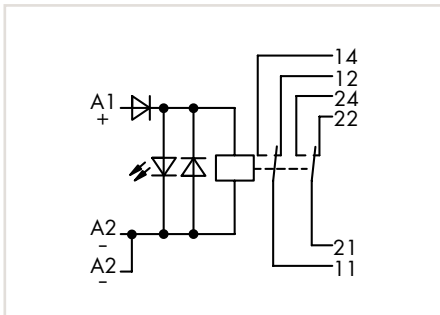
Coil	
Input voltage range	$U_N -15 \dots +10 \%$
Contacts	
Contact material	AgNi 90/10
Max. continuous current	12 A
Max. make current (resistive)	25 A / 4 s
Max. switching voltage	250 VAC
Max. switching power (resistive)	3 kVA (AC), DC see load limit curve
Recommended minimum load	12 VAC/DC, 100 mA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 6 ms
Mechanical life	$30 \times 10^6$
General Specifications	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at $U_N$	-25 ... +40 °C
Storage temperature	-40 ... +85 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1

Accessories,  
See pages 82



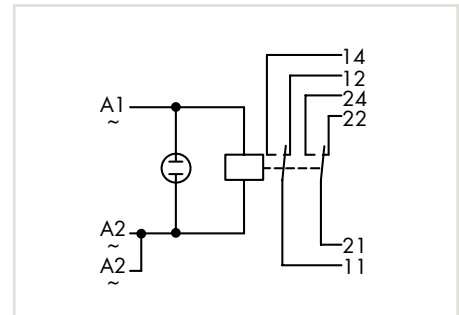


DC load limit curve



Relay module,  
2 changeover contacts,  
max. continuous current: 8 A,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	21 mA	789-312	10



Relay module,  
2 changeover contacts,  
max. continuous current: 8 A,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC/DC	22 mA	789-512	10
230 VAC	4.2 mA	789-516	10

### Technical Data

#### Coil

Input voltage range  $U_N$  -15 ... +10 %

#### Contacts

Contact material AgNi 90/10  
 Max. continuous current 8 A  
 Max. make current (resistive) 15 A / 4 s  
 Max. switching voltage 250 VAC  
 Max. switching power (resistive) 2 kVA (AC), DC see load limit curve  
 Recommended minimum load 12 VAC/DC, 100 mA  
 Pull-in/drop-out/bounce time typ. 8 ms / 6 ms / 6 ms  
 Mechanical life  $30 \times 10^6$  switching operations

#### General Specifications

Nominal voltage 250 V  
 Rated surge voltage 4 kV  
 Pollution degree 2  
 Dielectric strength, contact-coil (AC, 1 min) 5 kV<sub>rms</sub>  
 Dielectric strength open contact (AC, 1 min) 1 kV<sub>rms</sub>  
 Dielectric strength contact-contact (AC, 1 min) 2.5 kV<sub>rms</sub>  
 Ambient operating temperature at  $U_N$  -25 ... +40 °C  
 Storage temperature -40 ... +85 °C  
 Dimensions (mm) W x H x D 17.5 x 55 x 90, height from upper-edge of DIN-rail  
 Connection technology CAGE CLAMP®  
 Conductor range 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG  
 Strip length 9 ... 10 mm / 0.35 ... 0.39 inch  
 Standards/approvals EN 60664-1

$U_N$  -15 ... +10 %

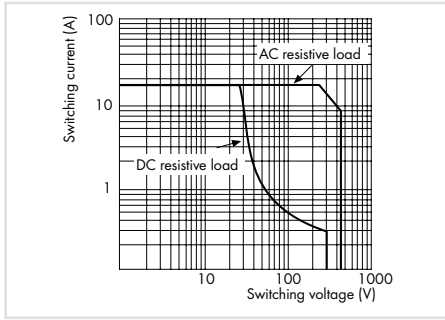
Contact material AgNi 90/10  
 Max. continuous current 8 A  
 Max. make current (resistive) 15 A / 4 s  
 Max. switching voltage 250 VAC  
 Max. switching power (resistive) 2 kVA (AC), DC see load limit curve  
 Recommended minimum load 12 VAC/DC, 100 mA  
 Pull-in/drop-out/bounce time typ. 15 ms / 15 ms / 3 ms  
 Mechanical life  $5 \times 10^6$  switching operations

Nominal voltage 250 V  
 Rated surge voltage 4 kV  
 Pollution degree 2  
 Dielectric strength, contact-coil (AC, 1 min) 5 kV<sub>rms</sub>  
 Dielectric strength open contact (AC, 1 min) 1 kV<sub>rms</sub>  
 Dielectric strength contact-contact (AC, 1 min) 2.5 kV<sub>rms</sub>  
 Ambient operating temperature at  $U_N$  -25 ... +40 °C  
 Storage temperature -40 ... +85 °C  
 Dimensions (mm) W x H x D 17.5 x 55 x 90, height from upper-edge of DIN-rail  
 Connection technology CAGE CLAMP®  
 Conductor range 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG  
 Strip length 9 ... 10 mm / 0.35 ... 0.39 inch  
 Standards/approvals EN 60664-1

# Relay Modules in a DIN-Rail-Mount Enclosure

## 789 Series

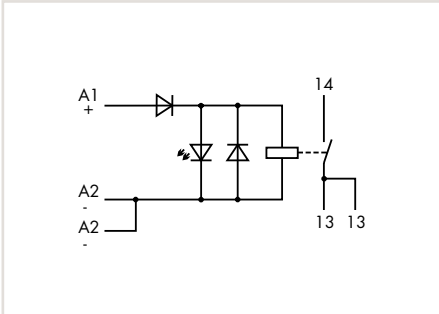
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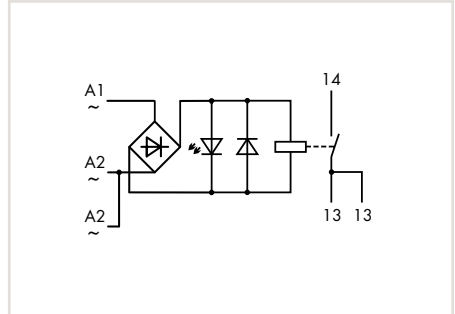
Load limit curve

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



Similar to picture



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

Relay module,  
1 make contact,  
max. continuous current: 16 A,  
for lamp loads,  
red status indicator, 18 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	19 mA	789-320	10

Relay module,  
1 make contact,  
max. continuous current: 16 A,  
for lamp loads,  
red status indicator, 18 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VAC	32 mA	789-520	10

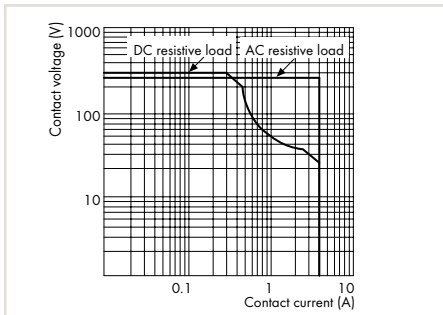
**Technical Data**

Coil	
Input voltage range	V <sub>N</sub> -15 ... +20 %
Contacts	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current (resistive)	120 A / 50 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	12 VAC/DC, 100 mA
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Mechanical life	10 x 10 <sup>6</sup> switching operations
General Specifications	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at U <sub>N</sub>	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1, EN 61810-1

Coil	
Input voltage range	V <sub>N</sub> -15 ... +20 %
Contacts	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current (resistive)	120 A / 50 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	12 VAC/DC, 100 mA
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Mechanical life	10 x 10 <sup>6</sup> switching operations
General Specifications	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at U <sub>N</sub>	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1, EN 61810-1

Coil	
Input voltage range	V <sub>N</sub> -15 ... +20 %
Contacts	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current (resistive)	120 A / 50 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	12 VAC/DC, 100 mA
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Mechanical life	10 x 10 <sup>6</sup> switching operations
General Specifications	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at U <sub>N</sub>	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1, EN 61810-1

Accessories,  
See pages 82



Load limit curve

**Note**

- Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.
- In the case of gold-plated elementary relays switching voltages of 30 VDC and currents of 50 mA should not be exceeded. Higher switching power eventually evaporates the gold layer. The resulting deposits in the housing may reduce the service life.

**Technical Data****Coil**

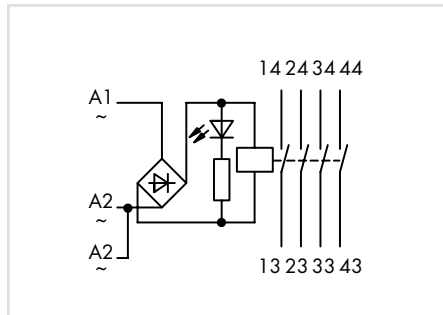
Input voltage range	$U_N -15 \dots +10 \%$
---------------------	------------------------

**Contacts**

Contact material	AgNi + Au
Max. continuous current	4 A
Max. make current (resistive)	4 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1 kVA, resistive, see load limit curve
Recommended minimum load	100 mA / 100 mV
Pull-in/drop-out/bounce time typ.	20 ms / 20 ms / 1 ms
Mechanical life	$10 \times 10^8$ switching operations

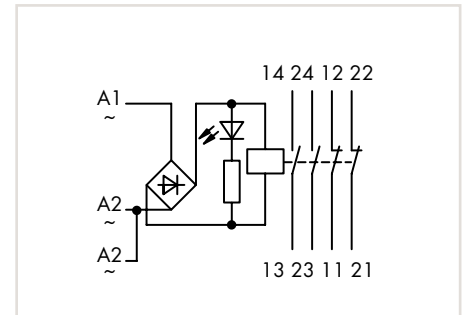
**General Specifications**

Nominal voltage	230 V
Rated surge voltage	2.5 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	1.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	0.75 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at $U_N$	-25 ... +40 °C
Storage temperature	-40 ... +85 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1, EN 61810-1



Relay module,  
4 make contacts,  
max. continuous current: 4 A,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC/DC	12 mA	789-552	10



Relay module,  
2 make contacts and 2 break contacts,  
max. continuous current: 4 A,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC/DC	12 mA	789-536	10

Input voltage range	$U_N -15 \dots +10 \%$
---------------------	------------------------

Contact material	AgNi + Au
------------------	-----------

Max. continuous current	4 A
-------------------------	-----

Max. make current (resistive)	4 A
-------------------------------	-----

Max. switching voltage	250 VAC
------------------------	---------

Max. switching power (resistive)	1 kVA, resistive, see load limit curve
----------------------------------	--

Recommended minimum load	100 mA / 100 mV
--------------------------	-----------------

Pull-in/drop-out/bounce time typ.	20 ms / 20 ms / 1 ms
-----------------------------------	----------------------

Mechanical life	$10 \times 10^8$ switching operations
-----------------	---------------------------------------

Nominal voltage	230 V
-----------------	-------

Rated surge voltage	2.5 kV
---------------------	--------

Pollution degree	2
------------------	---

Dielectric strength, contact-coil (AC, 1 min)	1.5 kV <sub>rms</sub>
---	-----------------------

Dielectric strength open contact (AC, 1 min)	0.75 kV <sub>rms</sub>
--	------------------------

Dielectric strength contact-contact (AC, 1 min)	1 kV <sub>rms</sub>
---	---------------------

Ambient operating temperature at $U_N$	-25 ... +40 °C
--	----------------

Storage temperature	-40 ... +85 °C
---------------------	----------------

Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
---------------------------	--

Connection technology	CAGE CLAMP®
-----------------------	-------------

Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
-----------------	--

Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
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Standards/approvals	EN 60664-1, EN 61810-1
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# Relay Modules in a DIN-Rail-Mount Enclosure

## 789 Series

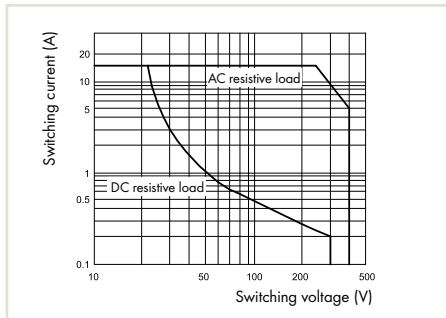
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Similar to picture

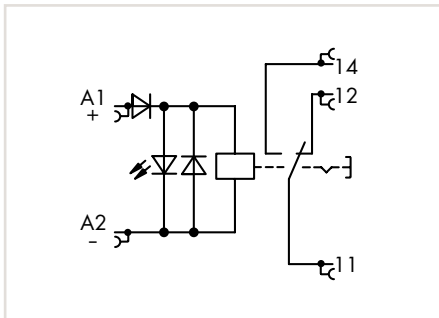


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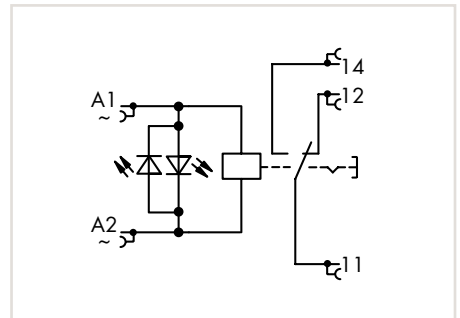
Load limit curve

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



Relay module,  
1 changeover contact,  
max. continuous current: 12 A,  
manual operation,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	17 mA	789-1341	10



Relay module,  
1 changeover contact,  
max. continuous current: 12 A,  
manual operation,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC	3.5 mA	789-1544	10

**Technical Data**

Coil	
Input voltage range	$V_N -10 \dots +10 \%$
Contacts	
Contact material	AgNi
Max. continuous current	12 A
Max. make current (resistive)	24 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	3 kVA (AC)
Recommended minimum load	10 mA / 12 VAC/DC
Pull-in/drop-out/bounce time typ.	15 ms / 8 ms / 6 ms
Mechanical life	$5 \times 10^6$ switching operations
General Specifications	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	3.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at $U_N$	-25 ... +50 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1

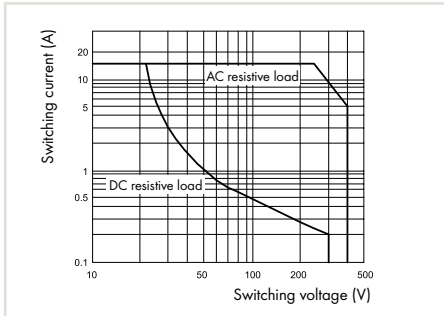
Accessories,  
See pages 82



Similar to picture

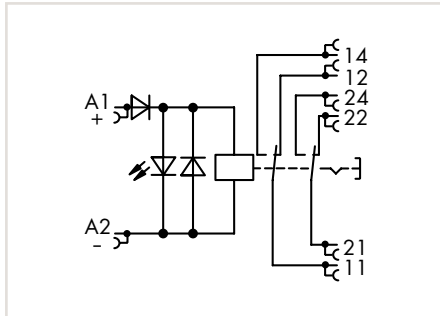


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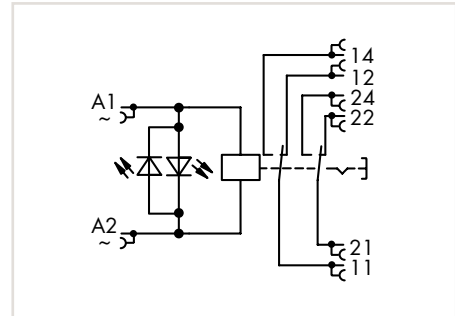
Load limit curve

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



Relay module, 2 changeover contacts, max. continuous current: 8 A, manual operation, red status indicator, 18 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	17 mA	789-1346	10



Relay module, 2 changeover contacts, max. continuous current: 8 A, manual operation, red status indicator, 18 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
230 VAC	3.5 mA	789-1549	10

**Technical Data**

Coil	
Input voltage range	V <sub>N</sub> -10 ... +10 %
Contacts	
Contact material	AgNi
Max. continuous current	8 A
Max. make current (resistive)	12 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	2 x 2 kVA (AC)
Recommended minimum load	10 mA / 12 VAC/DC
Pull-in/drop-out/bounce time typ.	15 ms / 8 ms / 6 ms
Mechanical life	5 x 10 <sup>6</sup> switching operations
General Specifications	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	3.5 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Ambient operating temperature at U <sub>N</sub>	-25 ... +50 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1

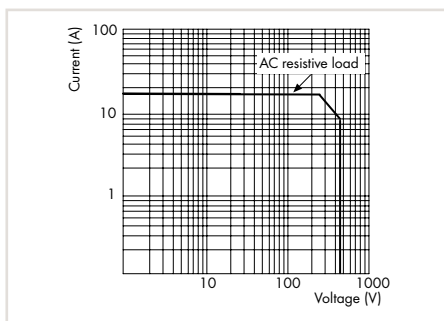
V <sub>N</sub> -10 ... +10 %
AgNi
8 A
12 A
250 VAC
2 x 2 kVA (AC)
10 mA / 12 VAC/DC
15 ms / 8 ms / 6 ms
5 x 10 <sup>6</sup> switching operations
250 V
4 kV
2
3.5 kV <sub>rms</sub>
1 kV <sub>rms</sub>
1.5 kV <sub>rms</sub>
-25 ... +50 °C
-40 ... +70 °C
17.5 x 55 x 90, height from upper-edge of DIN-rail
CAGE CLAMP®
0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
9 ... 10 mm / 0.35 ... 0.39 inch
EN 60664-1

V <sub>N</sub> -10 ... +10 %
AgNi
8 A
12 A
250 VAC
2 x 2 kVA (AC)
10 mA / 12 VAC/DC
15 ms / 8 ms / 7 ms
5 x 10 <sup>6</sup> switching operations
250 V
4 kV
2
3.5 kV <sub>rms</sub>
1 kV <sub>rms</sub>
1.5 kV <sub>rms</sub>
-25 ... +50 °C
-40 ... +70 °C
17.5 x 55 x 90, height from upper-edge of DIN-rail
CAGE CLAMP®
0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
9 ... 10 mm / 0.35 ... 0.39 inch
EN 60664-1

# Relay Modules in a DIN-Rail-Mount Enclosure

## 789 Series

1

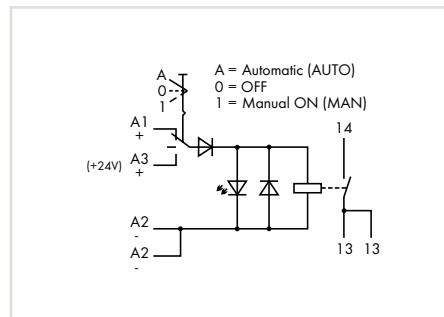


Load limit curve



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, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 µF	> 5,000

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



**Note**

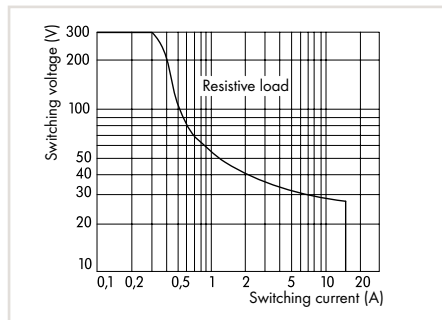
Inductive loads have to be attenuated by an appropriate protective circuit in order to protect relay coils and contacts.

Relay module,  
1 make contact,  
max. continuous current: 16 A,  
manual-0-automatic switch,  
red status indicator, 18 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	19 mA	789-323	10

**Technical Data**

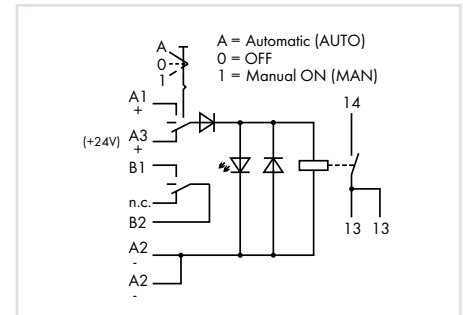
<b>Coil</b>	
Input voltage range	V <sub>N</sub> -15 ... +20 %
<b>Contacts</b>	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current (resistive)	120 A / 50 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	100 mA / 5 VDC
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Mechanical life	10 x 10 <sup>6</sup> switching operations
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at U <sub>N</sub>	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1



DC load limit curve

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

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



Relay module,  
1 make contact,  
max. continuous current: 16 A,  
for lamp loads,  
manual-0-automatic switch,  
red status indicator, 18 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	17 mA	789-324	10

### Technical Data

#### Coil

Input voltage range

U<sub>N</sub> -10 ... +20 %

#### Contacts

Contact material

AgSnO<sub>2</sub>, pre-make contact W

Max. continuous current

16 A

Max. make current (resistive)

165 A / 20 ms (AC)

Max. switching voltage

250 VAC

Max. switching power (resistive)

4 kVA (AC), DC see load limit curve

Recommended minimum load

-

Pull-in/drop-out/bounce time typ.

10 ms / 5 ms / 4 ms

Mechanical life

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

#### General Specifications

Nominal voltage

250 V

Rated surge voltage

4 kV

Pollution degree

2

Dielectric strength, contact-coil (AC, 1 min)

4 kV<sub>rms</sub>

Dielectric strength open contact (AC, 1 min)

1 kV<sub>rms</sub>

Ambient operating temperature at U<sub>N</sub>

-25 ... +40 °C

Storage temperature

-40 ... +70 °C

Dimensions (mm) W x H x D

17.5 x 55 x 90, height from upper-edge of DIN-rail

Connection technology

CAGE CLAMP®

Conductor range

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

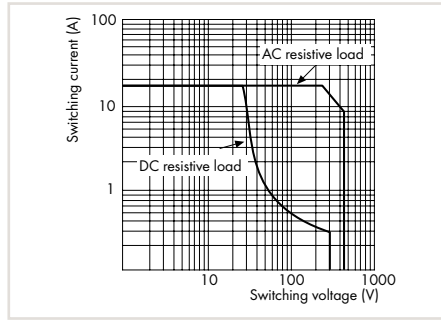
Standards/approvals

EN 60664-1, EN 61810-1

# Relay Modules in a DIN-Rail-Mount Enclosure

## 789 Series

1

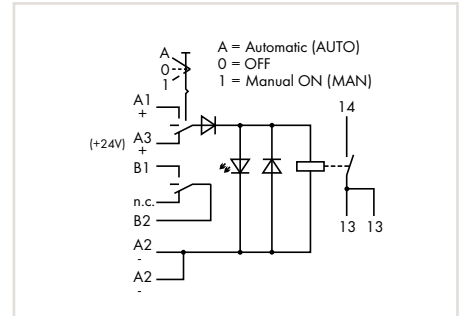


Load limit curve



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, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 µF	> 5,000

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



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

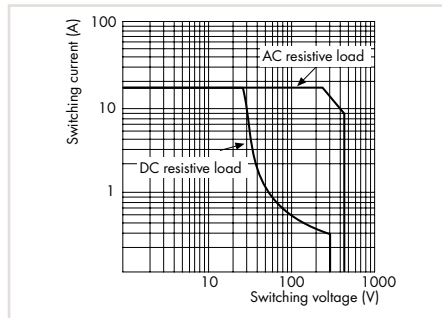
Relay module,  
1 make contact,  
max. continuous current: 16 A,  
manual-0-automatic switch,  
red status indicator, 18 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	19 mA	789-325	10

### Technical Data

<b>Coil</b>	
Input voltage range	V <sub>N</sub> -15 ... +20 %
<b>Contacts</b>	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	16 A
Max. make current (resistive)	120 A / 50 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	100 mA / 5 VDC
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Mechanical life	10 x 10 <sup>6</sup> switching operations
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at U <sub>N</sub>	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1



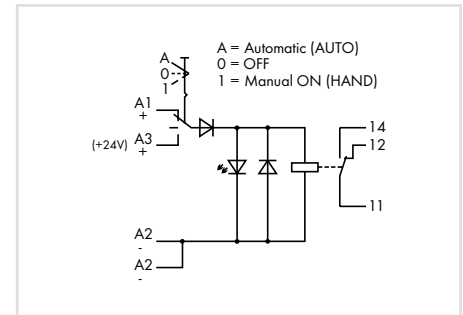


Load limit curve

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, Duocircuit	600 W	20,000
Fluorescent lamp with ECG ②	12 x 58 W	25,000
Energy saving lamp 15 W	25 pcs	20,000
Energy saving lamp 13 W	30 pcs	20,000
Energy saving lamp 9 W	38 pcs	20,000
Gas discharge lamp	1000 W	20,000
Dulux-Lamp not compensated	800 W	20,000
Dulux-Lamp compensated	500 W	20,000
Max. capacitance at 230 VAC	60 µF	> 5,000
① CCG = Conventional Control Gear		
② ECG = Electronic Control Gear		

**Note**

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



Relay module,  
1 changeover contact,  
max. continuous current: 12 A,  
for lamp loads,  
manual-0-automatic switch,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	19 mA	789-326	10

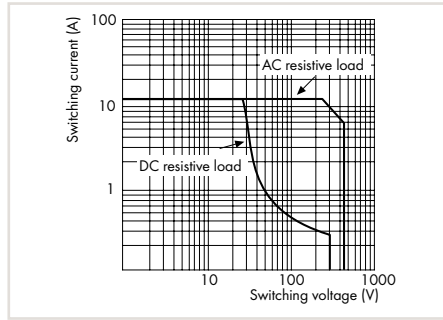
**Technical Data**

<b>Coil</b>	
Input voltage range	$V_N -15 \dots +20 \%$
<b>Contacts</b>	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	12 A
Max. make current (resistive)	120 A / 50 ms (AC)
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA (AC), DC see load limit curve
Recommended minimum load	100 mA / 5 VDC
Pull-in/drop-out/bounce time typ.	15 ms / 5 ms / -
Mechanical life	10 x 10 <sup>6</sup> switching operations
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature at $U_N$	-20 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1, EN 61810-1

# Relay Modules in a DIN-Rail-Mount Enclosure

## 789 Series

1

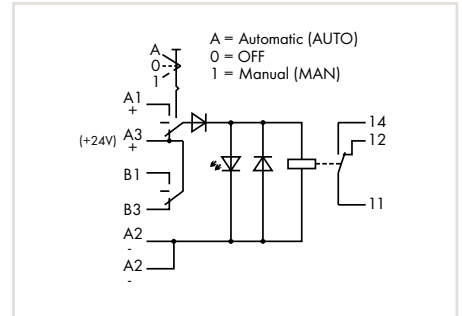


Load limit curve



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.

Relay module,  
1 changeover contact,  
max. continuous current: 12 A,  
for lamp loads,  
manual-0-automatic switch,  
red status indicator, 18 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	19 mA	789-329	10

**Technical Data**

**Coil**

Input voltage range

V<sub>N</sub> -15 ... +20 %

**Contacts**

Contact material

AgSnO<sub>2</sub>

Max. continuous current

12 A

Max. make current (resistive)

120 A / 50 ms (AC)

Max. switching voltage

250 VAC

Max. switching power (resistive)

4 kVA (AC), DC see load limit curve

Recommended minimum load

100 mA / 5 VDC

Pull-in/drop-out/bounce time typ.

15 ms / 5 ms / -

Mechanical life

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

**General Specifications**

Nominal voltage

250 V

Rated surge voltage

4 kV

Pollution degree

2

Dielectric strength, contact-coil (AC, 1 min)

4 kV<sub>rms</sub>

Dielectric strength open contact (AC, 1 min)

1 kV<sub>rms</sub>

Ambient operating temperature at U<sub>N</sub>

-25 ... +40 °C

Storage temperature

-40 ... +70 °C

Dimensions (mm) W x H x D

17.5 x 55 x 90, height from upper-edge of DIN-rail

Connection technology

CAGE CLAMP®

Conductor range

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Strip length

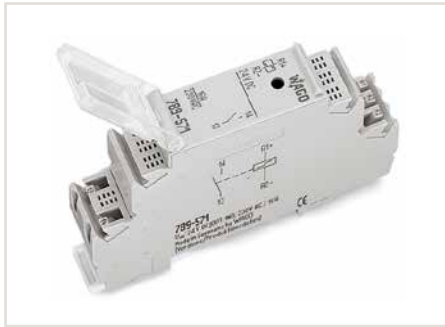
9 ... 10 mm / 0.35 ... 0.39 inch

Standards/approvals

EN 60664-1

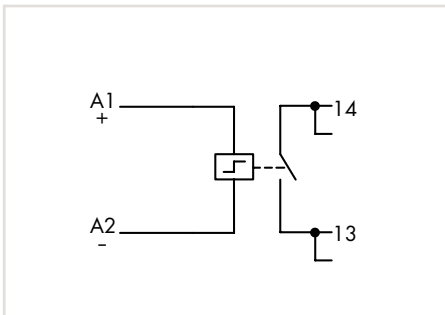
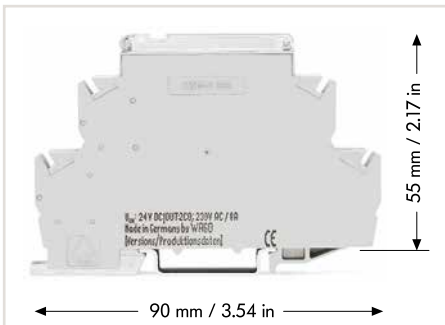
# Latching Relay Modules in a DIN-Rail Mount Enclosure

## 789 Series

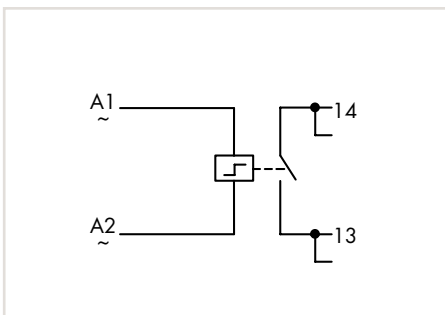


Latching relay module,  
1 make contact,  
max. continuous current: 16 A,  
red status indicator, 18 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	42 mA	789-571	10
230 VAC	10 mA	789-570	10



789-571



789-570

### Note

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

### Technical Data

Contact material	AgSnO <sub>2</sub>
Input voltage range	$U_N - 15 \dots +10 \%$
Max. switching voltage	250 VAC
Max. make current	50 A / 20 ms
Max. continuous current	16 A
Max. switching power (resistive)	4000 VA AC
Recommended minimum load	0.1 A
Minimum switch-on time	40 ms
Minimum break time	180 ms
Coil control	Pulse mode
Fuse protection	Circuit breaker max. 16 A, B characteristic
Nominal operating mode	continuous duty
Max. switching load with load/without load	6 min <sup>-1</sup> / 4 s <sup>-1</sup>
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Mechanical life	10 x 10 <sup>4</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
Ambient operating temperature at $U_N$	-25 ... +40 °C
Storage temperature	-40 ... +85 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 60664-1

## Accessories

### 789 Series

Push-in type jumper bar



Description	Item No.	Pack. Unit
I <sub>N</sub> 16 A, uninsulated, 12-way, to be cut to the required length	789-112	100 (4x25)

Operating tool with a partially insulated shaft



Description	Item No.	Pack. Unit
Type 2, 3.5 x 0.5 mm blade	210-720	1

Felt-tip pen



Description	Item No.	Pack. Unit
for permanent marking	210-110	1

Miniature WSB Quick marking system, 10 strips with 10 markers, white, with black printing



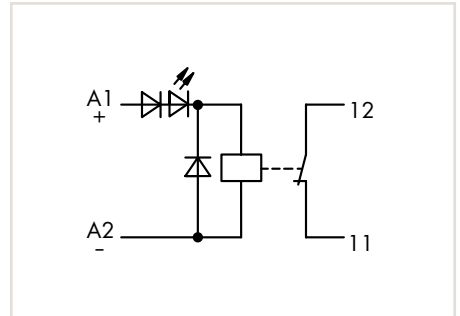
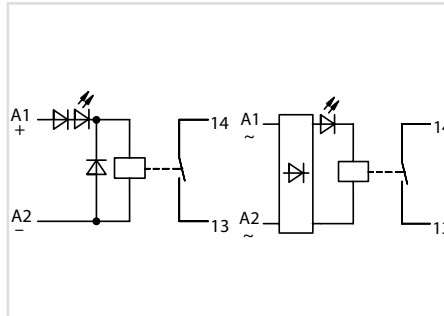
Description	Item No.	Pack. Unit
plain	248-501	5 cards
Marking		
1 ... 10 (10 x)	248-502	5 cards
11 ... 20 (10 x)	248-503	5 cards
21 ... 30 (10 x)	248-504	5 cards
31 ... 40 (10 x)	248-505	5 cards
41 ... 50 (10 x)	248-506	5 cards
1 ... 50 (2 x)	248-566	5 cards
K 1 ... K 10 (10 x)	248-450	5 cards
K 11 ... 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



# DIN-Rail-Mount Carriers with a Miniature Switching Relay

## 288 Series

1



Relay module,  
1 make contact,  
max. continuous current: 5 A,  
13 mm wide

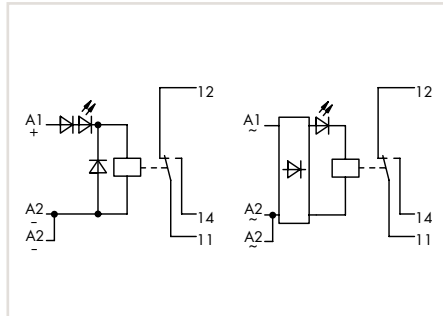
$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	16 mA	288-364	1
24 VAC/DC	16 mA	288-564	1
115 VAC/DC	4.4 mA	288-567	1

Relay module,  
1 break contact,  
max. continuous current: 5 A,  
13 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	16 mA	288-368	1

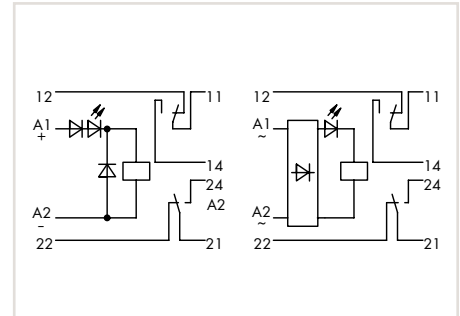
### Technical Data

Contact material	AgNi 0.15	AgNi 0.15
Max. switching voltage	250 VAC	250 VAC
Max. make current	4 s / 16 A	4 s / 16 A
Max. continuous current	5 A	5 A
Max. switching power (resistive)	1250 VA	1250 VA
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	250 V	250 V
Rated surge voltage	4 kV	4 kV
Pollution degree	2	2
Mechanical life	30 x 10 <sup>6</sup> switching operations	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	2 x 10 <sup>5</sup> switching operations	2 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 ... +40 °C	-25 ... +40 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	13 x 47 x 85, height from upper-edge of DIN-rail	13 x 47 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch	5 ... 6 mm / 0.2 ... 0.24 inch



Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
12 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	21.8 mA	288-304	1
24 VAC/DC	21.8 mA	288-504	1



Relay module,  
2 changeover contacts,  
max. continuous current: 6 A,  
23 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	21.8 mA	288-312	1
24 VAC/DC	21.8 mA	288-512	1

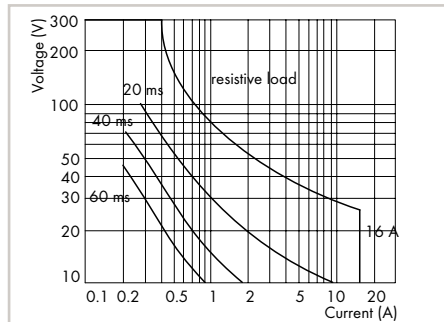
#### Technical Data

Technical Data	288-304 / 288-504	288-312 / 288-512
Contact material	AgNi 0.15	AgNi 0.15
Max. switching voltage	250 VAC	250 VAC
Max. make current	4 s / 16 A	4 s / 14 A
Max. continuous current	6 A	6 A
Max. switching power (resistive)	1500 VA	1500 VA
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 2 ms	8 ms / 3 ms / 2 ms
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>	2 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)		1.5 kV <sub>rms</sub>
Nominal voltage	250 V	250 V
Rated surge voltage	2.5 kV	2.5 kV
Pollution degree	2	2
Mechanical life	30 x 10 <sup>6</sup> switching operations	20 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations	1 x 10 <sup>5</sup> switching operations
Ambient operating temperature	-25 ... +40 °C	-25 ... +40 °C
Storage temperature	-40 ... +80 °C	-40 ... +80 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	20.5 x 48 x 85, height from upper-edge of DIN-rail	20.5 x 48 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch	5 ... 6 mm / 0.22 inch

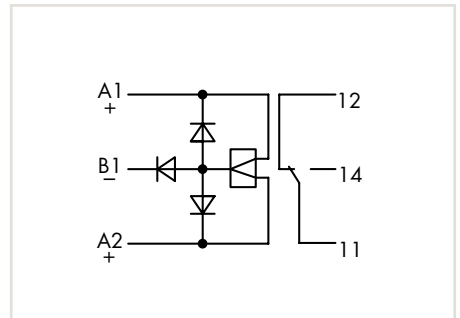
# DIN-Rail-Mount Carriers with a Miniature Switching Relay

## 288 Series

1



DC load limit curve



Relay module, bistable,  
1 changeover contact,  
max. continuous current: 6 A,  
21 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	41.5 mA	288-380	1

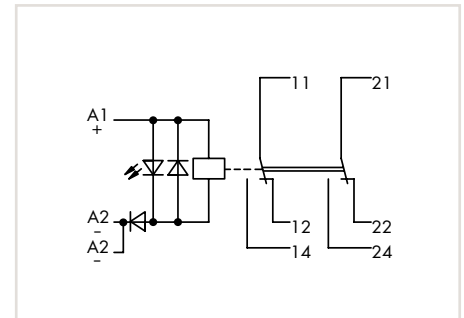
### Technical Data

Input voltage range	$U_N -15 \dots +20 \%$
Contact material	AgNi 0.15
Max. switching voltage	250 VAC
Max. make current	4 s / 16 A
Max. continuous current	6 A
Max. switching power (resistive)	1500 VA
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 2 ms
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact	1 kV <sub>rms</sub>
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Mechanical life	30 x 10 <sup>6</sup> switching operations
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	20.5 x 48 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch





Similar to picture



Relay module, with forced operated contacts,  
2 changeover contacts,  
max. continuous current: 0.3 A,  
19 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	36 mA	288-437	1

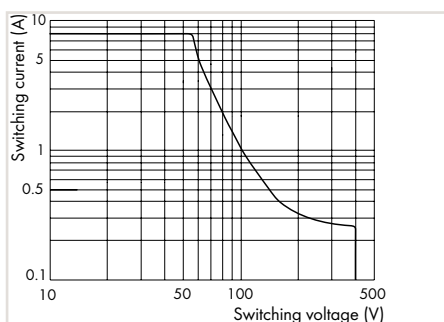
#### Technical Data

Input voltage range	$U_N -15 \dots +10 \%$
Contact material	AgNi 10 + Au
Contact type	2 changeover contacts
Max. switching voltage	60 V
Max. continuous current	0.3 A
Max. switching power (resistive)	7 W (max.)
Recommended minimum load	100 mV AC/DC / 1 mA / 1 mW
Pull-in/drop-out/bounce time typ.	15 ms / 12 ms / -
Nominal voltage	250 V
Rated surge voltage	1.5 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1 kV <sub>rms</sub>
Mechanical life	$5 \times 10^7$ switching operations
Ambient operating temperature	-20 ... +70 °C
Relay fastening	direct soldered
Dimensions incl. mounting carrier and relay (mm) W x H x D	19 x 38 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Nominal operating mode	EN 60664-1, EN 50205

## DIN-Rail-Mount Carriers with a Miniature Switching Relay

## 288 Series

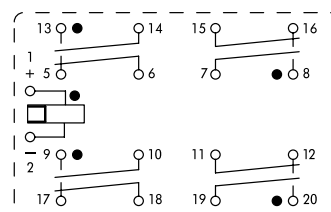
1



DC load limit curve

**Note**

- If required a ventilation hole (e) can be made in the cover, reducing the degree of protection from IP67 to IP30.
- 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.



Relay module with forced operated contacts,  
4 make contacts and 4 break contacts,  
max. continuous current: 6 A,  
64 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC/DC	26 mA	288-414	1
230 VAC/DC	10 mA	288-418	1

**Technical Data**

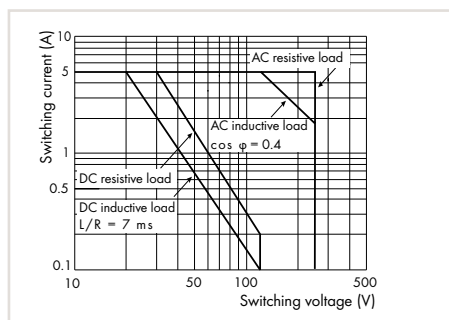
<b>Coil</b>	
Input voltage range	$U_N -15 \dots +10 \%$
<b>Contacts</b>	
Contact material	AgSnO <sub>2</sub>
Max. continuous current	6 A
Max. make current (resistive)	20 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA
Recommended minimum load	$\geq 10 \text{ V} / 10 \text{ mA}$
Pull-in/drop-out/bounce time typ.	18 ms / 21 ms / 4 ms
Mechanical life	$1 \times 10^7$ switching operations
Electrical life (N.O., resistive load)	$1 \times 10^5$ switching operations
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	2.5 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	2 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Ambient operating temperature at $U_N$	-40 ... +70 °C
Storage temperature	-40 ... +80 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	63.5 x 40 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Forced operation	Type B
Standards/approvals	EN 60664-1; EN 50205; EN 61810-1; ESTI (SEV): 09.1133; UL 508: E120782; TÜV: 968/EZ 116.02/09



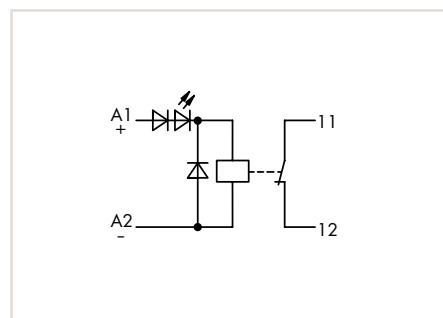
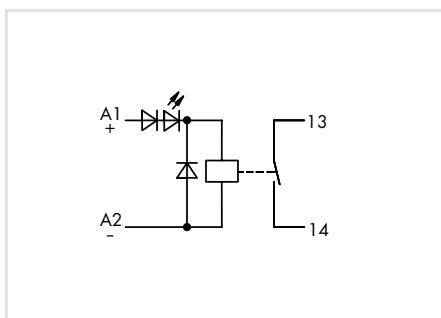
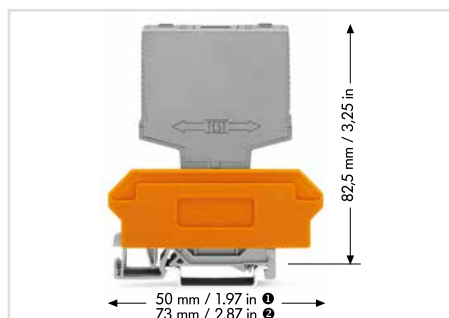
# Pluggable Relay Modules for Carrier Terminal Blocks

## 286 Series

1



DC load limit curve



Relay module,  
1 make contact,  
max. continuous current: 5 A,  
red status indicator, 10 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	7.4 mA	286-364	1

Relay module,  
1 break contact,  
max. continuous current: 5 A,  
red status indicator, 10 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	20.4 mA	286-368	1

### Technical Data

Contact material	AgSnO
Max. continuous current	5 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1250 VA
Pull-in/drop-out/bounce time typ.	8 ms / 10 ms / 2 ms
Mechanical life	5 x 10 <sup>4</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>4</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	2.5 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	3 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgNi
Max. continuous current	5 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1250 VA
Pull-in/drop-out/bounce time typ.	10 ms / 4 ms / 3 ms
Mechanical life	5 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	5 x 10 <sup>4</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C

### Accessories

Terminal block for pluggable modules

with 2-conductor terminal blocks, orange separator ①

with 4-conductor terminal blocks, orange separator ②

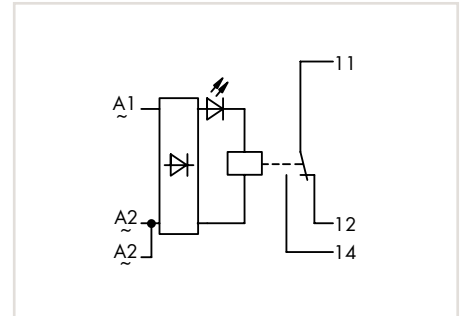
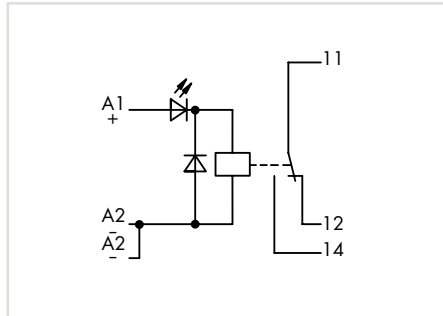
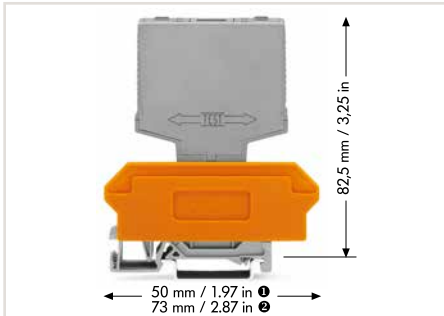
with 4-conductor terminal blocks, marker plate ②

Conductor range: 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 in.

Width	Item No.	Pack. Unit
12 mm	280-618	1
12 mm	280-608	1
15 mm	280-762	1

Width	Item No.	Pack. Unit
12 mm	280-618	1
12 mm	280-608	1
15 mm	280-762	1

Marking, see page 95



Relay module,  
1 changeover contact,  
max. continuous current: 7 A,  
red status indicator, 15 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	19.4 mA	286-304	1

Relay module,  
1 changeover contact,  
max. continuous current: 7 A,  
red status indicator, 15 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
115 VAC	6.1 mA	286-507	1
230 VAC	4.8 mA	286-508	1

**Technical Data**

Contact material	AgNi 0.15
Max. continuous current	7 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1750 VA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 4 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgNi 0.15
Max. continuous current	7 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1750 VA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 4 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgNi 0.15
Max. continuous current	7 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1750 VA
Pull-in/drop-out/bounce time typ.	8 ms / 6 ms / 4 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

**Accessories**

Terminal block for pluggable modules

with 2-conductor terminal blocks, orange separator ①

with 4-conductor terminal blocks, orange separator ②

with 4-conductor terminal blocks, marker plate ②

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

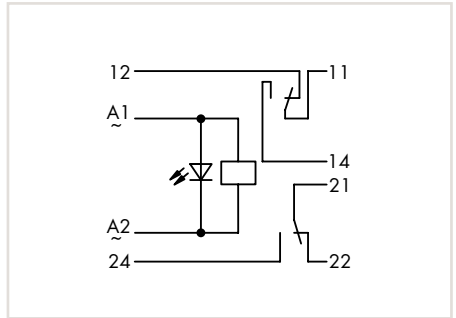
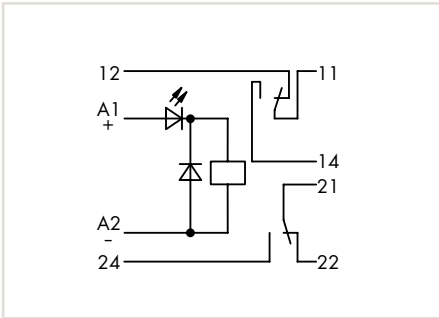
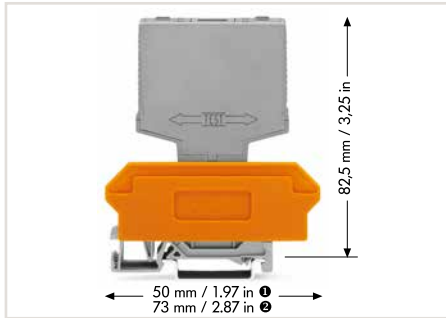
Width	Item No.	Pack. Unit
17 mm	280-619	1
17 mm	280-609	1
20 mm	280-763	1

Width	Item No.	Pack. Unit
17 mm	280-619	1
17 mm	280-609	1
20 mm	280-763	1

# Pluggable Relay Modules for Carrier Terminal Blocks

## 286 Series

1



Relay module,  
2 changeover contacts,  
max. continuous current: 7 A,  
red status indicator, 20 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	21.8 mA	286-312	1
110 VDC	4.9 mA	286-315	1
220 VDC	5 mA	286-316	1

Relay module,  
2 changeover contacts,  
max. continuous current: 7 A,  
red status indicator, 20 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
115 VAC	10.5 mA	286-515	1
230 VAC	5.5 mA	286-516	1

### Technical Data

Contact material	AgNi 0.15
Max. continuous current	7 A
Max. make current (resistive)	0.2 s / 30 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1750 VA
Pull-in/drop-out/bounce time typ.	18 ms / 3 ms / 2 ms
Mechanical life	30 x 10 <sup>7</sup> switching operations
Electrical life (N.O., resistive load)	2.5 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	2 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgNi 0.15
Max. continuous current	7 A
Max. make current (resistive)	0.2 s / 30 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1750 VA
Pull-in/drop-out/bounce time typ.	18 ms / 3 ms / 2 ms
Mechanical life	30 x 10 <sup>7</sup> switching operations
Electrical life (N.O., resistive load)	2.5 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	2 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgNi 0.15
Max. continuous current	7 A
Max. make current (resistive)	0.2 s / 30 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1750 VA
Pull-in/drop-out/bounce time typ.	18 ms / 3 ms / 2 ms
Mechanical life	30 x 10 <sup>7</sup> switching operations
Electrical life (N.O., resistive load)	2.5 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	2 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

### Accessories

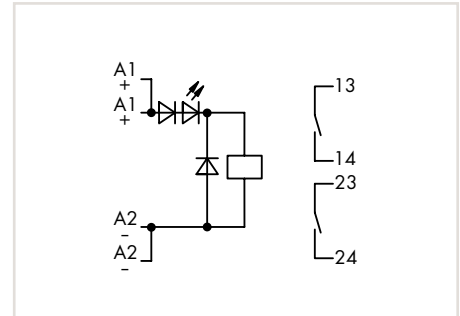
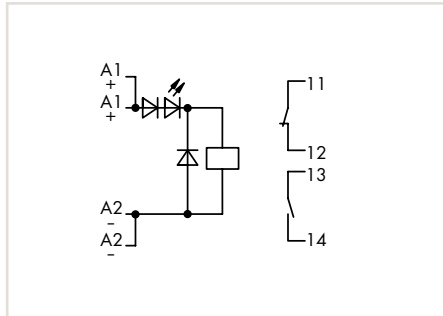
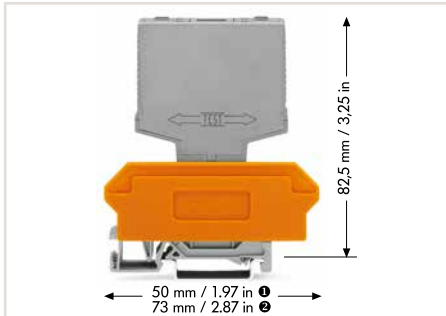
Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm	280-764	1

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm	280-764	1

Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm	280-764	1

Marking, see page 95



Relay module, 1 make contact and 1 break contact, max. continuous current: 6 A, red status indicator, 20 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	7.4 mA	286-320	1

Relay module, 2 break contacts, max. continuous current: 6 A, red status indicator, 20 mm wide

U <sub>N</sub>	I <sub>N</sub>	Item No.	Pack. Unit
24 VDC	7.4 mA	286-328	1

**Technical Data**

Contact material	AgSnO <sub>2</sub>
Max. continuous current	6 A
Max. make current (resistive)	1 s / 15 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA
Pull-in/drop-out/bounce time typ.	10 ms / 4 ms / 1 ms
Mechanical life	5 x 10 <sup>7</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	3 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgSnO <sub>2</sub>
Max. continuous current	6 A
Max. make current (resistive)	1 s / 15 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA
Pull-in/drop-out/bounce time typ.	10 ms / 4 ms / 1 ms
Mechanical life	5 x 10 <sup>7</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	3 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgSnO <sub>2</sub>
Max. continuous current	6 A
Max. make current (resistive)	1 s / 15 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA
Pull-in/drop-out/bounce time typ.	10 ms / 4 ms / 1 ms
Mechanical life	5 x 10 <sup>7</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	3 kV <sub>rms</sub>
Dielectric strength open contact (AC, 1 min)	1 kV <sub>rms</sub>
Dielectric strength contact-contact (AC, 1 min)	1.5 kV <sub>rms</sub>
Ambient operating temperature	-25 °C ... +40 °C
Storage temperature	-25 ... +40 °C

**Accessories**

Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm	280-764	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			

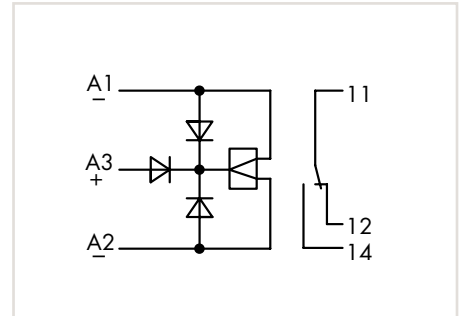
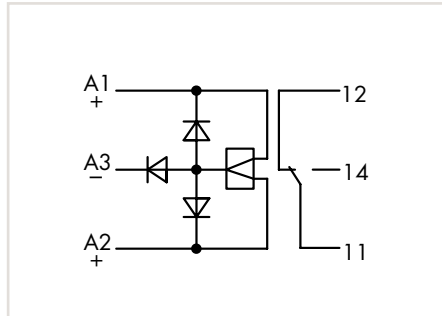
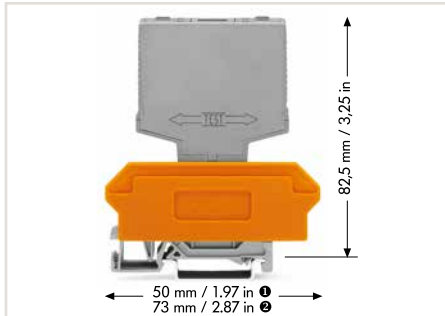
Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm	280-764	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			

Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminal blocks, marker plate ②	25 mm	280-764	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			

## Pluggable Relay Modules for Carrier Terminal Blocks

### 286 Series

1



Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	41.5 mA	286-380	1

Relay module,  
1 changeover contact,  
max. continuous current: 6 A,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	41.5 mA	286-381	1

#### Technical Data

Contact material	AgNi 0.15
Max. continuous current	6 A
Max. make current (resistive)	20 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 2 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgNi 0.15
Max. continuous current	6 A
Max. make current (resistive)	20 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 2 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C

Contact material	AgNi 0.15
Max. continuous current	6 A
Max. make current (resistive)	20 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	1500 VA
Pull-in/drop-out/bounce time typ.	9 ms / 3 ms / 2 ms
Mechanical life	30 x 10 <sup>6</sup> switching operations
Electrical life (N.O., resistive load)	1 x 10 <sup>5</sup> switching operations
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, contact-coil (AC, 1 min)	4 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C

#### Accessories

Terminal block for pluggable modules

with 4-conductor terminal blocks, orange separator ②

with 4-conductor terminal blocks, orange separator ②

with 4-conductor terminal blocks, marker plate ②

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

Width	Item No.	Pack. Unit
17 mm	280-619	1
17 mm	280-609	1
20 mm	280-763	1

Width	Item No.	Pack. Unit
17 mm	280-619	1
17 mm	280-609	1
20 mm	280-763	1

Marking,  
see page 95



## Accessories

### 286 Series

WSB marker cards,  
5 cards each containing 10 strips with 10 markers



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

WSB marker cards, 4 mm, plain,  
5 cards each containing 10 strips with 10 markers

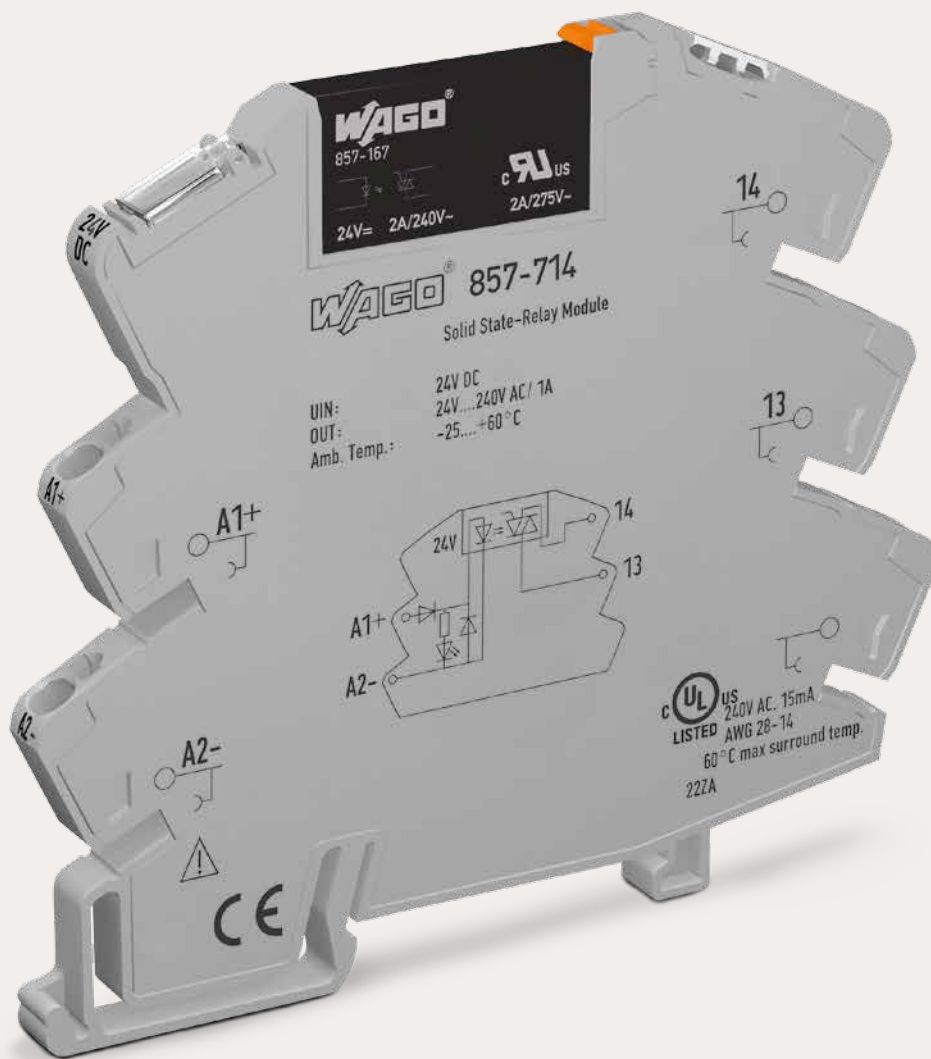


Description	Item No.	Pack. Unit
white	209-701	5
yellow	209-701/000-002	5
red	209-701/000-005	5
blue	209-701/000-006	5
gray	209-701/000-007	5
orange	209-701/000-012	5
light green	209-701/000-017	5
green	209-701/000-023	5
violet	209-701/000-024	5

Marker strips for mounting carrier  
(288 Series)







Marking	Item No.	Pack. Unit
white	709-198	1



# Solid-State Relay and Optocoupler Modules

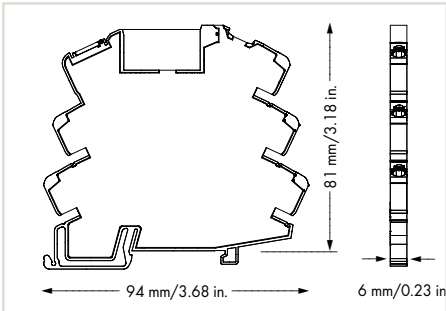
## Solid-State Relay and Optocoupler Modules

	Page	
	<b>Sockets with a Solid-State Relay and Optocoupler, 857 Series</b>	
	Sockets with a Solid-State Relay	98
	Optocoupler Modules	110
	Multifunction Timer Relays with a Solid-State Relay	114
	Accessories, 857 Series	116
	<b>Sockets with a Solid-State Relay, 788 Series</b>	
	Sockets with a Solid-State Relay	122
	Accessories, 788 Series	126
	<b>Optocoupler Modules, 859 Series</b>	
	Optocoupler Modules	128
	Accessories, 859 Series	156
	<b>Pluggable Modules – Optocouplers, 286 Series</b>	
	Pluggable Modules – Optocouplers	158
	Accessories, 286 Series	166

## Sockets with a Solid-State Relay

### 857 Series

2

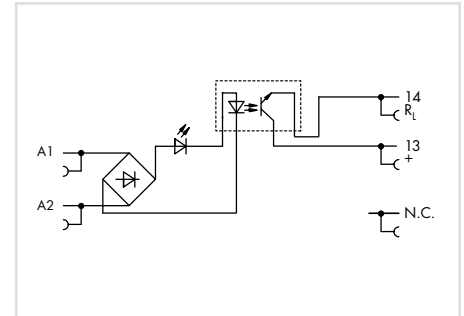
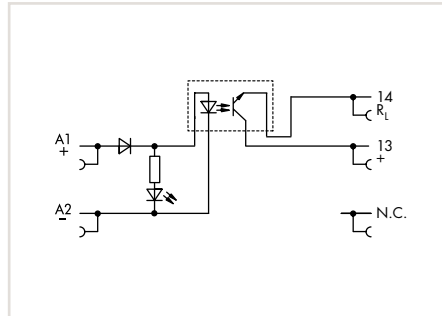


#### Technical Data

Load circuit	
Output voltage range	0 ... 48 VDC
Max. continuous current	0.1 A (DC)
Max. voltage drop at output	< 1 VDC
Reverse voltage transistor/triac	60 V
Min. switching current	50 $\mu$ A
Turn-on time	< 100 $\mu$ s
Turn-off time	< 600 $\mu$ s
Max. switching frequency	1 kHz
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	3.75 kV <sub>rms</sub>
Ambient operating temperature	-20 ... +60 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 81 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch

#### Note

Solid-state relays are designed for use in signal processing networks which are not fed by the low-voltage power supply network.



Solid-state relay module,  
output voltage range: 0 ... 48 VDC,  
max. continuous current: 0.1 A,  
2-wire connection,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9 mA	857-704	25

Solid-state relay module,  
output voltage range: 0 ... 48 VDC,  
max. continuous current: 0.1 A,  
2-wire connection,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
115 VAC/DC	4.2 mA	857-707	25

**Specific Technical Data**

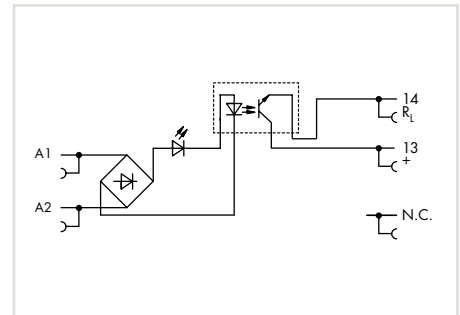
Control circuit	
Input voltage range (low level)	0 ... 10 VDC
Input voltage range (high signal)	16.8 ... 30 VDC
General Specifications	
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508

Input voltage range (low level)	0 ... 25 VAC/DC
Input voltage range (high signal)	100 ... 138 VAC/DC
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508

## Sockets with a Solid-State Relay

## 857 Series

2



Solid-state relay module,  
output voltage range: 0 ... 48 VDC,  
max. continuous current: 0.1 A,  
2-wire connection,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC/DC	3.25 mA	857-708	25

## Specific Technical Data

## Control circuit

Input voltage range (low level)

0 ... 30 VAC/DC

Input voltage range (high signal)

200 ... 253 VAC/DC

## General Specifications

Standards/approvals

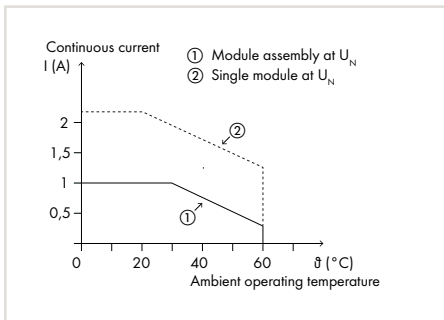
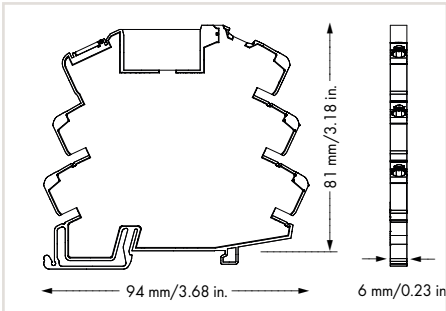
EN 61000-6-2; EN 61000-6-3; EN 61373;  
EN 61010-2-201; UL 508



## Sockets with a Solid-State Relay

### 857 Series

2



Current carrying capacity

#### Note

Solid-state relays are designed for use in signal processing networks which are not fed by the low-voltage power supply network.

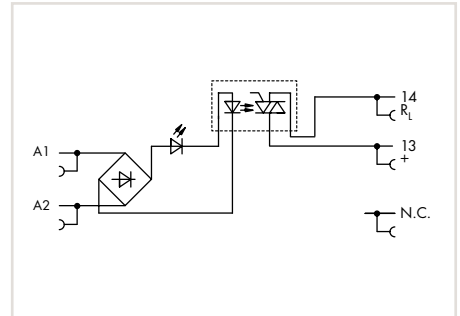
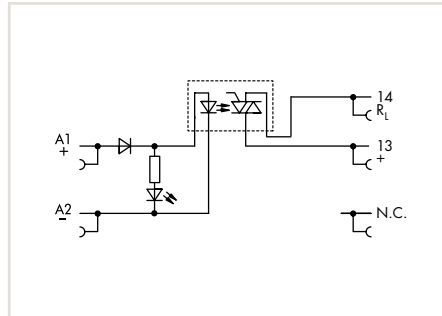
#### Technical Data

Load circuit	
Output voltage range	24 ... 240 VAC
Max. continuous current	2 AAC
Max. voltage drop at output	< 1.6 VAC
Reverse voltage transistor/triac	600 V
Leakage current	< 1.5 mA
Min. switching current	22 mA
Turn-on time	< 10 ms
Turn-off time	< 10 ms
Max. switching frequency	50 Hz / 60 Hz
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	3.75 kV <sub>rms</sub>
Ambient operating temperature	-20 ... +60 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 81 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch





Similar to picture



Solid-state relay module,  
output voltage range: 24 ... 240 VAC,  
max. continuous current: 2 A,  
2-wire connection, zero-voltage switching,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9.2 mA	857-714	25

Solid-state relay module,  
output voltage range: 24 ... 240 VAC,  
max. continuous current: 2 A,  
2-wire connection, zero-voltage switching,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
115 VAC/DC	3.9 mA	857-717	25

**Specific Technical Data**

Control circuit	
Input voltage range (low level)	0 ... 10 VDC
Input voltage range (high signal)	20 ... 28.8 VDC
General Specifications	
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508

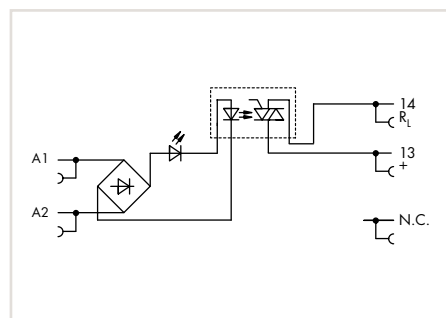
Input voltage range (low level)	0 ... 25 VAC/DC
Input voltage range (high signal)	100 ... 138 VAC/DC
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508

Input voltage range (low level)	0 ... 25 VAC/DC
Input voltage range (high signal)	100 ... 138 VAC/DC
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508

## Sockets with a Solid-State Relay

### 857 Series

2



Solid-state relay module,  
output voltage range: 24 ... 240 VAC,  
max. continuous current: 2 A,  
2-wire connection, zero-voltage switching,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC/DC	3.2 mA	857-718	25

#### Specific Technical Data

##### Control circuit

Input voltage range (low level)

0 ... 60 VAC/DC

Input voltage range (high signal)

200 ... 253 VAC/DC

##### General Specifications

Standards/approvals

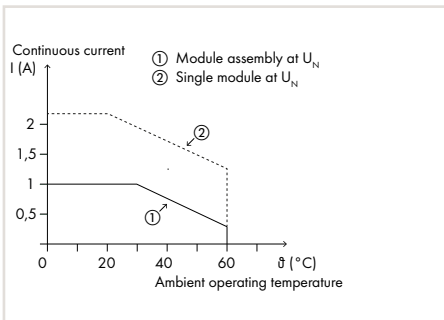
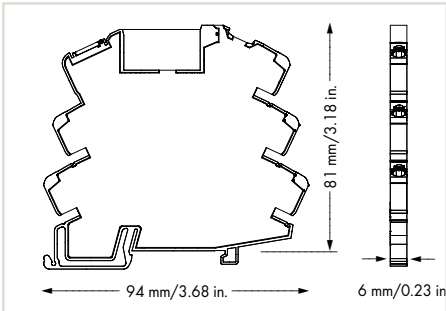
EN 61000-6-2; EN 61000-6-3; EN 61373;  
EN 61010-2-201; UL 508



## Sockets with a Solid-State Relay

### 857 Series

2



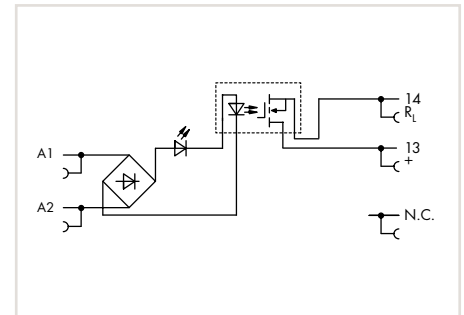
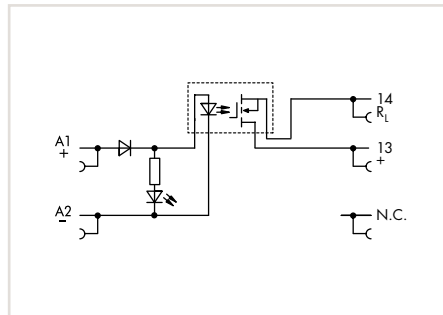
Current carrying capacity

#### Note

Solid-state relays are designed for use in signal processing networks which are not fed by the low-voltage power supply network.

#### Technical Data

Load circuit	
Output voltage range	0 ... 24 VDC
Max. continuous current	3 ADC
Max. voltage drop at output	120 mV (DC)
Reverse voltage transistor/triac	33 V
Turn-on time	100 $\mu$ s
Turn-off time	600 $\mu$ s
Min. switching current	50 $\mu$ A
Max. switching frequency	350 Hz
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	3.75 kV <sub>rms</sub>
Ambient operating temperature	-20 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 81 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch



Solid-state relay module,  
output voltage range: 0 ... 24 VDC,  
max. continuous current: 3 A,  
2-wire connection,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9.2 mA	857-724	25

Solid-state relay module,  
output voltage range: 0 ... 24 VDC,  
max. continuous current: 3 A,  
2-wire connection,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
115 VAC/DC	3.9 mA	857-727	25

#### Specific Technical Data

##### Control circuit

Input voltage range (low level)

0 ... 10 VDC

0 ... 25 VAC/DC

Input voltage range (high signal)

16.8 ... 31.2 VDC

90 ... 138 VAC/DC

##### General Specifications

Standards/approvals

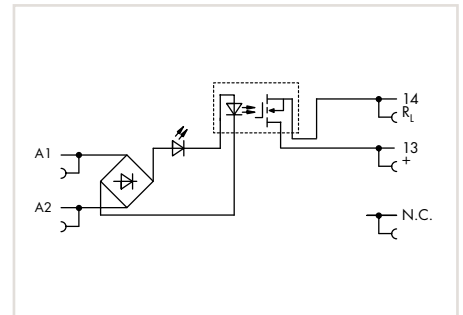
EN 61000-6-2; EN 61000-6-3; EN 61373;  
EN 61010-2-201; UL 508; GL

EN 61000-6-2; EN 61000-6-3; EN 61373;  
EN 61010-2-201; UL 508

## Sockets with a Solid-State Relay

## 857 Series

2



Solid-state relay module,  
output voltage range: 0 ... 24 VDC,  
max. continuous current: 3 A,  
2-wire connection,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC/DC	3.2 mA	857-728	25

## Specific Technical Data

## Control circuit

Input voltage range (low level)

0 ... 60 VAC/DC

Input voltage range (high signal)

200 ... 253 VAC/DC

## General Specifications

Standards/approvals

EN 61000-6-2; EN 61000-6-3; EN 61373;  
EN 61010-2-201; UL 508



## Optocoupler Modules

### 857 Series



#### Technical Data

##### Control circuit

Input voltage range (low level)

0 ... 5 VDC

Input voltage range (high signal)

16.8 ... 31.2 VDC

##### General Specifications

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

Dimensions (mm) W x H x D

6 x 96 x 94, height from upper-edge of DIN-rail

Connection technology

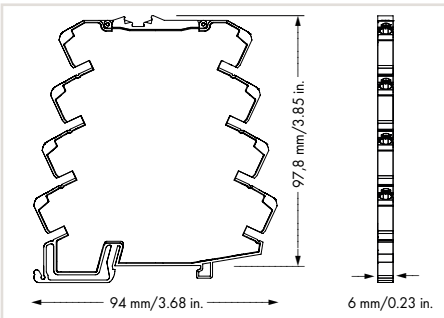
Push-in CAGE CLAMP®

Conductor range

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

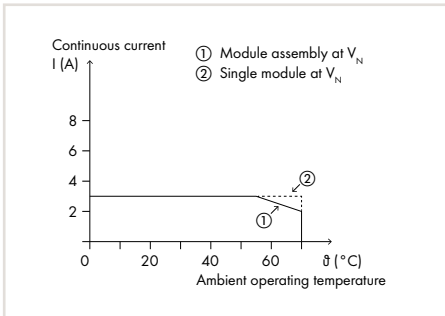
9 ... 10 mm / 0.35 ... 0.39 inch



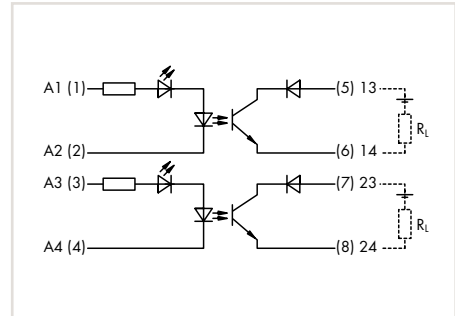
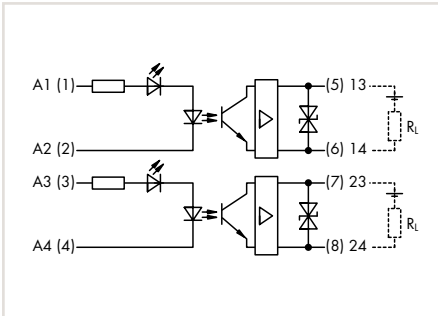
#### Note

Solid-state relays are designed for use in signal processing networks which are not fed by the low-voltage power supply network.





Current carrying capacity



Optocoupler module, 2-way, output voltage range: 3 ... 31.2 VDC, max. continuous current: 3 A, 2-wire connection, yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	7.75 mA	857-1430	25

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	5.6 mA	857-1494	25

**Specific Technical Data**

Load circuit	
Output voltage range	3 ... 31.2 VDC
Max. continuous current	3 ADC
Turn-on time	25 μs
Turn-off time	250 μs
Max. switching frequency	1.5 kHz
Max. voltage drop at output	0.2 V
Reverse voltage transistor/triac	55 V
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Dielectric strength channel/channel (AC, 1 min)	4 kV <sub>rms</sub>
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; GL; UL 508 (max. 70 °C/2 A)

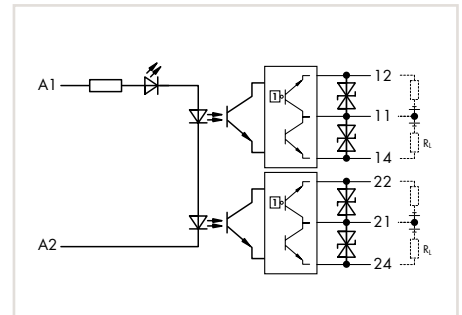
Output voltage range	9 ... 60 VDC
Max. continuous current	0.1 A (DC)
Turn-on time	20 μs
Turn-off time	120 μs
Max. switching frequency	1.5 kHz
Max. voltage drop at output	2 V
Reverse voltage transistor/triac	100 V
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Dielectric strength channel/channel (AC, 1 min)	4 kV <sub>rms</sub>
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508 (max. 50 °C/100 mA)

Output voltage range	9 ... 60 VDC
Max. continuous current	0.1 A (DC)
Turn-on time	20 μs
Turn-off time	120 μs
Max. switching frequency	1.5 kHz
Max. voltage drop at output	2 V
Reverse voltage transistor/triac	100 V
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Dielectric strength channel/channel (AC, 1 min)	4 kV <sub>rms</sub>
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508 (max. 50 °C/100 mA)

## Optocoupler Modules

## 857 Series

2



Optocoupler module, 2-channel,  
output voltage range: 9 ... 60 VDC,  
max. continuous current: 0.5 A,  
2 changeover contacts,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	5.9 mA	857-1432	25

#### Specific Technical Data

##### Control circuit

Input voltage range (low level)

0 ... 5 VDC

Input voltage range (high signal)

16.8 ... 30 VDC

##### Load circuit

Output voltage range

9 ... 60 VDC

Max. continuous current

0.5 A (DC)

Turn-on time

25  $\mu$ s

Turn-off time

250  $\mu$ s

Max. switching frequency

1.5 kHz

Max. voltage drop at output

1.5 V

Reverse voltage transistor/triac

100 V

##### General Specifications

Dielectric strength, control/load circuit (AC, 1 min)

3.75 kV<sub>rms</sub>

Dielectric strength channel/channel (AC, 1 min)

–

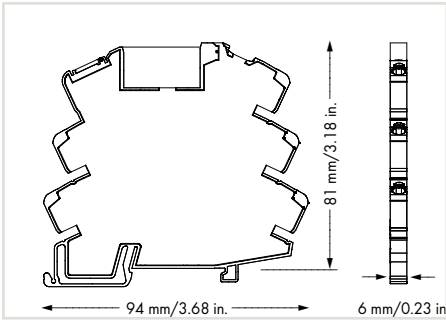
Standards/approvals

EN 61000-6-2; EN 61000-6-3; EN 61373;  
EN 61010-2-2001; UL 508 (max. 70 °C / 0.3 A)



## Multifunction Timer Relays with a Solid-State Relay

### 857 Series



Function and time range adjustable via DIP switch

#### Note

Solid-state relays are designed for use in signal processing networks which are not fed by the low-voltage power supply network.

#### Technical Data

##### Control circuit

Input voltage range

$U_N - 15 \% \dots + 30 \%$

Power consumption at  $U_N$

9.15 mA (active) / 2.5 mA (passive)

##### General Specifications

Time range

adjustable:

0.1 ... 10 s; 3 ... 300 s; 0.3 ... 30 min; 3 ... 300 min

Reset time

50 ms

Repeat accuracy

$\pm 1 \%$

Dielectric strength, control/load circuit (AC, 1 min)

3.75 kV<sub>rms</sub>

Ambient operating temperature

-20 ... +60 °C

Storage temperature

-40 ... +70 °C

Dimensions (mm) W x H x D

6 x 81 x 94, height from upper-edge of DIN-rail

Connection technology

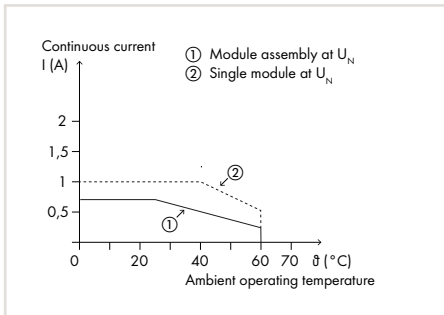
Push-in CAGE CLAMP®

Conductor range

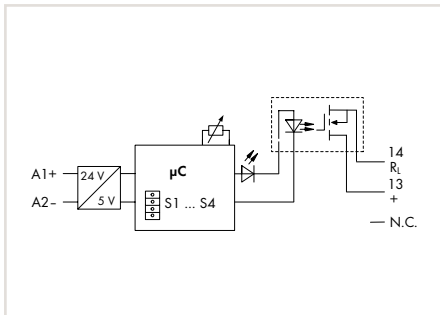
0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

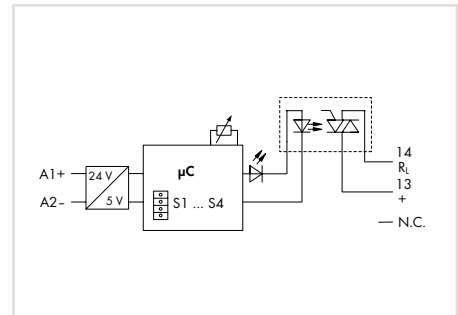


Current carrying capacity



Solid-state timer relay module, output voltage range: 0 ... 24 VDC, max. continuous current: 2 A, 2-wire connection, multifunction/multitime range, yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9.15 mA	857-624	25



Solid-state timer relay module, output voltage range: 24 ... 230 VAC, max. continuous current: 1 A, 2-wire connection, multifunction/multitime range, yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9.15 mA	857-634	25

### Specific Technical Data

#### Load circuit

Parameter	WAGO 857-624	WAGO 857-634
Output voltage range	0 ... 24 VDC	24 ... 230 VAC
Reverse voltage transistor/triac	33 V	600 V
Max. continuous current	2 A (DC)	1 A (DC)
Turn-on time	100 µs	1 ms
Turn-off time	2 ms	10 ms
Max. voltage drop input	< 120 mV (DC)	< 1 VAC

#### General Specifications

Parameter	WAGO 857-624	WAGO 857-634
Functions	<ul style="list-style-type: none"> <li>On-delay</li> <li>Single-shot</li> <li>On-delay and single-shot leading edge (1 s, fixed)</li> <li>Blinking</li> </ul>	<ul style="list-style-type: none"> <li>On-delay</li> <li>Single-shot</li> <li>On-delay and single-shot leading edge (1 s, fixed)</li> <li>Blinking</li> </ul>
Standards/approvals	EN 61812-1; EN 61373; EN 50121-3-2	EN 61812-1; EN 61373; EN 50121-3-2

## Accessories

### 857 Series

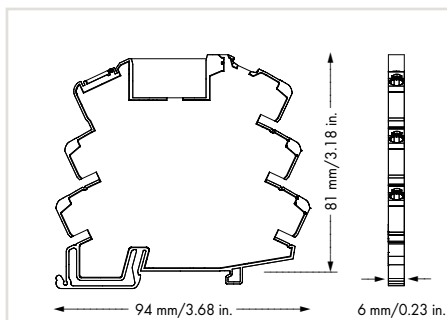


#### Technical Data

Max. continuous current	6 A
Status indication	LED yellow
Ambient operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 81 x 94, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	UR 508; EN61010-2-201

Socket, for miniature switching relay and opto-coupler

	Item No.	Pack. Unit
24 VAC/DC	857-104	25
115 VAC/DC	857-107	25
230 VAC/DC	857-108	25



## Accessories

### 857 Series



Basic solid-state relay,  
output voltage range: 0 ... 24 VDC,  
max. continuous current: 3 A,  
5 mm wide, 15 mm high

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	7 mA	857-161	20

Basic solid-state relay,  
output voltage range: 0 ... 48 VDC,  
max. continuous current: 0.1 A,  
5 mm wide, 15 mm high

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	7 mA	857-164	20

#### Technical Data

Control circuit		Load circuit	
Input voltage range	18 ... 30 VDC	Switching voltage	0 ... 24 VDC
		Reverse voltage transistor/triac	33 V
		Max. continuous current	3 ADC
		Max. voltage drop input	< 120 mV (DC)
General Specifications		General Specifications	
Dielectric strength, control/load circuit	3.75 kV	Dielectric strength, control/load circuit	3.75 kV <sub>rms</sub>
Ambient operating temperature	-30 ... +80 °C	Ambient operating temperature	-30 ... +80 °C
Storage temperature	-40 ... +100 °C	Storage temperature	-40 ... +100 °C
Dimensions (mm) W x H x D	5 x 15 x 28	Dimensions (mm) W x H x D	5 x 15 x 28

## Accessories

## 857 Series

2



Basic solid-state relay,  
output voltage range: 24 ... 240 VDC,  
max. continuous current: 2 A,  
5 mm wide, 15 mm high

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	7 mA	857-167	20

Basic solid-state relay,  
output voltage range: 0 ... 24 VDC,  
max. continuous current: 3 A,  
5 mm wide, 15 mm high

$U_N$	$I_N$	Item No.	Pack. Unit
60 V	3 mA	857-162	20

## Specific Technical Data

	857-161	857-162
<b>Control circuit</b>		
Input voltage range	18 ... 30 VDC	35 ... 72 VDC
<b>Load circuit</b>		
Switching voltage	24 ... 240 VAC	0 ... 24 VDC
Reverse voltage transistor/triac	600 V	33 V
Max. continuous current	2 AAC	3 ADC
Max. voltage drop input	< 1 VAC	< 120 mV (DC)
<b>General Specifications</b>		
Dielectric strength, control/load circuit	3.75 kV	3.75 kV
Ambient operating temperature	-30 ... +80 °C	-30 ... +80 °C
Storage temperature	-40 ... +100 °C	-40 ... +100 °C
Dimensions (mm) W x H x D	5 x 15 x 28	5 x 15 x 28





Basic solid-state relay,  
output voltage range: 0 ... 48 VDC,  
max. continuous current: 0.1 A,  
5 mm wide, 15 mm high

$U_N$	$I_N$	Item No.	Pack. Unit
60 V	2.8 mA	857-165	20

Basic solid-state relay,  
output voltage range: 24 ... 240 VDC,  
max. continuous current: 2 A,  
5 mm wide, 15 mm high

$U_N$	$I_N$	Item No.	Pack. Unit
60 V	3.1 mA	857-168	20

#### Specific Technical Data

<b>Control circuit</b>		
Input voltage range	52 ... 72 VDC	35 ... 72 VDC
<b>Load circuit</b>		
Switching voltage	0 ... 48 VDC	24 ... 240 VAC
Reverse voltage transistor/triac	54 V	600 V
Max. continuous current	0.1 A (DC)	2 AAC
Max. voltage drop input	< 1 VDC	< 1 VAC
<b>General Specifications</b>		
Dielectric strength, control/load circuit	3.75 kV	3.75 kV
Ambient operating temperature	-20 ... +60 °C	-30 ... +80 °C
Storage temperature	-40 ... +70 °C	-40 ... +100 °C
Dimensions (mm) W x H x D	5 x 15 x 28	5 x 15 x 28

## Accessories

### 857 Series

Push-in type jumper bars, light gray, insulated, 18 A



Description	Item No.	Pack. Unit
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. suffixes for colored push-in type jumper bars	yellow	.../000-029
	red	.../000-005
	blue	.../000-006

Comb-style jumper bar, insulated, for conductor entry



Description	Item No.	Pack. Unit
2-way	281-482	100

WMB Multi marking system, 10 strips with 10 markers, white, with black printing



Description	Item No.	Pack. Unit	
plain	793-501	5 cards	
Marking	1 ... 10 (10 x)	793-502	5 cards
	11 ... 20 (10 x)	793-503	5 cards
	21 ... 30 (10 x)	793-504	5 cards
	31 ... 40 (10 x)	793-505	5 cards
	41 ... 50 (10 x)	793-506	5 cards
	1 ... 50 (2 x)	793-566	5 cards

Operating tool, with a partially insulated shaft

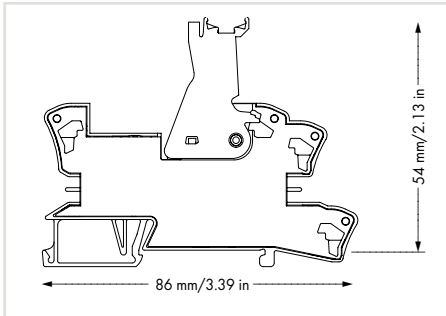


Description	Item No.	Pack. Unit
Type 2, (3.5 x 0.5) mm blade	210-720	1



## Sockets with a Solid-State Relay

### 788 Series

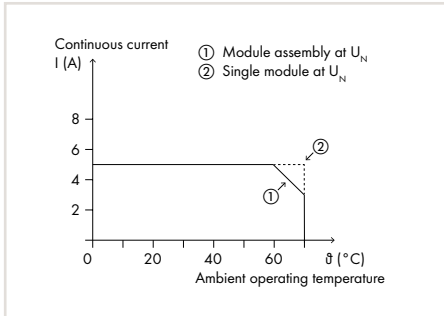
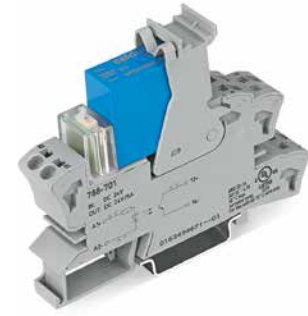


#### Note

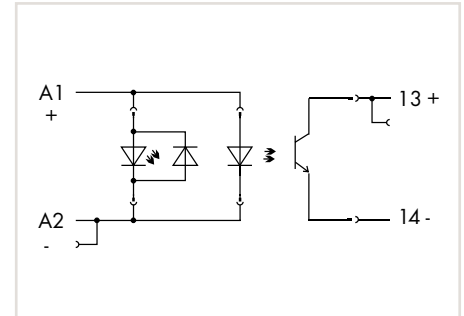
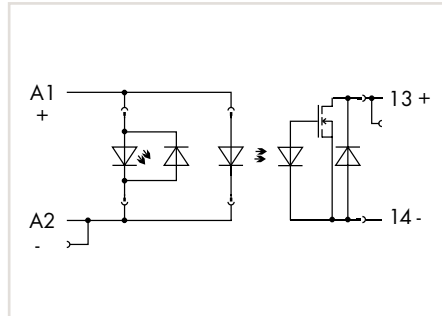
Solid-state relays are designed for use in signal processing networks which are not fed by the low-voltage power supply network.

#### Technical Data

<b>Load circuit</b>	
Turn-on time	50 $\mu$ s
Turn-off time	600 $\mu$ s
Switching frequency	100 Hz
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	2.5 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	15 x 53 x 86, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch



Current carrying capacity curve, for 788-701



Solid-state relay module,  
output voltage range: 0 ... 24 VDC,  
max. continuous current: 3.5 A,  
2-wire connection,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	7 mA	788-700	20

Solid-state relay module,  
output voltage range: 0 ... 30 VDC,  
max. continuous current: 5 A,  
2-wire connection,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9.3 mA	788-701	10

**Specific Technical Data**

Control circuit	
Input voltage range (low level)	0 ... 8 VDC
Input voltage range (high signal)	18 ... 30 VDC
Load circuit	
Output voltage range	0 ... 24 VDC
Max. continuous current	3.5 ADC
Max. switching frequency	
Max. voltage drop at output	0.1 VDC
Reverse voltage transistor/triac	33 V
Ambient operating temperature	-20 ... +60 °C
General Specifications	
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508

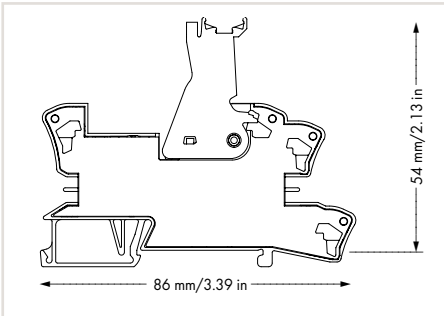
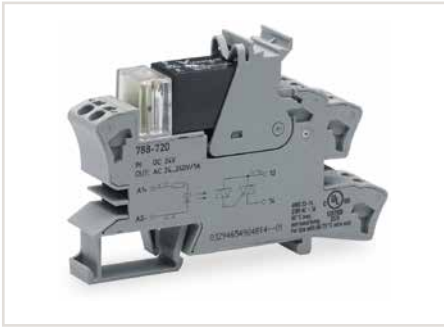
0 ... 2.5 VDC
15 ... 30 VDC
0 ... 30 VDC
5 A (DC)
100 Hz
0.3 VDC
36 V
-40 ... +70 °C
EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508 (max. 40 °C/4.7 A)

0 ... 2.5 VDC
15 ... 30 VDC
0 ... 30 VDC
5 A (DC)
100 Hz
0.3 VDC
36 V
-40 ... +70 °C
EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508 (max. 40 °C/4.7 A)

## Sockets with a Solid-State Relay

### 788 Series

2



#### Technical Data

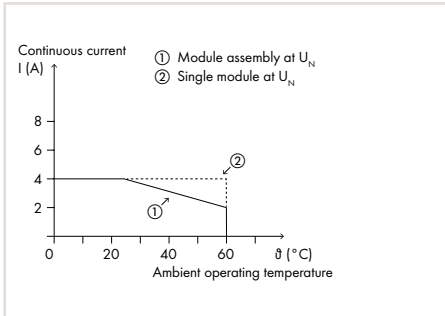
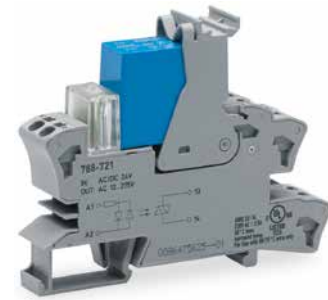
<b>Load circuit</b>	
Turn-on time	10 ms
Turn-off time	10 ms
Max. voltage drop at output	< 1.1 VAC
Reverse voltage transistor/triac	600 V
Switching frequency	50 / 60 Hz
<b>General Specifications</b>	
Nominal voltage	250 V
Rated surge voltage	2.5 kV
Pollution degree	2
Ambient operating temperature	-20 ... +60 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	15 x 53 x 86, height from upper-edge of DIN-rail
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch

#### Note

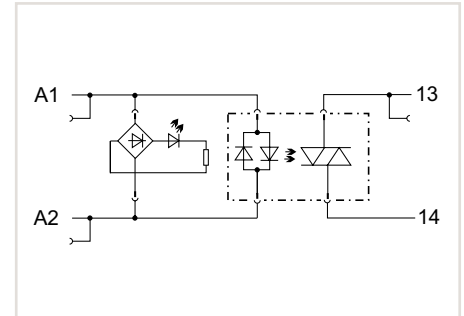
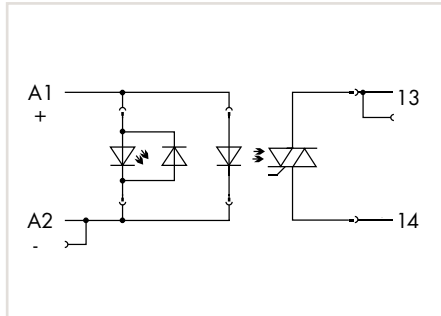
Solid-state relays are designed for use in signal processing networks which are not fed by the low-voltage power supply network.



Accessories,  
see page 126



Current carrying capacity curve, for 788-721



Solid-state relay module,  
output voltage range: 24 ... 240 VAC,  
max. continuous current: 1 A,  
2-wire connection, zero-voltage switching,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	7 mA	788-720	20

Solid-state relay module,  
output voltage range: 12 ... 275 VAC,  
max. continuous current: 4 A,  
2-wire connection, zero-voltage switching,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VAC/DC	10 mA	788-721	10

**Specific Technical Data**

Control circuit	
Input voltage range (low level)	0 ... 4 VDC
Input voltage range (high signal)	18 ... 30 VDC
Load circuit	
Output voltage range	24 ... 240 VAC
Max. continuous current	1 AAC
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	3.75 kV <sub>rms</sub>
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508 (max. 60 °C/1 A)

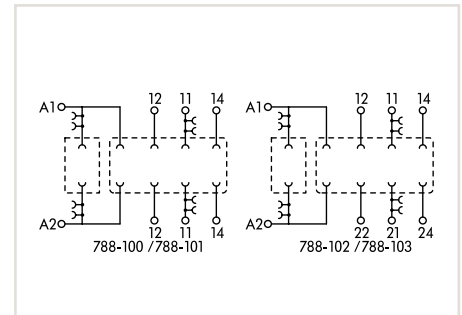
Input voltage range (low level)	0 ... 2.5 VAC/DC
Input voltage range (high signal)	15 ... 30 VAC/DC
Output voltage range	12 ... 275 VAC
Max. continuous current	4 AAC
Dielectric strength, control/load circuit (AC, 1 min)	4 kV <sub>rms</sub>
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508 (max. 40 °C/2.5 A)

Input voltage range (low level)	0 ... 2.5 VAC/DC
Input voltage range (high signal)	15 ... 30 VAC/DC
Output voltage range	12 ... 275 VAC
Max. continuous current	4 AAC
Dielectric strength, control/load circuit (AC, 1 min)	4 kV <sub>rms</sub>
Standards/approvals	EN 61000-6-2; EN 61000-6-3; EN 61373; EN 61010-2-201; UL 508 (max. 40 °C/2.5 A)

## Accessories

### 788 Series

2



Socket, for miniature switching relay,  
1 changeover contact/2 changeover contacts,  
for DIN-35 rail

Description	Item No.	Pack. Unit
1 changeover contact (relay height: 15 mm)	788-100	20
2 changeover contacts (relay height: 15 mm)	788-102	20
1 changeover contact (relay height: 25 mm)	788-101	10
2 changeover contacts (relay height: 25 mm)	788-103	10

#### Specific Technical Data

##### Contacts

Max. continuous current	16 A / 2 x 8 A
Max. switching voltage	250 VAC
Max. switching power (resistive)	4 kVA / 2 x 2 kVA AC

##### General Specifications

Nominal input voltage ( $U_N$ )	Depending on relay, max. 250 VAC
Nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	3
Dielectric strength, contact-coil (AC, 1 min)	6 kV <sub>rms</sub> (depending on relay)
Dielectric strength, open contact (AC, 1 min)	1 kV <sub>rms</sub> (depending on relay)
Dielectric strength, contact-contact (AC, 1 min)	3.5 kV <sub>rms</sub> (depending on relay)
Storage temperature	-40 ... +80 °C
Ambient operating temperature	-40 ... +70 °C (depending on relay)
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch.
Standards/approvals	EN 60664-1



## Accessories

### 788 Series

Status indication



Description	Power consumption at $U_N$	Item No.	Pack. Unit
Operation status indicator with recovery diode, 24 VDC (12 ... 24 V)	2.4 mA	788-120	50 (2x25)
Operation status indicator, with recovery diode, 48 VDC (48 ... 60 V)	1.9 mA	788-121	50 (2x25)
Operation status indicator, 110 VDC	1.9 mA	788-122	50 (2x25)
Operation status indicator, 24 VAC	2.1 mA	788-123	50 (2x25)
Operation status indicator, 115 VAC	1.7 mA	788-124	50 (2x25)
Operation status indicator, 230 VAC	1.6 mA	788-125	50 (2x25)

Push-in type jumper bar,  $I_{max}$  18 A



Description	Item No.	Pack. Unit
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

Description	Item No.	Pack. Unit
2-way (internal)	859-402	200 (8x25)

WMB Multi marking system, 10 strips with 10 markers, white, with black printing



Description	Item No.	Pack. Unit
plain	793-501	5 cards
Marking 1 ... 10 (10 x)	793-502	5 cards
11 ... 20 (10 x)	793-503	5 cards
21 ... 30 (10 x)	793-504	5 cards
31 ... 40 (10 x)	793-505	5 cards
41 ... 50 (10 x)	793-506	5 cards
1 ... 50 (2 x)	793-566	5 cards

Group marker carriers



Item No.	Pack. Unit
209-145	100 (50)

Operating tool, with a partially insulated shaft



Description	Item No.	Pack. Unit
Type 2, (3.5 x 0.5) mm blade	210-720	1

Twin ferrule, red, insulated, 12 mm long



Sleeve for mm <sup>2</sup> / AWG	Item No.	Pack. Unit
2 x 1 mm <sup>2</sup> / 2 x 18	216-542	500

## Rail-Mount Terminal Blocks with an Optocoupler

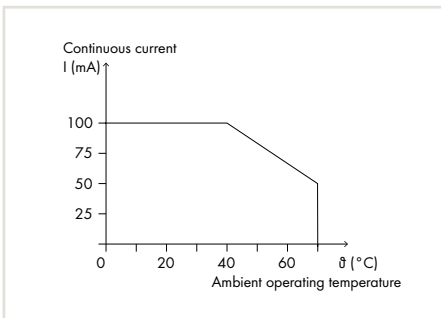
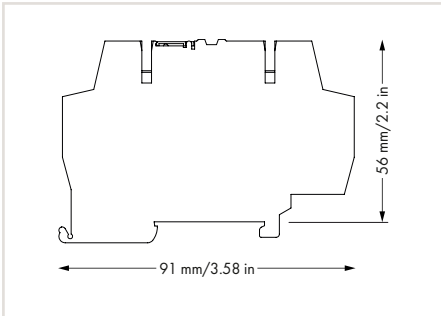
### 859 Series

2

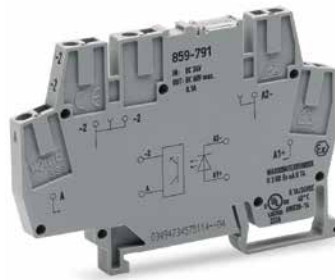


#### Technical Data

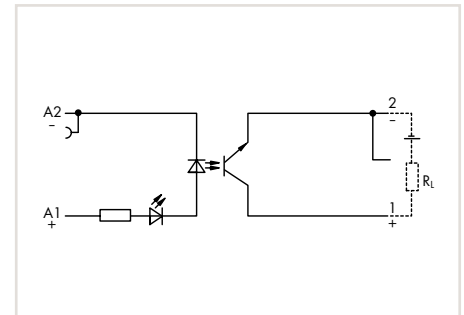
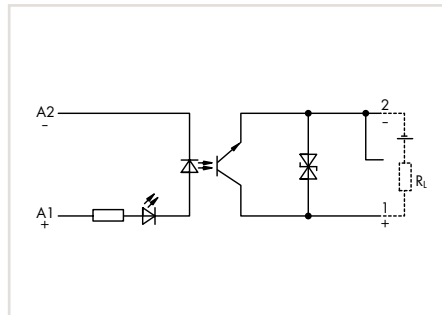
Ambient operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Current carrying capacity



2



Optocoupler module,  
output voltage range: 7 ... 60 VDC,  
max. continuous current: 0.1 A,  
2-wire connection, railway applications,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	4 mA	859-791	5

Optocoupler module,  
output voltage range: 9 ... 60 VDC,  
max. continuous current: 0.1 A,  
2-wire connection, railway applications,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	4.2 mA	859-794	5

### Specific Technical Data

#### Control circuit

Input voltage range (low level)

0 ... 5 VDC

Input voltage range (high signal)

16 ... 30 VDC

#### Load circuit

Max. continuous current

100 mA

Output voltage range

7... 60 VDC

Turn-on time

20  $\mu$ s

Turn-off time

120  $\mu$ s

Max. switching frequency

3 kHz

Max. voltage drop at output

1.5 V

Reverse voltage transistor/triac

100 V

#### General Specifications

Dielectric strength, control/load circuit (AC, 1 min)

4 kV<sub>rms</sub>

Standards/approvals

EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 50121-3-2; EN 61373; UL 508

0 ... 5 VDC

16 ... 30 VDC

100 mA

9 ... 60 VDC

20  $\mu$ s

120  $\mu$ s

1.5 kHz

2 V

100 V

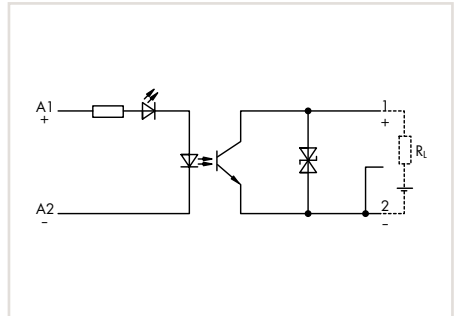
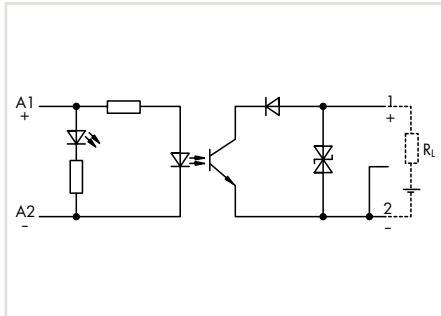
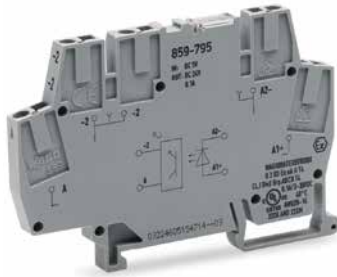
2.5 kV<sub>rms</sub>

EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 50121-3-2; EN 61373; UL 508

# Rail-Mount Terminal Blocks with an Optocoupler

## 859 Series

2



Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 0.1 A,  
2-wire connection, railway applications,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	17 mA	859-795	5

Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 0.1 A,  
2-wire connection, railway applications,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9.2 mA	859-796	5

### Specific Technical Data

#### Control circuit

Input voltage range (low level)	0 ... 0.8 VDC
Input voltage range (high signal)	2 ... 6.25 VDC

#### Load circuit

Output voltage range	3 ... 30 VDC
Max. continuous current	100 mA
Turn-on time	10 $\mu$ s
Turn-off time	50 $\mu$ s
Max. switching frequency	10 kHz
Max. voltage drop at output	1 V
Reverse voltage transistor/triac	65 V

#### General Specifications

Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Standards/approvals	EN 60664; EN 61000-6-3; EN 61000-6-4; EN 50121-3-2; EN 61373; UL 508

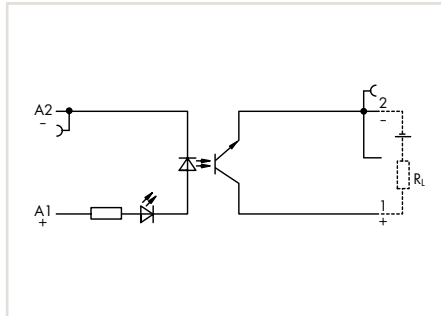
Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high signal)	16.8 ... 30 VDC

Output voltage range	3 ... 30 VDC
Max. continuous current	100 mA
Turn-on time	10 $\mu$ s
Turn-off time	50 $\mu$ s
Max. switching frequency	10 kHz
Max. voltage drop at output	1 V
Reverse voltage transistor/triac	65 V

Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 50121-3-2; EN 61373; UL 508

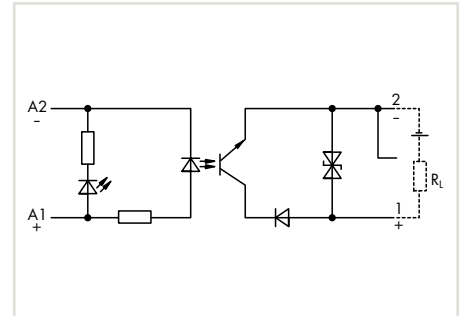


2



Optocoupler module,  
output voltage range: 9 ... 60 VDC,  
max. continuous current: 0.1 A,  
2-wire connection, railway applications,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	4 mA	859-798	5



Optocoupler module,  
output voltage range: 3 ... 60 VDC.  
max. continuous current: 0.1 A,  
2-wire connection, railway applications,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	7.5 mA	859-793	5

### Specific Technical Data

#### Control circuit

Input voltage range (low level)	0.4 ... 4.8 VDC
Input voltage range (high signal)	8.4 ... 15 VDC

#### Load circuit

Output voltage range	9 ... 60 VDC
Max. continuous current	100 mA
Turn-on time	20 $\mu$ s
Turn-off time	120 $\mu$ s
Max. switching frequency	1.5 kHz
Max. voltage drop at output	2 V
Reverse voltage transistor/triac	100 V

#### General Specifications

Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 50121-3-2; EN 61373

0 ... 0.8 VDC
2 ... 6.25 VDC

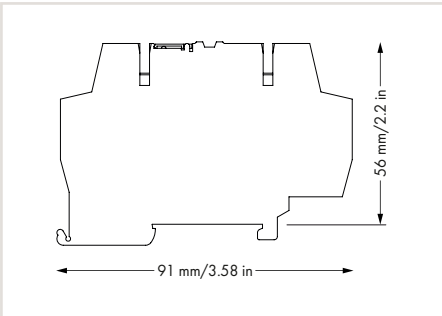
3 ... 60 VDC
100 mA
20 $\mu$ s
120 $\mu$ s
1.5 kHz
2.5 V
100 V

2.5 kV <sub>rms</sub>
EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 50121-3-2; EN 61373; UL 508

## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series

2

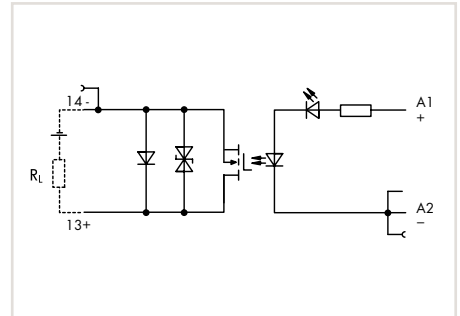
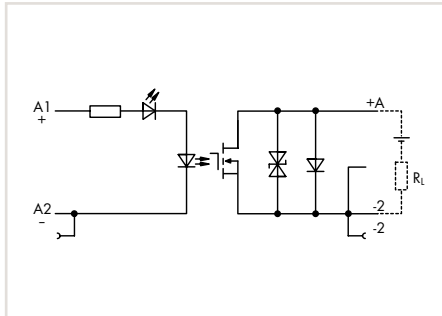


#### Technical Data

Load circuit	
Output voltage range	3 ... 30 VDC
Max. continuous current	3 A
Peak output current	25 A
Turn-on time	25 $\mu$ s
Turn-off time	450 $\mu$ s
Max. switching frequency	350 Hz
Max. voltage drop at output	0.2 V
Reverse voltage transistor/triac	55 V
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +55 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Accessories,  
see page 156



Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 3 A,  
2-wire connection,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	14 mA	859-730	5

Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 3 A,  
2-wire connection,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	7 mA	859-740	5

**Specific Technical Data**

**Control circuit**

Input voltage range (low level)

0 ... 5 VDC

Input voltage range (high signal)

15 ... 27 VDC

0 ... 9 VDC

19 ... 27 VDC

**General Specifications**

Standards/approvals

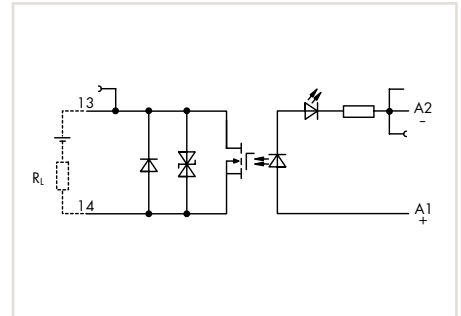
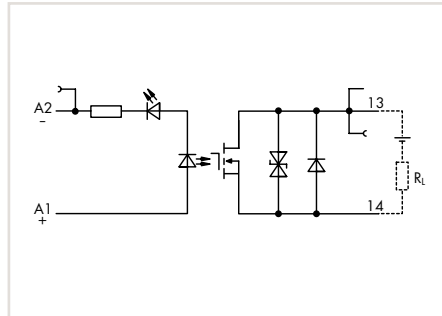
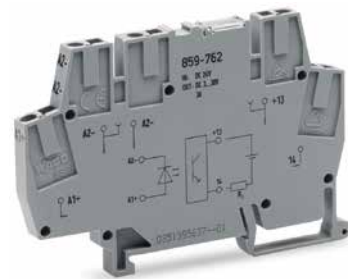
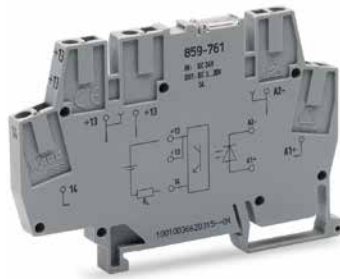
EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373; UL 508

EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373; UL 508

# Rail-Mount Terminal Blocks with an Optocoupler

## 859 Series

2



Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 3 A,  
2-wire connection,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	14 mA	859-761	5

Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 3 A,  
2-wire connection,  
yellow status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	7 mA	859-762	5

**Specific Technical Data**

**Control circuit**

Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high signal)	15 ... 27 VDC

0 ... 9 VDC
19 ... 27 VDC

**General Specifications**

Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373
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EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373
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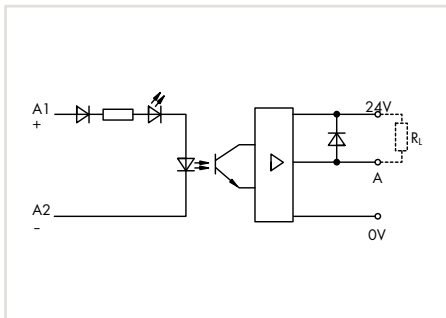
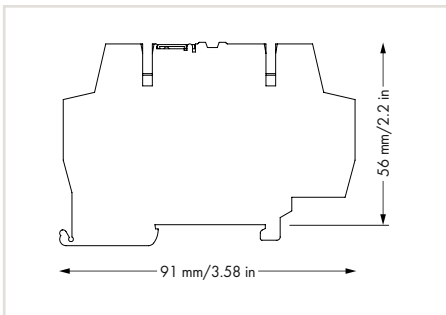
## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series



Optocoupler module,  
output voltage range: 10 ... 30 VDC,  
max. continuous current: 3 A,  
3-wire connection, negative switching  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	4 mA	859-720	5



#### Technical Data

##### Control circuit

Input voltage range (low level)	0 ... 3 VDC
Input voltage range (high signal)	16 ... 30 VDC

##### Load circuit

Output voltage range	10 ... 30 VDC
Max. continuous current	3 A
Peak output current	20 A
Turn-on time	25 $\mu$ s
Turn-off time	75 $\mu$ s
Max. switching frequency	1 kHz / < 2 A, 2 kHz / < 1 A, 3 kHz / < 0.5 A
Max. voltage drop at output	0.5 V
Reverse voltage transistor/triac	55 V

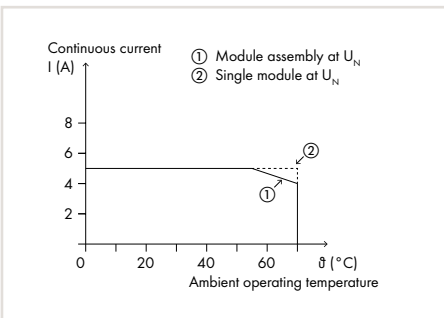
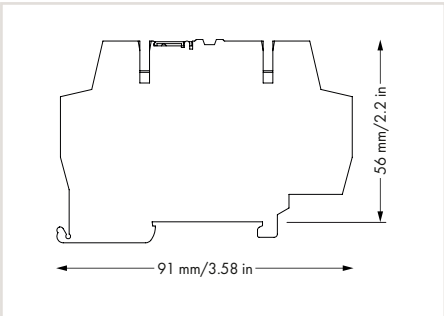
##### General Specifications

Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508

# Rail-Mount Terminal Blocks with an Optocoupler

## 859 Series

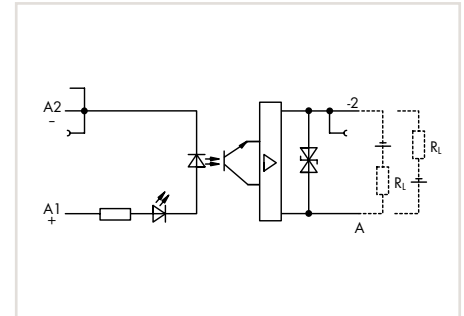
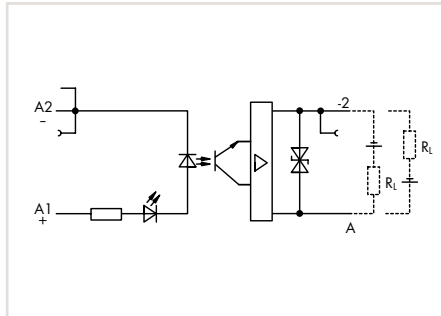
2



Current carrying capacity

### Technical Data

Load circuit	
Output voltage range	3 ... 30 VDC
Max. continuous current	5 A
Peak output current	25 A
Turn-on time	200 $\mu$ s
Turn-off time	450 $\mu$ s
Max. switching frequency	100 Hz
Max. voltage drop at output	0.2 V
Reverse voltage transistor/triac	55 V
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 5 A,  
2-wire connection,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	3.5 mA	859-737	5

Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 5 A,  
2-wire connection,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	7.2 mA	859-738	5

**Specific Technical Data**

**Control circuit**

Input voltage range (low level)

0 ... 5 VDC

0 ... 2 VDC

Input voltage range (high signal)

15 ... 30 VDC

4 ... 6 VDC

**General Specifications**

Standards/approvals

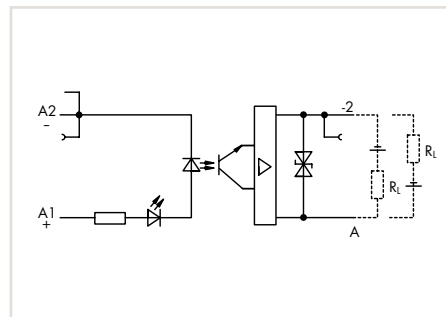
EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373

EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373

# Rail-Mount Terminal Blocks with an Optocoupler

## 859 Series

2



Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 5 A,  
2-wire connection,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	3.2 mA	859-739	5

**Specific Technical Data**

**Control circuit**

Input voltage range (low level)

0 ... 5 VDC

Input voltage range (high signal)

9.6 ... 14.4 VDC

**General Specifications**

Standards/approvals

EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373

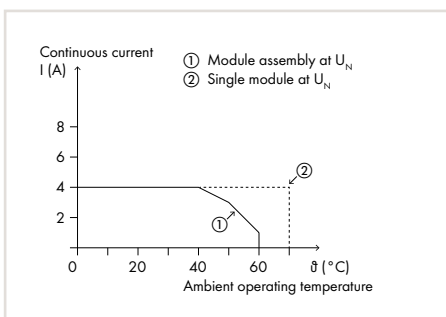
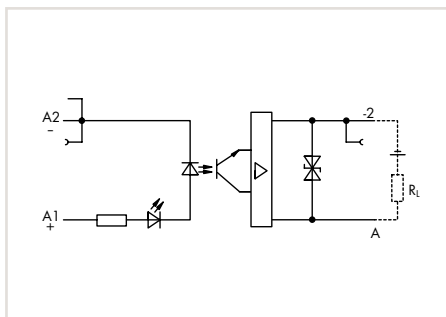
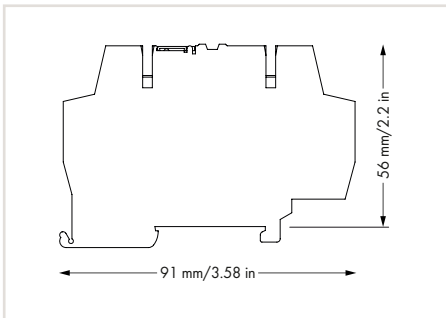
## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series



Optocoupler module,  
output voltage range: 10 ... 53 VDC,  
max. continuous current: 4 A,  
2-wire connection,  
red status indicator, 6 mm wide

$U_N$	Item No.	Pack. Unit
12 ... 48 VDC	859-744	5



Current carrying capacity

#### Technical Data

##### Control circuit

Input voltage range (low level)	0 ... 4 VDC
Input voltage range (high signal)	10 ... 53 VDC

##### Load circuit

Output voltage range	3 ... 53 VDC
Max. continuous current	4 A
Peak output current	30 A
Turn-on time	200 $\mu$ s
Turn-off time	450 $\mu$ s
Max. switching frequency	100 Hz
Max. voltage drop at output	0.2 V
Reverse voltage transistor/triac	80 V

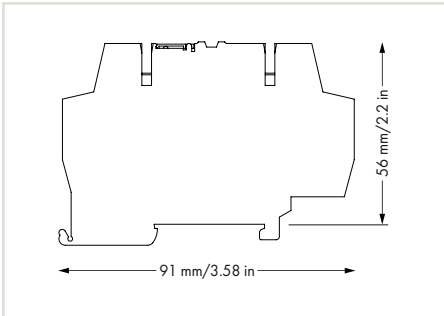
##### General Specifications

Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373

## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series

2

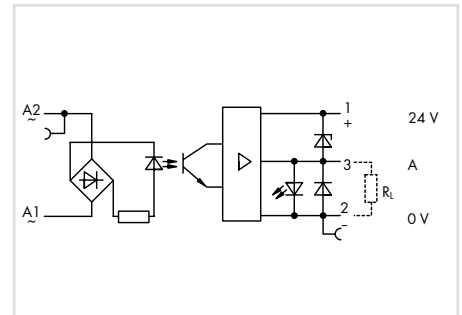
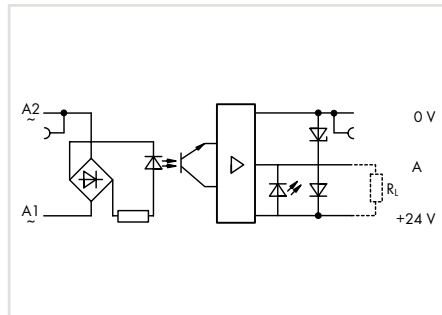


#### Technical Data

Load circuit	
Output voltage range	20 ... 30 VDC
Max. continuous current	500 mA
Turn-on time	< 30 ms
Turn-off time	< 30 ms
Max. voltage drop at output	1.2 V
Reverse voltage transistor/triac	80 V
Switching frequency	5 Hz
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +55 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Accessories,  
see page 156



Optocoupler module,  
output voltage range: 20 ... 30 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, low-side switching,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC	0.6 mA	859-712	5

Optocoupler module,  
output voltage range: 20 ... 30 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, high-side switching,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
230 VAC	0.6 mA	859-772	5

**Specific Technical Data**

**Control circuit**

Input voltage range (low level)

0 ... 90 VAC

0 ... 90 VAC

Input voltage range (high signal)

175 ... 270 VAC

175 ... 270 VAC

**General Specifications**

Standards/approvals

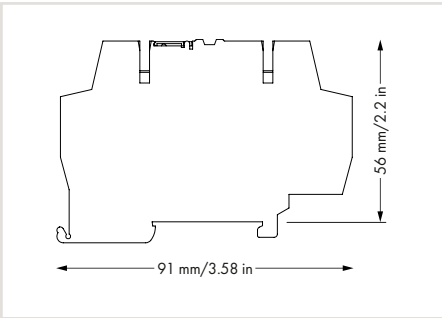
EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373; UL 508

EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373; UL 508

## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series

2



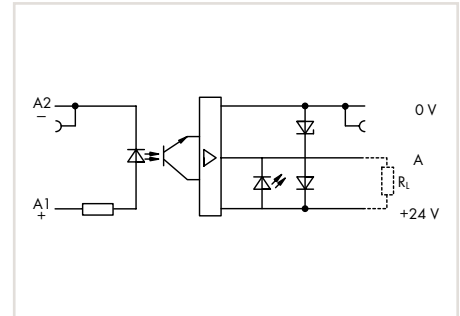
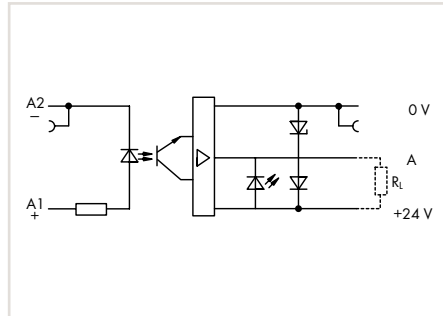
#### Technical Data

Load circuit	
Output voltage range	20 ... 30 VDC
Max. continuous current	500 mA
Max. switching frequency	10 kHz
Max. voltage drop at output	1.2 V
Reverse voltage transistor/triac	80 V
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +55 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch





Similar to picture



Optocoupler module,  
output voltage range: 20 ... 30 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, low-side switching,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	9.6 mA	859-702	25

Optocoupler module,  
output voltage range: 20 ... 30 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, low-side switching,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	7.7 mA	859-708	25

**Specific Technical Data**

Control circuit	
Input voltage range (low level)	0 ... 1 VDC
Input voltage range (high signal)	4 ... 6.25 VDC
Load circuit	
Turn-on time	< 7 $\mu$ s
Turn-off time	< 15 ms
General Specifications	
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508

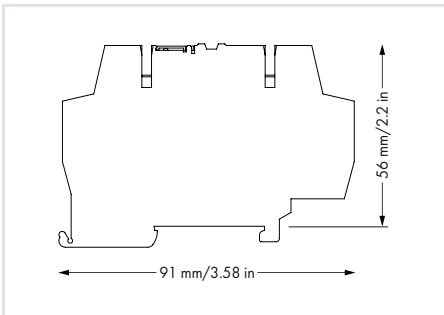
Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high signal)	19 ... 30 VDC
Turn-on time	< 10 $\mu$ s
Turn-off time	< 10 $\mu$ s
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508

Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high signal)	19 ... 30 VDC
Turn-on time	< 10 $\mu$ s
Turn-off time	< 10 $\mu$ s
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508

## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series

2

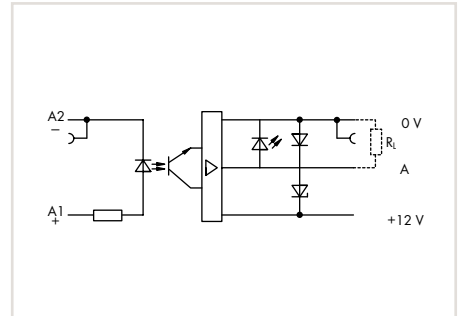
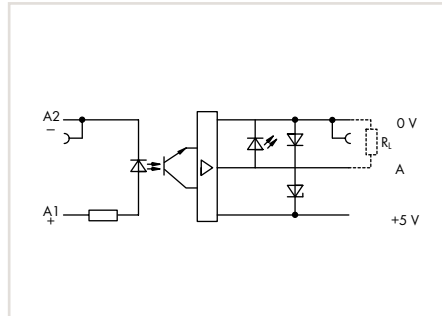


#### Technical Data

Load circuit	
Max. continuous current	500 mA
Peak output current	4 A
Turn-on time	< 15 $\mu$ s
Turn-off time	< 30 $\mu$ s
Max. switching frequency	10 kHz
Max. voltage drop at output	1.2 V
Reverse voltage transistor/triac	80 V
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Similar to picture



Optocoupler module,  
output voltage range: 4 ... 6.25 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, high-side switching,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

Optocoupler module,  
output voltage range: 8 ... 18 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, high-side switching,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	8 mA	859-750	5

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	8 mA	859-751	5

**Specific Technical Data**

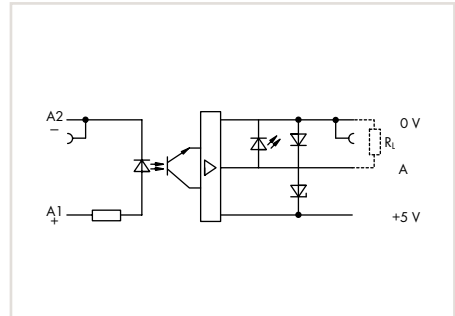
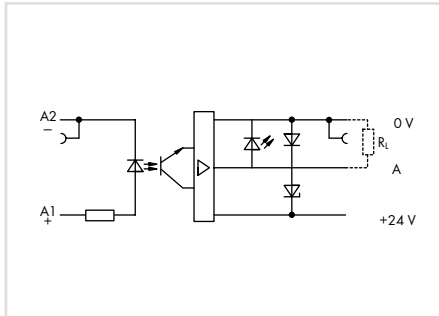
Control circuit	
Input voltage range (low level)	0 ... 1 VDC
Input voltage range (high signal)	4 ... 6.25 VDC
Load circuit	
Output voltage range	4 ... 6.25 VDC
General Specifications	
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508

Input voltage range (low level)	0 ... 1 VDC
Input voltage range (high signal)	4 ... 6 VDC
Output voltage range	8 ... 18 VDC
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508

# Rail-Mount Terminal Blocks with an Optocoupler

## 859 Series

2



Optocoupler module,  
output voltage range: 20 ... 30 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, high-side switching,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

Optocoupler module.  
output voltage range: 4 ... 6.25 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, high-side switching,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	10 mA	859-752	5

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	11 mA	859-756	5

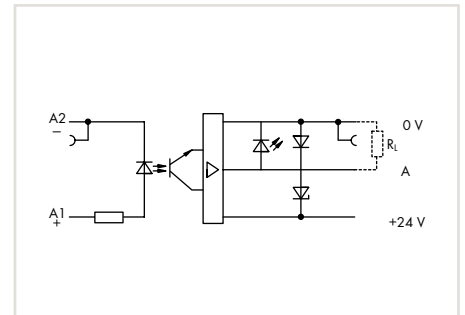
### Specific Technical Data

Control circuit	
Input voltage range (low level)	0 ... 1 VDC
Input voltage range (high signal)	4 ... 6 VDC
Load circuit	
Output voltage range	20 ... 30 VDC
General Specifications	
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508

Output voltage range	4 ... 6.25 VDC
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508



2



Optocoupler module,  
output voltage range: 20 ... 30 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, high-side switching,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	8 mA	859-758	25

#### Specific Technical Data

##### Control circuit

Input voltage range (low level)

0 ... 5 VDC

Input voltage range (high signal)

18 ... 30 VDC

##### Load circuit

Output voltage range

20 ... 30 VDC

##### General Specifications

Standards/approvals

EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373; UL 508

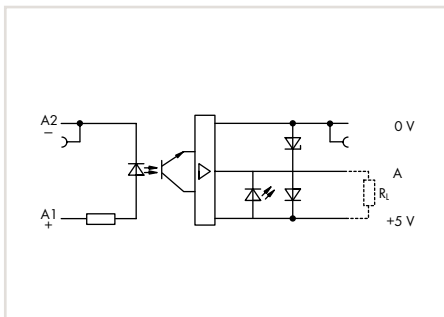
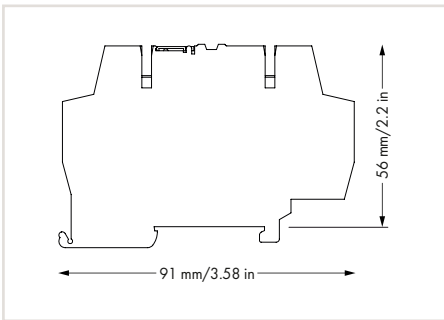
## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series



Optocoupler module,  
output voltage range: 4 ... 6.25 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, low-side switching,  
frequency: 10 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	11 mA	859-706	5



#### Technical Data

Control circuit	
Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high signal)	18 ... 30 VDC
Load circuit	
Max. continuous current	0.5 A
Output voltage range	4 ... 6.25 VDC
Turn-on time	< 7 $\mu$ s
Turn-off time	< 15 $\mu$ s
Max. switching frequency	10 kHz
Max. voltage drop at output	1.2 V
Reverse voltage transistor/triac	80 V
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +55 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373; UL 508

## Rail-Mount Terminal Blocks with an Optocoupler

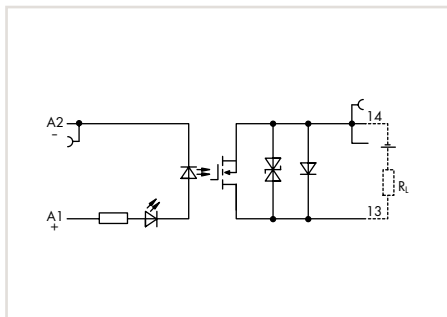
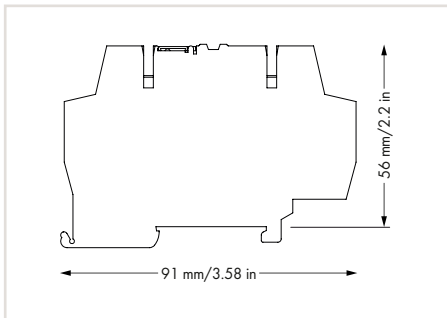
### 859 Series



Similar to picture

Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 0.5 A,  
2-wire connection,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
12 VDC	9.2 mA	859-797	5



#### Technical Data

##### Control circuit

Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high signal)	9 ... 16 VDC

##### Load circuit

Max. continuous current	0.5 A
Output voltage range	3 ... 30 VDC
Peak output current	2.7 A
Turn-on time	15 $\mu$ s
Turn-off time	100 $\mu$ s
Max. switching frequency	2.5 kHz
Max. voltage drop at output	0.2 V
Reverse voltage transistor/triac	55 V

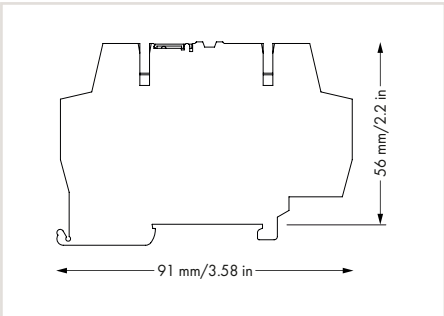
##### General Specifications

Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +55 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; UL 508

## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series

2



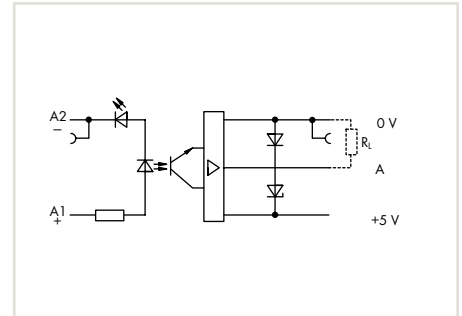
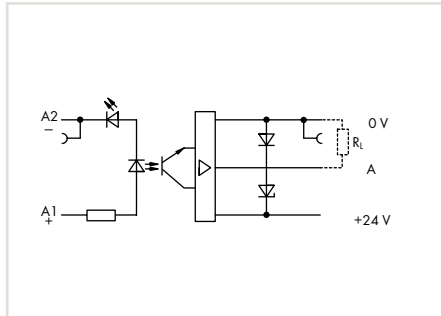
#### Technical Data

Load circuit	
Max. continuous current	100 mA
Peak output current	0.8 A
Turn-on time	< 0.5 $\mu$ s
Turn-off time	< 5 $\mu$ s
Max. switching frequency	100 kHz
Reverse voltage transistor/triac	40 V
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +55 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Accessories,  
see page 156





Optocoupler module,  
output voltage range: 20 ... 28.8 VDC,  
max. continuous current: 0.1 A,  
3-wire connection, high-side switching,  
frequency: 100 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	16.5 mA	859-753	5

Optocoupler module,  
output voltage range: 4 ... 6 VDC,  
max. continuous current: 0.1 A,  
3-wire connection, high-side switching,  
frequency: 100 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9 mA	859-755	5

#### Specific Technical Data

##### Control circuit

Input voltage range (low level)

0 ... 1 VDC

0 ... 5 VDC

Input voltage range (high signal)

4 ... 6.25 VDC

20 ... 30 VDC

##### Load circuit

Output voltage range

20 ... 28.8 VDC

4 ... 6 VDC

Max. voltage drop at output

1.2 V

0.6 V

##### General Specifications

Standards/approvals

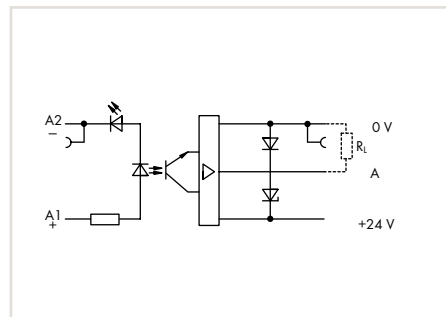
EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373; UL 508

EN 60664-1; EN 61000-6-2; EN 61000-6-3;  
EN 61373; UL 508

# Rail-Mount Terminal Blocks with an Optocoupler

## 859 Series

2



Optocoupler module,  
output voltage range: 20 ... 28.8 VDC,  
max. continuous current: 0.1 A,  
3-wire connection, high-side switching,  
frequency: 100 kHz,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	9 mA	859-759	5

Specific Technical Data	
<b>Control circuit</b>	
Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high signal)	20 ... 30 VDC
<b>Load circuit</b>	
Output voltage range	20 ... 28.8 VDC
Max. voltage drop at output	1.2 V
<b>General Specifications</b>	
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; EN 61373

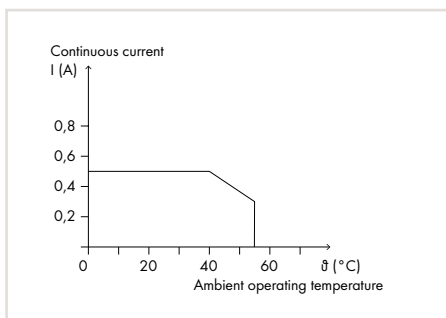
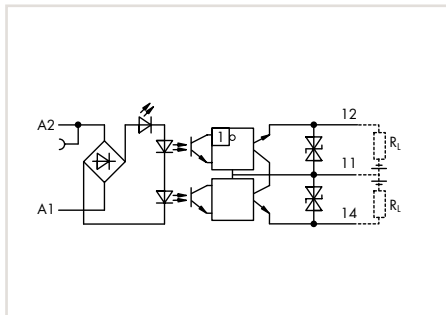
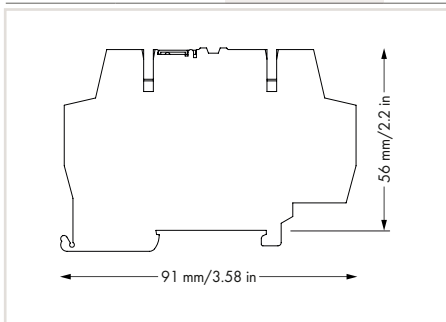
## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series



Optocoupler module,  
output voltage range: 3 ... 30 VDC,  
max. continuous current: 0.5 A,  
1 changeover contact,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	5.3 mA	859-732	5



Current carrying capacity

#### Technical Data

##### Control circuit

Input voltage range (low level)	0 ... 5 VDC
Input voltage range (high signal)	15 ... 42 VDC

##### Load circuit

Output voltage range	3 ... 30 VDC
Max. continuous current	0.5 A (DC)
Peak output current	4 A
Turn-on time	25 $\mu$ s
Turn-off time	150 $\mu$ s
Max. switching frequency	1.5 kHz
Max. voltage drop at output	1.5 V
Reverse voltage transistor/triac	80 V

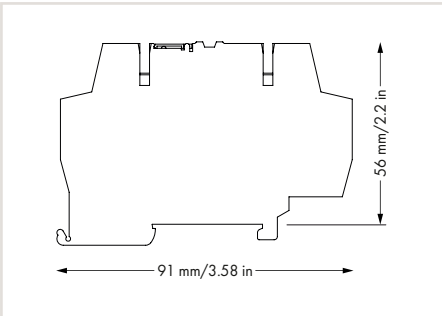
##### General Specifications

Dielectric strength, control/load circuit (AC, 1 min)	3.75 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +55 °C
Storage temperature	-25 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	EN 60664-1; EN 61000-6-2; EN 61000-6-3; UL 508

## Rail-Mount Terminal Blocks with an Optocoupler

### 859 Series

2



#### Technical Data

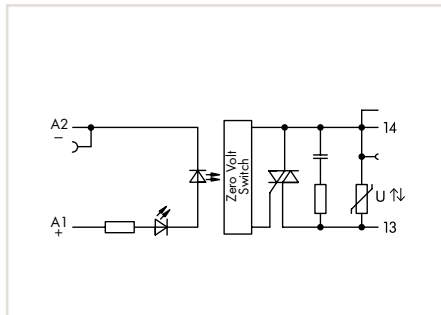
Load circuit	
Output voltage range	24 ... 260 VAC
Max. continuous current	500 mA
Peak output current	30 A
Turn-on time	10 ms
Turn-off time	10 ms
Switching frequency	50 / 60 Hz
Max. voltage drop at output	1.2 V
Reverse voltage transistor/triac	600 V
General Specifications	
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV <sub>rms</sub>
Ambient operating temperature	-25 ... +55 °C
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D	6 x 56 x 91, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



Accessories,  
see page 156

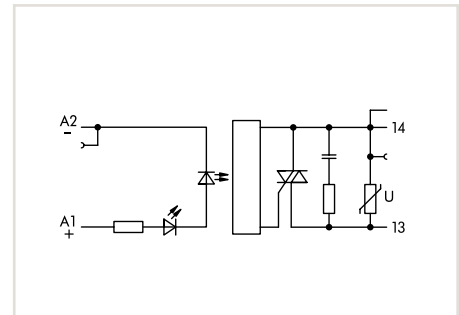


2



Optocoupler module,  
output voltage range: 24 ... 260 VAC,  
max. continuous current: 0.5 A,  
2-wire connection, zero switching,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 VDC	6 mA	859-734	5



Optocoupler module,  
output voltage range: 24 ... 260 VAC,  
max. continuous current: 0.5 A,  
2-wire connection,  
zero switching,  
red status indicator, 6 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 VDC	7.7 mA	859-902	5

#### Specific Technical Data

##### Control circuit

Input voltage range (low level)

0 ... 5 VDC

Input voltage range (high signal)

19 ... 28.8 VDC

##### General Specifications

Standards/approvals

EN 61010-2-201; EN 61000-6-2; EN 61000-6-3;  
UL 508

0 ... 1 VDC

4 ... 6.25 VDC

EN 61010-2-201; EN 61000-6-2; EN 61000-6-3;  
UL 508

## Accessories

### 859 Series

Operating tool, with a partially insulated shaft



Description	Item No.	Pack. Unit
Type 2, (3.5 x 0.5) mm blade	210-720	1

Felt-tip pen



Description	Item No.	Pack. Unit
Felt-tip pen, for permanent marking	210-110	1

Test pin



Description	Item No.	Pack. Unit
Ø 1 mm, with solder connection for test cable	859-500	100 (100x1)

End and intermediate plate



Description	Item No.	Pack. Unit
1 mm thick, gray	859-525	100 (4x25)

Push-in type jumper bars, light gray, insulated, 18 A



Description	Item No.	Pack. Unit
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. suffixes for colored push-in type jumper bars	yellow	... /000-029
	red	... /000-005
	blue	... /000-006

Mini-WSB Quick Marking System,  
10 strips with 10 markers,  
white, with black printing



Description	Item No.	Pack. Unit
plain	248-501	5 cards
Marking		
1 ... 10 (10 x)	248-502	5 cards
11 ... 20 (10 x)	248-503	5 cards
21 ... 30 (10 x)	248-504	5 cards
31 ... 40 (10 x)	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

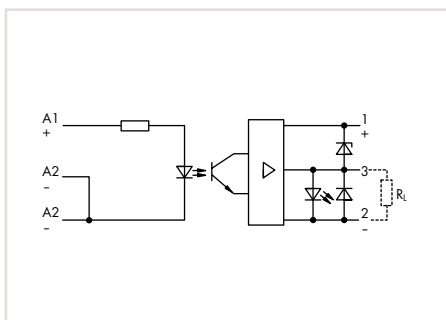
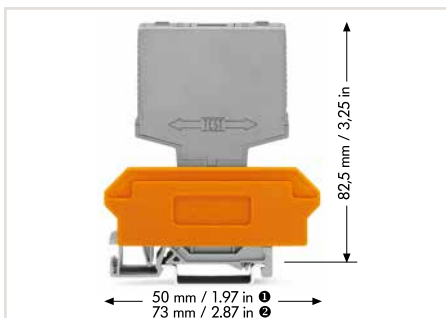
## Pluggable Modules – Optocouplers

### 286 Series



Optocoupler module, output voltage range: 20 ... 30 VDC, max. continuous current: 0.5 A, 3-wire connection, high-side switching, red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
5 V	14 mA	286-752/002-000	1




#### Technical Data

Control circuit	
Input voltage range (high signal)	2 ... 6.25 VDC
Input current range	3.3 ... 18.5 mA
Load circuit	
Output voltage range	20 ... 30 VDC
Max. continuous current	500 mA
Turn-on time	< 5 $\mu$ s
Turn-off time	< 10 $\mu$ s
Max. switching frequency	25 kHz
Leakage current	2.5 $\mu$ A
Max. voltage drop at output	$\leq$ 1.2 V
Max. output (reverse current)	12 mA
Reverse voltage transistor/triac	80 VDC
General Specifications	
Nominal voltage	50 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-25 ... +70 °C
Standards/specifications	EN 60664-1

#### Accessories

Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ②	17 mm	280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm	280-609	1
with 4-conductor terminal blocks, orange separator ②	20 mm	280-763	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			

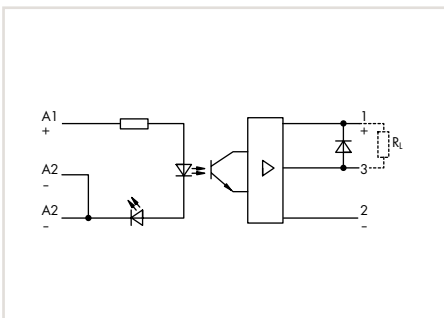
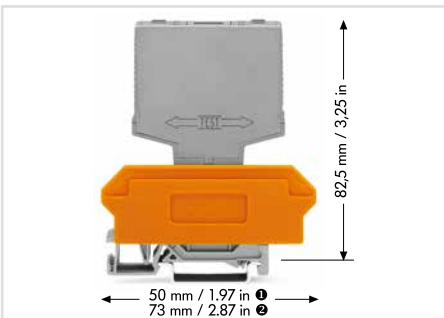
 Accessories, see page 166





Optocoupler module,  
output voltage range: 15 ... 40 VDC,  
max. continuous current: 5 A,  
3-wire connection, low-side switching,  
frequency: 10 kHz,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	13.5 mA	286-721	1



#### Technical Data

##### Control circuit

Input voltage range (high signal)	15 ... 30 VDC
Input current range	7.5 mA ... 18 mA (DC)

##### Load circuit

Output voltage range	15 ... 40 VDC
Max. continuous current	5 A
Turn-on time	< 20 $\mu$ s
Turn-off time	< 80 $\mu$ s
Max. switching frequency	1 kHz
Leakage current	2.5 $\mu$ A
Max. voltage drop at output	$\leq$ 0.5 V
Reverse voltage transistor/triac	50 VDC

##### General Specifications

Nominal voltage	50 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C
Standards/specifications	EN 60664-1

#### Accessories

##### Terminal block for pluggable modules

	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ②	17 mm	280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm	280-609	1
with 4-conductor terminal blocks, orange separator ②	20 mm	280-763	1

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG;  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

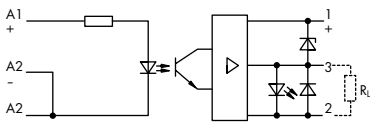
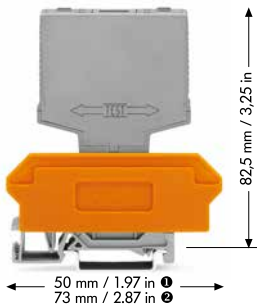
## Pluggable Modules – Optocouplers

### 286 Series



Optocoupler module,  
output voltage range: 20 ... 30 VDC,  
max. continuous current: 4 A,  
3-wire connection, high-side switching,  
frequency: 10 kHz,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	13.5 mA	286-723	1



#### Technical Data

Control circuit	
Input voltage range (high signal)	15 ... 30 VDC
Input current range	7.6 mA ... 15.0 mA (DC)
Load circuit	
Output voltage range	20 ... 30 VDC
Max. continuous current	4 A
Turn-on time	≤ 15 μs
Turn-off time	≤ 25 μs
Max. switching frequency	2.5 kHz
Leakage current	2.5 μA
Max. voltage drop at output	≤ 1.2 V
Max. output (reverse current)	12 mA
Reverse voltage transistor/triac	100 VDC
General Specifications	
Nominal voltage	50 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C
Standards/specifications	EN 60664-1

#### Accessories

Terminal block for pluggable modules


with 2-conductor terminal blocks, orange separator ②

with 4-conductor terminal blocks, orange separator ②

with 4-conductor terminal blocks, orange separator ②

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG;  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

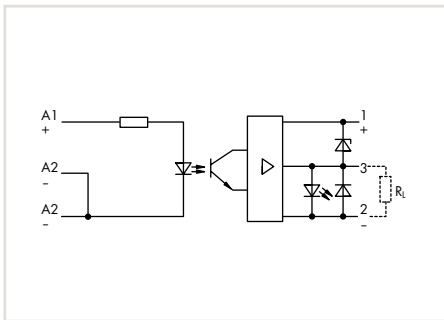
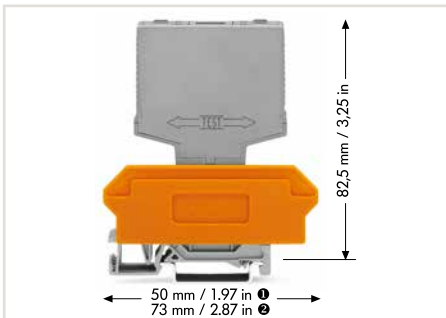
Width	Item No.	Pack. Unit
17 mm	280-619	1
17 mm	280-609	1
20 mm	280-763	1

 Accessories,  
see page 166



Optocoupler module,  
output voltage range: 20 ... 30 VDC,  
max. continuous current: 0.5 A,  
3-wire connection, high-side switching,  
frequency: 25 kHz,  
red status indicator, 15 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	15 mA	286-752	1



#### Technical Data

##### Control circuit

Input voltage range (high signal)	12 ... 30 VDC
Input current range	5 mA ... 20 mA (DC)

##### Load circuit

Output voltage range	20 ... 30 VDC
Max. continuous current	500 mA
Turn-on time	< 7 $\mu$ s
Turn-off time	< 15 $\mu$ s
Max. switching frequency	25 kHz
Leakage current	2.5 $\mu$ A
Max. voltage drop at output	$\leq$ 1.2 V
Max. output	12 mA
Reverse voltage transistor/triac	80 VDC

##### General Specifications

Nominal voltage	50 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C
Standards/specifications	EN 60664-1

#### Accessories

##### Terminal block for pluggable modules

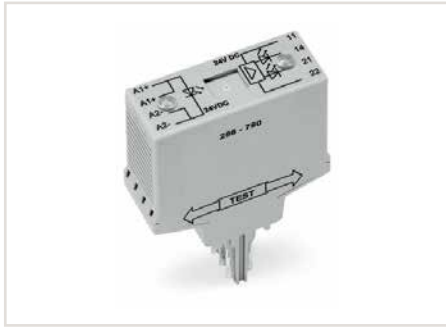
with 2-conductor terminal blocks, orange separator ②	17 mm	280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm	280-609	1
with 4-conductor terminal blocks, orange separator ②	20 mm	280-763	1

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG;  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

Width	Item No.	Pack. Unit
17 mm	280-619	1
17 mm	280-609	1
20 mm	280-763	1

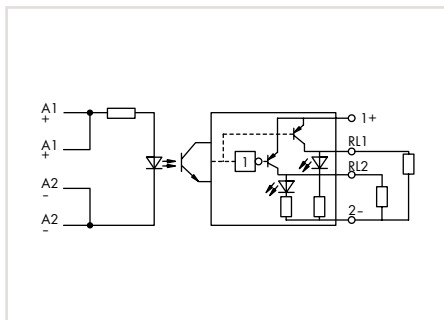
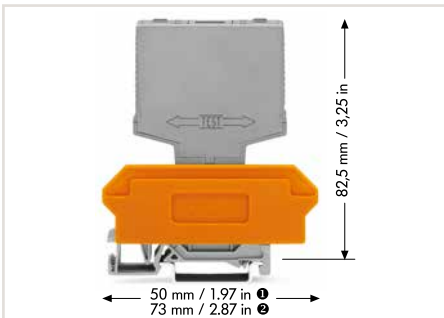
## Pluggable Modules – Optocouplers

### 286 Series



Optocoupler module, with 2 inverted outputs, output voltage range: 20 ... 30 VDC, max. continuous current: 0.5 A, frequency: 2.5 kHz, 20 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	9 mA	286-790	1



#### Technical Data

##### Control circuit

Input voltage range (high signal)	20 ... 30 VDC
Input current range	7 mA ... 12 mA (DC)

##### Load circuit

Output voltage range	20 ... 30 VDC
Max. continuous current	500 mA
Turn-on time	4 $\mu$ s
Turn-off time	15 $\mu$ s
Max. switching frequency	2.5 kHz
Leakage current	2.5 $\mu$ A
Max. voltage drop at output	< 1.2 V
Reverse voltage transistor/triac	100 VDC

##### General Specifications

Nominal voltage	50 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C
Standards/specifications	EN 60664-1

#### Accessories

Terminal block for pluggable modules


with 2-conductor terminal blocks, orange separator ②

with 4-conductor terminal blocks, orange separator ②

with 4-conductor terminal blocks, orange separator ②

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG;  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

Width	Item No.	Pack. Unit
22 mm	280-638	1
22 mm	280-628	1
25 mm	280-764	1

 Accessories, see page 166



Optocoupler module,  
output voltage range: 20 ... 60 VDC,  
max. continuous current: 0.1 A,  
2-wire connection,  
frequency: 3 kHz,  
red status indicator, 10 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	14 mA	286-791	1

#### Technical Data

##### Control circuit

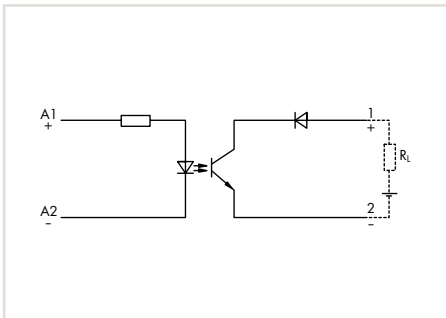
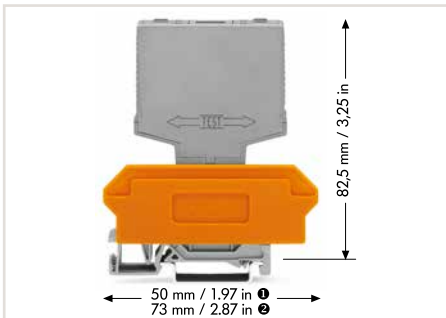
Input voltage range (high signal)	15 ... 30 VDC
Input current range	7.5 mA ... 18 mA (DC)

##### Load circuit

Output voltage range	20 ... 60 VDC
Max. continuous current	100 mA
Turn-on time	10 $\mu$ s
Turn-off time	50 $\mu$ s
Max. switching frequency	3 kHz
Leakage current	2.5 $\mu$ A
Max. voltage drop at output	$\leq$ 2 V
Reverse voltage transistor/triac	80 VDC

##### General Specifications

Nominal voltage	50 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C
Standards/specifications	EN 60664-1



#### Accessories

##### Terminal block for pluggable modules

with 2-conductor terminal blocks, orange separator ②	12 mm	280-618	1
with 4-conductor terminal blocks, orange separator ②	12 mm	280-608	1
with 4-conductor terminal blocks, orange separator ②	15 mm	280-762	1

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG;  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

Width	Item No.	Pack. Unit
12 mm	280-618	1
12 mm	280-608	1
15 mm	280-762	1

## Pluggable Modules – Optocouplers

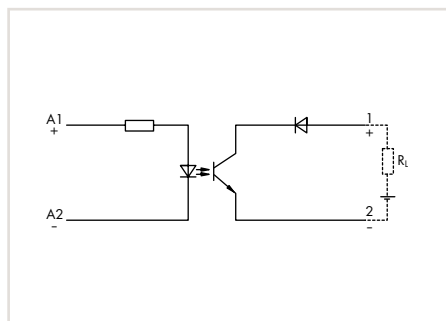
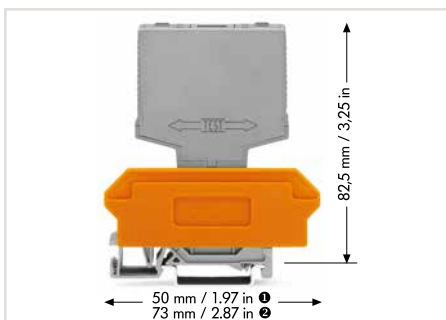
### 286 Series

2



Optocoupler module,  
output voltage range: 20 ... 60 VDC,  
max. continuous current: 0.1 A,  
frequency: 1.5 kHz,  
10 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	4 mA	286-794	1




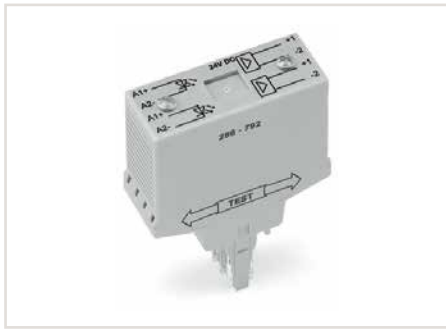
#### Technical Data

Control circuit	
Input voltage range (high signal)	18 ... 30 VDC
Input current range	2 mA ... 5 mA (DC)
Load circuit	
Output voltage range	20 ... 60 VDC
Max. continuous current	100 mA
Turn-on time	80 $\mu$ s
Turn-off time	100 $\mu$ s
Max. switching frequency	1.5 kHz
Leakage current	2.5 $\mu$ A
Max. voltage drop at output	$\leq$ 2 V
Reverse voltage transistor/triac	80 VDC
General Specifications	
Nominal voltage	100 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV
Ambient operating temperature	-25 ... +60 $^{\circ}$ C
Storage temperature	-25 ... +60 $^{\circ}$ C
Standards/specifications	EN 60664-1

#### Accessories

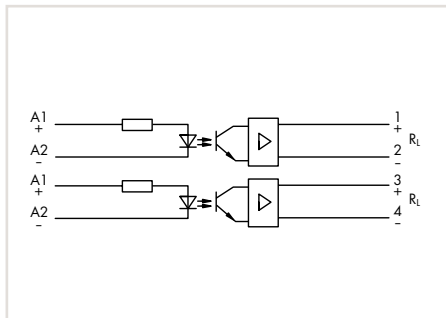
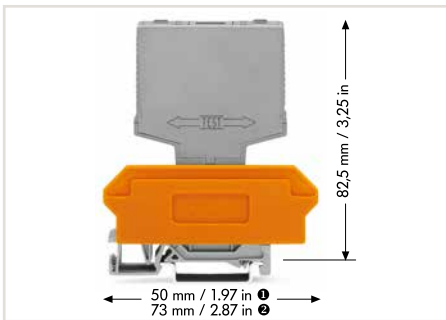
Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ②	12 mm	280-618	1
with 4-conductor terminal blocks, orange separator ②	12 mm	280-608	1
with 4-conductor terminal blocks, orange separator ②	15 mm	280-762	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			

 Accessories,  
see page 166



Dual-channel optocoupler module, output voltage range: 20 ... 30 VDC, max. continuous current: 0.25 A, frequency: 1.5 kHz, 20 mm wide

$U_N$	$I_N$	Item No.	Pack. Unit
24 V	15 mA	286-792	1



#### Technical Data

##### Control circuit

Input voltage range (high signal)	7.5 ... 30 VDC
Input current range	4 mA ... 19 mA (DC)

##### Load circuit

Output voltage range	20 ... 30 VDC
Max. continuous current	250 mA
Turn-on time	< 60 $\mu$ s
Turn-off time	< 120 $\mu$ s
Max. switching frequency	1.5 kHz
Leakage current	2.6 $\mu$ A
Max. voltage drop at output	< 2.5 V
Reverse voltage transistor/triac	80 VDC

##### General Specifications

Nominal voltage	50 V
Rated surge voltage	4 kV
Pollution degree	2
Dielectric strength, control/load circuit (AC, 1 min)	2.5 kV
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-25 ... +40 °C
Standards/specifications	EN 60664-1

#### Accessories

Terminal block for pluggable modules

	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ②	22 mm	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminal blocks, orange separator ②	25 mm	280-764	1

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG;  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

## Accessories

### 286 Series

WSB marker cards,  
5 cards, each containing 10 strips with 10 markers



Marking	Item No.	Pack. Unit
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
lin, lin, lout, lout, 24V, 11, 12, 14, 0V	209-997	5 cards
S	209-682	5 cards
V	209-784	5 cards
F1 ... F10	209-787	5 cards
D	209-783	5 cards
+, -, 1, 2, 3, 13, 14, 4, 5, 6	249-608	5 cards
L, N, Quitt, Störung, Test, N, 14, 24	249-606	5 cards
A1, A2, Quitt, Störung, 12, 11, 11, 14	249-653	5 cards

WSB Quick marking system, 4 mm, plain,  
5 cards, each containing 10 strips with 10 markers



Description	Item No.	Pack. Unit
white	209-701	5 cards
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


























## ***JUMPFLEX***® Signal Conditioners and Isolation Amplifiers













## JUMPFLEX® Signal Conditioners and Isolation Amplifiers

	Page	
	<b>JUMPFLEX® Isolation Amplifiers</b>	
	2857 Series	182
	857 Series	184
	<b>JUMPFLEX® Current and Voltage Signal Conditioners</b>	
	2857 Series	206
	857 Series	208
	<b>JUMPFLEX® Threshold Value Switches</b>	
	2857 Series	218
	857 Series	222
	<b>JUMPFLEX® Temperature Signal Conditioners</b>	
	857 Series	224
	<b>JUMPFLEX® Potentiometer Signal Conditioner</b>	
	857 Series	242
	<b>JUMPFLEX® Frequency Signal Conditioner</b>	
	857 Series	244
	<b>Configuration Software</b>	
	Interface Configuration Software and Configuration App	248
	<b>Accessories</b>	
	Configuration Display, 2857 Series	250
	<b>EPSITRON® Power for JUMPFLEX® – Switched-Mode Power Supply, 787 Series</b>	251
	<b>WAGO Bluetooth® Adapter and WAGO USB Communication Cable, 750 Series</b>	252
	Supply and Through Module, 857 Series	254
	Interface Adapter, 857 Series	256
	WAGO Interface Cables, 706 Series	257
	Accessories, 857 Series	258
	<b>JUMPFLEX® Signs/Symbols and Approvals</b>	
	Signs and Symbols	261
	Approvals	180

# Technical Details

3












Description	Item No.	Image	Circuit Diagram	Input	Input	Input																																										
 <b>Isolation Amplifiers</b>																																																
<b>Universal Isolation Amplifier</b>	2857-401		<table border="1"> <tr> <td>1.1</td> <td>U+</td> <td>INPUT</td> <td>OUTPUT</td> <td>OUT+</td> <td>4.1</td> </tr> <tr> <td>1.2</td> <td>U-</td> <td>VOLTAGE</td> <td></td> <td>OUT-</td> <td>4.2</td> </tr> <tr> <td>2.1</td> <td>I+</td> <td>INPUT</td> <td></td> <td>U<sub>s</sub>+</td> <td>5.1</td> </tr> <tr> <td>2.2</td> <td>I-</td> <td>CURRENT</td> <td>POWER</td> <td>GND</td> <td>5.2</td> </tr> <tr> <td>3.1</td> <td>DO</td> <td>DO</td> <td>JUMPER</td> <td>U<sub>s</sub>+</td> <td>6.1</td> </tr> <tr> <td>3.2</td> <td>DI</td> <td>DI</td> <td>POWER</td> <td>GND</td> <td>6.2</td> </tr> <tr> <td></td> <td>(GND)</td> <td>(HOLD)</td> <td></td> <td></td> <td></td> </tr> </table>	1.1	U+	INPUT	OUTPUT	OUT+	4.1	1.2	U-	VOLTAGE		OUT-	4.2	2.1	I+	INPUT		U <sub>s</sub> +	5.1	2.2	I-	CURRENT	POWER	GND	5.2	3.1	DO	DO	JUMPER	U <sub>s</sub> +	6.1	3.2	DI	DI	POWER	GND	6.2		(GND)	(HOLD)				0 ... 1 mA 0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA 0 ... 100 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V 0 ... 220 V	± 1 mA ± 10 mA ± 20 mA ± 100 mA  ± 1 V ± 10 V ± 30 V ± 100 V ± 200 V
1.1	U+	INPUT	OUTPUT	OUT+	4.1																																											
1.2	U-	VOLTAGE		OUT-	4.2																																											
2.1	I+	INPUT		U <sub>s</sub> +	5.1																																											
2.2	I-	CURRENT	POWER	GND	5.2																																											
3.1	DO	DO	JUMPER	U <sub>s</sub> +	6.1																																											
3.2	DI	DI	POWER	GND	6.2																																											
	(GND)	(HOLD)																																														
<b>Isolation Amplifier, Configurable, with Zero/Span Adjustment</b>	857-400		<table border="1"> <tr> <td>IN+</td> <td>1</td> <td>IN</td> <td>5</td> <td>OUT+</td> </tr> <tr> <td>GND 1</td> <td>2</td> <td></td> <td>6</td> <td>GND 2</td> </tr> <tr> <td>U<sub>s</sub>+</td> <td>3</td> <td>POWER</td> <td>7</td> <td>U<sub>s</sub>+</td> </tr> <tr> <td>GND 3</td> <td>4</td> <td></td> <td>8</td> <td>GND 3</td> </tr> </table>	IN+	1	IN	5	OUT+	GND 1	2		6	GND 2	U <sub>s</sub> +	3	POWER	7	U <sub>s</sub> +	GND 3	4		8	GND 3	0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V																							
IN+	1	IN	5	OUT+																																												
GND 1	2		6	GND 2																																												
U <sub>s</sub> +	3	POWER	7	U <sub>s</sub> +																																												
GND 3	4		8	GND 3																																												
<b>Isolation Amplifier, Configurable, with Digital Output</b>	857-401		<table border="1"> <tr> <td>IN+</td> <td>1</td> <td>IN</td> <td>5</td> <td>OUT+</td> </tr> <tr> <td>GND 1</td> <td>2</td> <td>U<sub>i</sub>; 1</td> <td>6</td> <td>GND 2</td> </tr> <tr> <td>DO</td> <td>3</td> <td>DO</td> <td>7</td> <td>U<sub>s</sub>+</td> </tr> <tr> <td>GND 3</td> <td>4</td> <td>POWER</td> <td>8</td> <td>GND 3</td> </tr> </table>	IN+	1	IN	5	OUT+	GND 1	2	U <sub>i</sub> ; 1	6	GND 2	DO	3	DO	7	U <sub>s</sub> +	GND 3	4	POWER	8	GND 3	0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	± 20 mA  ± 10 V																						
IN+	1	IN	5	OUT+																																												
GND 1	2	U <sub>i</sub> ; 1	6	GND 2																																												
DO	3	DO	7	U <sub>s</sub> +																																												
GND 3	4	POWER	8	GND 3																																												
<b>Universal Isolation Amplifier</b>	857-402		<table border="1"> <tr> <td>U+</td> <td>1</td> <td>OUT</td> <td>5</td> <td>OUT+</td> </tr> <tr> <td>I+</td> <td>2</td> <td>U<sub>i</sub>; 1</td> <td>6</td> <td>OUT-</td> </tr> <tr> <td>I+</td> <td>3</td> <td>U<sub>i</sub>; 1</td> <td>7</td> <td>U<sub>s</sub>+</td> </tr> <tr> <td>I/U-</td> <td>4</td> <td>POWER</td> <td>8</td> <td>GND 3</td> </tr> </table>	U+	1	OUT	5	OUT+	I+	2	U <sub>i</sub> ; 1	6	OUT-	I+	3	U <sub>i</sub> ; 1	7	U <sub>s</sub> +	I/U-	4	POWER	8	GND 3	0 ... 0.3 mA to 0 ... 100 mA	0 ... 60 mV to 0 ... 200 V	± 0.3 mA to ± 100 mA  ± 60 mV to ± 200 V																						
U+	1	OUT	5	OUT+																																												
I+	2	U <sub>i</sub> ; 1	6	OUT-																																												
I+	3	U <sub>i</sub> ; 1	7	U <sub>s</sub> +																																												
I/U-	4	POWER	8	GND 3																																												
<b>Bipolar Isolation Amplifier</b>	857-409		<table border="1"> <tr> <td>U+</td> <td>1</td> <td>OUT</td> <td>5</td> <td>OUT+</td> </tr> <tr> <td>U-</td> <td>2</td> <td>U<sub>i</sub>; 1</td> <td>6</td> <td>OUT-</td> </tr> <tr> <td>I+</td> <td>3</td> <td>U<sub>i</sub>; 1</td> <td>7</td> <td>U<sub>s</sub>+</td> </tr> <tr> <td>I-</td> <td>4</td> <td>POWER</td> <td>8</td> <td>GND</td> </tr> </table>	U+	1	OUT	5	OUT+	U-	2	U <sub>i</sub> ; 1	6	OUT-	I+	3	U <sub>i</sub> ; 1	7	U <sub>s</sub> +	I-	4	POWER	8	GND	0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	± 10 mA ± 20 mA  ± 5 V ± 10 V																						
U+	1	OUT	5	OUT+																																												
U-	2	U <sub>i</sub> ; 1	6	OUT-																																												
I+	3	U <sub>i</sub> ; 1	7	U <sub>s</sub> +																																												
I-	4	POWER	8	GND																																												
<b>Isolation Amplifiers, Pre-Configured</b>	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																																												

Output			Special Functions			Configuration					Power	Page
												
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	± 10 mA ± 20 mA  ± 5 V ± 10 V	x	x		x		x	x	x	24 VDC	182
0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V				x	x					24 VDC	184
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V		x	x		x		x	x		24 VDC	186
0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	± 10 mA ± 20 mA  ± 5 V ± 10 V		x	x	x	x				24 VDC	188
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	± 10 mA ± 20 mA  ± 5 V ± 10 V			x	x					24 VDC	190
0(4) ... 20 mA	0(2) ... 10 V										24 VDC	192
0 ... 20 mA												
4 ... 20 mA												
	0 ... 10 V											
	0 ... 10 V											

See page 261 for an explanation of the symbols used.

# Technical Details

3






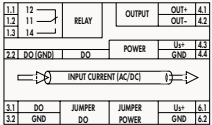

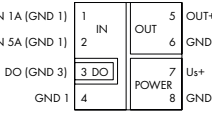

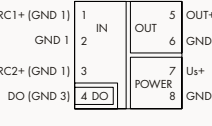

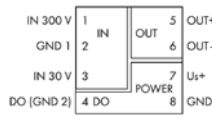

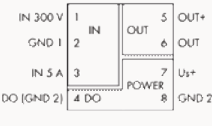

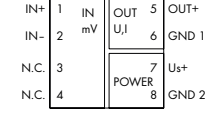
	Description	Item No.	Image	Circuit Diagram	Input																						
	 <b>Isolation Amplifiers</b>																										
Repeater Power Supplies	<b>Repeater Power Supplies</b>	857-420		<table border="1"> <tr> <td>U<sub>Sensor+</sub></td> <td>1</td> <td>OUT</td> <td>5</td> <td>OUT+</td> </tr> <tr> <td>IN</td> <td>2</td> <td>IN</td> <td>6</td> <td>GND 2</td> </tr> <tr> <td>GND 1</td> <td>3</td> <td>POWER</td> <td>7</td> <td>U<sub>S+</sub></td> </tr> <tr> <td>GND 1</td> <td>4</td> <td></td> <td>8</td> <td>GND 3</td> </tr> </table>	U <sub>Sensor+</sub>	1	OUT	5	OUT+	IN	2	IN	6	GND 2	GND 1	3	POWER	7	U <sub>S+</sub>	GND 1	4		8	GND 3	0 ... 20 mA 4 ... 20 mA		
	U <sub>Sensor+</sub>	1	OUT	5	OUT+																						
IN	2	IN	6	GND 2																							
GND 1	3	POWER	7	U <sub>S+</sub>																							
GND 1	4		8	GND 3																							
	<b>Repeater Power Supply, HART</b>	857-421		<table border="1"> <tr> <td>U<sub>Sensor+</sub></td> <td>1</td> <td>OUT</td> <td>5</td> <td>OUT +</td> </tr> <tr> <td>IN</td> <td>2</td> <td>IN</td> <td>6</td> <td>GND 2</td> </tr> <tr> <td>GND 1</td> <td>3</td> <td>POWER</td> <td>7</td> <td>U<sub>S+</sub></td> </tr> <tr> <td>GND 1</td> <td>4</td> <td></td> <td>8</td> <td>GND 3</td> </tr> </table>	U <sub>Sensor+</sub>	1	OUT	5	OUT +	IN	2	IN	6	GND 2	GND 1	3	POWER	7	U <sub>S+</sub>	GND 1	4		8	GND 3	4 ... 20 mA		
U <sub>Sensor+</sub>	1	OUT	5	OUT +																							
IN	2	IN	6	GND 2																							
GND 1	3	POWER	7	U <sub>S+</sub>																							
GND 1	4		8	GND 3																							
Signal Splitters	<b>Signal Splitter, (I)</b>	857-423		<table border="1"> <tr> <td>IN+</td> <td>1</td> <td>OUT 1</td> <td>5</td> <td>OUT 1+</td> </tr> <tr> <td>GND 1</td> <td>2</td> <td>IN</td> <td>6</td> <td>GND 2</td> </tr> <tr> <td>OUT 2+</td> <td>3</td> <td>POWER</td> <td>7</td> <td>U<sub>S+</sub></td> </tr> <tr> <td>GND 4</td> <td>4</td> <td></td> <td>8</td> <td>GND 3</td> </tr> </table>	IN+	1	OUT 1	5	OUT 1+	GND 1	2	IN	6	GND 2	OUT 2+	3	POWER	7	U <sub>S+</sub>	GND 4	4		8	GND 3	0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	
	IN+	1	OUT 1	5	OUT 1+																						
GND 1	2	IN	6	GND 2																							
OUT 2+	3	POWER	7	U <sub>S+</sub>																							
GND 4	4		8	GND 3																							
	<b>Signal Splitter, (I,U)</b>	857-424		<table border="1"> <tr> <td>IN+</td> <td>1</td> <td>OUT 1</td> <td>5</td> <td>OUT 1+</td> </tr> <tr> <td>GND 2</td> <td>2</td> <td>IN</td> <td>6</td> <td>GND 3</td> </tr> <tr> <td>OUT 2+</td> <td>3</td> <td>POWER</td> <td>7</td> <td>U<sub>S+</sub></td> </tr> <tr> <td>GND 4</td> <td>4</td> <td></td> <td>8</td> <td>GND 1</td> </tr> </table>	IN+	1	OUT 1	5	OUT 1+	GND 2	2	IN	6	GND 3	OUT 2+	3	POWER	7	U <sub>S+</sub>	GND 4	4		8	GND 1	0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	
IN+	1	OUT 1	5	OUT 1+																							
GND 2	2	IN	6	GND 3																							
OUT 2+	3	POWER	7	U <sub>S+</sub>																							
GND 4	4		8	GND 1																							
Passive Isolators	<b>Loop-Powered Isolation Amplifier</b>	857-450		<table border="1"> <tr> <td>U+</td> <td>1</td> <td>OUT</td> <td>5</td> <td>U<sub>S+</sub></td> </tr> <tr> <td>U-</td> <td>2</td> <td>IN</td> <td>420mA 6</td> <td>OUT 1</td> </tr> <tr> <td>I+</td> <td>3</td> <td>U, I</td> <td>7</td> <td>N.C.</td> </tr> <tr> <td>I-</td> <td>4</td> <td>N.C.</td> <td>8</td> <td>N.C.</td> </tr> </table>	U+	1	OUT	5	U <sub>S+</sub>	U-	2	IN	420mA 6	OUT 1	I+	3	U, I	7	N.C.	I-	4	N.C.	8	N.C.	0 ... 5 mA 0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 1 V 0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	± 5 mA ± 10 mA ± 20 mA  ± 1 V, ± 5 V ± 10 V ± 20 V
	U+	1	OUT	5	U <sub>S+</sub>																						
	U-	2	IN	420mA 6	OUT 1																						
I+	3	U, I	7	N.C.																							
I-	4	N.C.	8	N.C.																							
	<b>Passive Isolator, 1 Channel</b>	857-451		<table border="1"> <tr> <td>IN+</td> <td>1</td> <td>OUT</td> <td>5</td> <td>OUT+</td> </tr> <tr> <td>GND 1</td> <td>2</td> <td>IN</td> <td>6</td> <td>GND 2</td> </tr> <tr> <td>N.C.</td> <td>3</td> <td></td> <td>7</td> <td>N.C.</td> </tr> <tr> <td>N.C.</td> <td>4</td> <td></td> <td>8</td> <td>N.C.</td> </tr> </table>	IN+	1	OUT	5	OUT+	GND 1	2	IN	6	GND 2	N.C.	3		7	N.C.	N.C.	4		8	N.C.	0(4) ... 20 mA		
IN+	1	OUT	5	OUT+																							
GND 1	2	IN	6	GND 2																							
N.C.	3		7	N.C.																							
N.C.	4		8	N.C.																							
	<b>Passive Isolator, 2-Channel</b>	857-452		<table border="1"> <tr> <td>IN 1+</td> <td>1</td> <td>OUT 1</td> <td>5</td> <td>OUT 1+</td> </tr> <tr> <td>GND 1</td> <td>2</td> <td>IN 1</td> <td>6</td> <td>GND 2</td> </tr> <tr> <td>IN 2+</td> <td>3</td> <td>OUT 2</td> <td>7</td> <td>OUT 2+</td> </tr> <tr> <td>GND 3</td> <td>4</td> <td>IN 2</td> <td>8</td> <td>GND 4</td> </tr> </table>	IN 1+	1	OUT 1	5	OUT 1+	GND 1	2	IN 1	6	GND 2	IN 2+	3	OUT 2	7	OUT 2+	GND 3	4	IN 2	8	GND 4	2 x 0(4) ... 20 mA		
IN 1+	1	OUT 1	5	OUT 1+																							
GND 1	2	IN 1	6	GND 2																							
IN 2+	3	OUT 2	7	OUT 2+																							
GND 3	4	IN 2	8	GND 4																							

Output		Special Functions				Configuration					Power	Page
0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V					x					24 VDC	194
4 ... 20 mA											24 VDC	196
2 x 0(4) ... 20 mA						x					24 VDC	198
2 x 0 ... 20 mA 4 ... 20 mA	2 x 0 ... 10 V 2 ... 10 V					x					24 VDC	200
4 ... 20 mA					x	x					Power via output	202
0(4) ... 20 mA											Power via input	204
2 x 0(4) ... 20 mA											Power via input	205

See page 261 for an explanation of the symbols used.

# Technical Details

3

Description	Item No.	Image	Circuit Diagram	Input		
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">  </div> <div> <h2 style="margin: 0;">Current and Voltage Signal Conditioners</h2> </div> </div>						
<b>Through-Hole Current Signal Conditioner</b>	2857-550			AC/DC 100 A		
<b>Current Signal Conditioner</b>	857-550			1 A AC/DC 5 A AC/DC		
<b>Rogowski Current Signal Conditioner</b>	857-552			Rogowski coils 500 AAC 2000 AAC 4000 AAC		
<b>Voltage Signal Conditioner</b>	857-560			300 VAC/DC		
<b>Power Signal Conditioner</b>	857-569			300 VAC/DC (5 A)		
<b>Millivolt Signal Conditioner</b>	857-819			0 ... 200 mV 0 ... 1000 mV	± 100 mV	






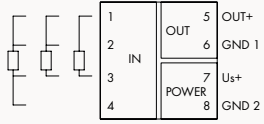

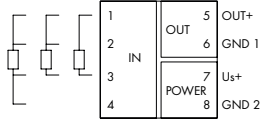

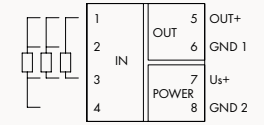

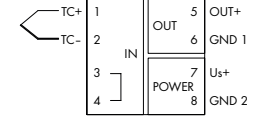

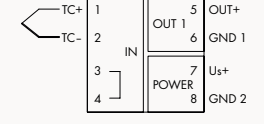

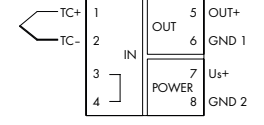

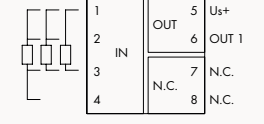

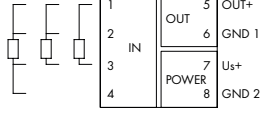

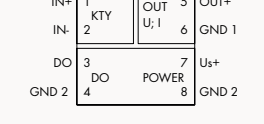














Output			Special Functions			Configuration					Power	Page
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V	$\pm 10$ mA $\pm 20$ mA $\pm 5$ V $\pm 10$ V	x	x	x	x		x	x	x	24 VDC	206
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V		x	x		x		x	x		24 VDC	208
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V		x	x		x		x	x		24 VDC	210
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V		x	x		x		x	x		24 VDC	212
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V		x	x		x		x	x		24 VDC	214
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x		x		x	x		24 VDC	216

See page 261 for an explanation of the symbols used.

# Technical Details

3




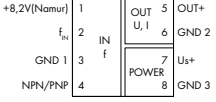
Description	Item No.	Image	Circuit Diagram	Input	Input	Input	
 <b>Temperature Signal Conditioners</b>			  				
<b>Temperature Signal Conditioner for Pt Sensors and Resistance Sensors</b>	857-800			Pt100 Pt200 Pt500 Pt1000	0 ... 1 kΩ 0 ... 4.5 kΩ	2 conductors 3 conductors 4 conductors	
<b>Temperature Signal Conditioner for Pt Sensors and Resistance Sensors</b>	857-801			Pt100 Pt200 Pt500 Pt1000	0 ... 1 kΩ 0 ... 4.5 kΩ	2 conductors 3 conductors 4 conductors	
<b>Temperature Signal Conditioner for Pt46 Sensors and Cu53 Sensors</b>	857-808			Pt46 Cu53		2 conductors 3 conductors 4 conductors	
<b>Temperature Signal Conditioner for Thermocouples</b>	857-810			Type J, K			
<b>Temperature Signal Conditioner for Thermocouples</b>	857-811			Type J, K, E, R, N, S, T, B, S			
<b>Temperature Signal Conditioner for Thermocouples</b>	857-812			Type K, S, B, R			
<b>Loop-Powered RTD Temperature Signal Conditioner</b>	857-815			Pt100 Pt200 Pt500 Pt1000	0 ... 1 kΩ 0 ... 4.5 kΩ	2 conductors 3 conductors 4 conductors	
<b>Temperature Signal Conditioner for Ni Sensors</b>	857-818			Ni100 Ni120 Ni200 Ni500 Ni1000		2 conductors 3 conductors 4 conductors	
<b>Temperature Signal Conditioner for KTY Sensors</b>	857-820			KTY sensors		2 conductors	






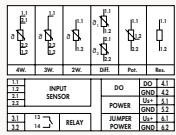

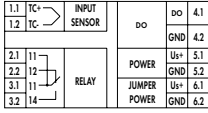

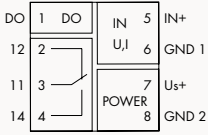
Output		Special Functions				Configuration					Power	Page
												
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x		x					24 VDC	224
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x		x		x	x		24 VDC	226
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V					x					24 VDC	228
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x		x					24 VDC	230
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x		x		x	x		24 VDC	232
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V					x					24 VDC	234
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V					x					Power via output	236
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x		x					24 VDC	238
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V		x	x		x					24 VDC	240





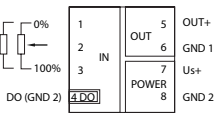
See page 261 for an explanation of the symbols used.

## Technical Details

3

Frequency Signal Conditioner		Description	Item No.	Image	Circuit Diagram	Input
			<b>Frequency Signal Conditioner</b>			
		<b>Frequency Signal Conditioner</b>	857-500		 <p>+8,2V(Namur) 1 OUT 5 OUT+                      f<sub>in</sub> 2 IN U<sub>I</sub> 6 GND 2                      GND 1 3 f POWER 7 U<sub>S</sub>+                      NPN/PNP 4 8 GND 3</p>	Frequency signals, NAMUR, NPN, or PNP sensors: 0.1 ... 120 kHz

Threshold Value Switches		Description	Item No.	Image	Circuit Diagram	Input
			<b>Threshold Value Switches</b>			  
		<b>RTD Threshold Value Switch</b>	2857-533			
		<b>Thermocouple Threshold Value Switch</b>	2857-534			
		<b>Analog Threshold Value Switch</b>	857-531			0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA
						0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V 0 ... 15 V 0 ... 30 V
						± 10 mA ± 20 mA ± 5 V ± 10 V

Potentiometer Signal Conditioners		Description	Item No.	Image	Circuit Diagram	Input
			<b>Potentiometer Signal Conditioners</b>			 
		<b>Potentiometer Signal Conditioner</b>	857-809			Potentiometer 0 ... 100 kΩ
						10 ... 100 kΩ

Output		Special Functions				Configuration					Power	Page
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V			x		x		x	x		24 VDC	244

Input	Special Functions					Configuration					Power	Page
0 ... 100 kΩ	Pt100 Pt200 Pt500 Pt1000 Pt5000 Pt10,000 Pt10 ... 20,000	250 VAC 6 A		x		x		x	x	x	24 VDC	218
	Type J, K, E, N, R, S, T, B, C	250 VAC 6 A		x		x		x	x	x	24 VDC	220
		250 VAC 6 A		x		x	x	x	x		24 VDC	222









Output		Special Functions				Configuration					Power	Page
0 ... 10 mA 2 ... 10 mA 0 ... 20 mA 4 ... 20 mA	0 ... 5 V 1 ... 5 V 0 ... 10 V 2 ... 10 V		x	x		x	x	x	x		24 VDC	242

See page 261 for an explanation of the symbols used.

# JUMPFLEX® Approvals








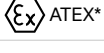
## 857 and 2857 Series

3

	cULus	E175199, UL 508
	cULus	E198726, ANSI/ISA 12.12.01
	BV (Bureau Veritas)	40179/A0 BV
	DNV (Det Norske Veritas)	A-13346
	GL (German Lloyd)	44627-07 HH
	NKK (Nippon Kaiji Kyokai)	TA12716M
	Polski Rejestr Statkow	TE/1989/880590/13
	ATEX*	TÜV 14 ATEX 112692X, II 3 G Ex nA IIC T4 Gc
	IECEX*	IECEX TUN 14.0030X, Ex nA IIC T4 Gc

Item No.	Item Description	Ex	PRS	NKK	GL	DNV	BV	UL
<b>Isolation Amplifiers</b>								
2857-401	Universal Isolation Amplifier							
857-400	Isolation Amplifier, Configurable with Zero/Span Adjustment	■	■	■	■	■	■	■
857-401	Isolation Amplifier, Configurable with Digital Output			■	■		■	■
857-402	Universal Isolation Amplifier	■	■					■
857-409	Bipolar Isolation Amplifier	■	■	■	■		■	■
857-411	Isolation Amplifiers, Pre-Configured	■	■	■	■	■	■	■
857-412	Isolation Amplifiers, Pre-Configured	■	■	■	■	■	■	■
857-413	Isolation Amplifiers, Pre-Configured	■	■	■	■	■	■	■
857-414	Isolation Amplifiers, Pre-Configured	■	■	■	■	■	■	■
857-415	Isolation Amplifiers, Pre-Configured	■	■	■	■	■	■	■
857-416	Isolation Amplifiers, Pre-Configured	■	■	■	■	■	■	■
<b>Isolation Amplifiers</b>								
857-420	Repeater Power Supplies							■
857-421	Repeater Power Supply, HART							■
857-423	Signal Splitters	■	■	■	■	■	■	■
857-424	Signal Splitter, (I,U)							■
857-450	Loop-Powered Isolation Amplifier	■	■					■
857-451	Passive Isolator, 1 Channel	■	■	■	■	■	■	■
857-452	Passive Isolator, 2-Channel	■	■	■	■	■	■	■
<b>Current and Voltage Signal Conditioners</b>								
2857-0550	Through-Hole Current Signal Conditioner							
857-550	Current Signal Conditioner	■	■	■	■	■	■	■
857-552	Rogowski Current Signal Conditioner	■	■					■
857-560	Voltage Signal Conditioner							
857-569	Power Signal Conditioner							
857-819	Millivolt Signal Conditioner	■	■	■	■	■	■	■

\*Available in May 2016

	cULus	E175199, UL 508
	cULus	E198726, ANSI/ISA 12.12.01
	BV (Bureau Veritas)	40179/A0 BV
	DNV (Det Norske Veritas)	A-13346
	GL (German Lloyd)	44627-07 HH
	NKK (Nippon Kaiji Kyokai)	TA12716M
	Polski Rejestr Statkow	TE/1989/880590/13
	ATEX*	TÜV 14 ATEX 112692X, II 3 G Ex nA IIC T4 Gc
	IECEX*	IECEX TUN 14.0030X, Ex nA IIC T4 Gc

Item No.	Item Description	Ex	PRS	NKK	GL	DNV	BV	UL
		Shipping Approvals						
<b>Temperature Signal Conditioners</b>								
857-800	Temperature Signal Conditioner for Pt and Resistance Sensors	■	■	■	■	■	■	■
857-801	Temperature Signal Conditioner for Pt and Resistance Sensors	■	■	■	■	■	■	■
857-810	Temperature Signal Conditioner for Thermocouples	■	■	■	■	■	■	■
857-811	Temperature Signal Conditioner for Thermocouples	■	■	■	■	■	■	■
857-812	Temperature Signal Conditioner for Thermocouples						■	■
857-808	Temperature Signal Conditioners PT46 & Cu53	■	■	■	■		■	■
857-815	Loop-Powered RTD Temperature Signal Conditioner							
857-818	Temperature Signal Conditioner for Ni Sensors	■	■	■	■		■	■
857-820	Temperature Signal Conditioner for KTY Sensors	■	■	■	■		■	■
<b>Threshold Value Switches</b>								
2857-533	RTD Threshold Value Switch							
2857-534	Thermocouple Threshold Value Switch							
857-531	Analog Threshold Value Switch		■	■	■	■	■	■
<b>Special Functions</b>								
857-500	Frequency Signal Conditioner	■	■	■	■		■	■
857-809	Potentiometer Signal Conditioners		■	■	■		■	■
<b>Accessories</b>								
857-979	Supply and Through Module	■	■	■	■		■	■
857-980	Interface Adapter for System Wiring		■	■	■	■	■	■

\*Available in May 2016

# JUMPFLEX® Signal Conditioners

## Universal Isolation Amplifier

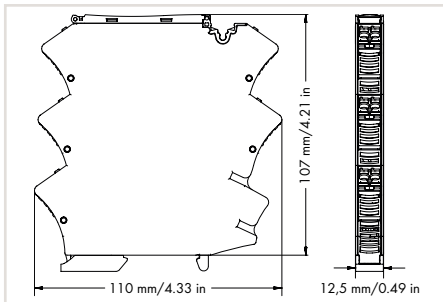
### 2857 Series



JUMPFLEX® Isolation Amplifier, bipolar current and voltage input signal, bipolar current and voltage output signal, digital output, configuration via software/display, supply voltage: 24 VDC, 12.5 mm wide

Item No.	Pack. Unit
2857-401	1

Terminal	Symbol	Function	Terminal	Symbol	Function
1.1	U+	INPUT VOLTAGE	4.1	OUT+	OUTPUT
1.2	U-		4.2	OUT-	
2.1	I+	INPUT CURRENT	5.1	U <sub>s</sub> +	POWER
2.2	I-		5.2	GND	
3.1	DO (GND)	DO	6.1	U <sub>s</sub> +	JUMPER POWER
3.2	DI (GND)	DI (HOLD)	6.2	GND	



#### Short description:

The universal isolation amplifier converts, amplifies, filters and electrically isolates analog signals.

#### Features:

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

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app, configuration display

##### Input

Input signal

Current:  
 $\pm 1 \text{ mA}$ ,  $0 \dots 1 \text{ mA}$ ,  
 $\pm 10 \text{ mA}$ ,  $0 \dots 10 \text{ mA}$ ,  $2 \dots 10 \text{ mA}$ ,  
 $\pm 20 \text{ mA}$ ,  $0 \dots 20 \text{ mA}$ ,  $4 \dots 20 \text{ mA}$ ,  
 $\pm 100 \text{ mA}$ ,  $0 \dots 100 \text{ mA}^*$   
 Voltage:  
 $\pm 1 \text{ V}$ ,  $0 \dots 1 \text{ V}$ ,  
 $\pm 10 \text{ V}$ ,  $0 \dots 10 \text{ V}$ ,  $2 \dots 10 \text{ V}$ ,  
 $\pm 30 \text{ V}$ ,  $0 \dots 30 \text{ V}$ ,  
 $\pm 100 \text{ V}$ ,  $0 \dots 100 \text{ V}$ ,  
 $\pm 200 \text{ V}$ ,  $0 \dots 220 \text{ V}^*$

Input resistance

$\geq 1 \text{ M}\Omega$  (U input);  $\leq 50 \Omega$  (I input)

Max. operating frequency

10 kHz / 5 kHz / 100 Hz / 30 Hz\* (configurable via DIP switch)

Overload capacity

-250 V, +250 V / -120 mA, +120 mA

##### Input – Digital:

HOLD Signal

11.8 V ... US

##### Output

Output signal

Current:

$\pm 10 \text{ mA}$ ,  $0 \dots 10 \text{ mA}$ ,  $2 \dots 10 \text{ mA}$ ,  
 $\pm 20 \text{ mA}$ ,  $0 \dots 20 \text{ mA}$ ,  $4 \dots 20 \text{ mA}^*$

Voltage:

$\pm 5 \text{ V}$ ,  $0 \dots 5 \text{ V}$ ,  $1 \dots 5 \text{ V}$ ,  
 $\pm 10 \text{ V}$ ,  $0 \dots 10 \text{ V}$ ,  $2 \dots 10 \text{ V}^*$

Load impedance

Current:  $\leq 600 \Omega$ ;  
 Voltage:  $\geq 1 \text{ k}\Omega$

##### Output – Digital:

Max. switching voltage

Supply voltage applied -0.3 V

Max. continuous current ( $I_{DO}$ )

100 mA (no internal limitation)

##### General Specifications

Nominal supply voltage  $U_S$

24 VDC

Supply voltage range

US -30 ... +30 %

Current consumption at 24 VDC

$\leq 70 \text{ mA}$  (+  $I_{DO}$ )

Response time ( $T_{10-90}$ )

< 1 ms

Transmission error

$\leq 0.1 \%$  of the full scale value

Temperature coefficient

$\leq 0.01 \%$  / K

Conformity marking

CE

Standards/Approvals

DIN EN 60664-1;  
 Safe isolation acc. DIN EN 61140

##### Environmental Requirements

Ambient operating temperature

-40 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

4 kV AC, 50 Hz, 1 min.

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP® (picoMAX® 5.0)

Conductor range

Solid/fine-stranded:  
 $0.2 \dots 2.5 \text{ mm}^2$  /  $24 \dots 12 \text{ AWG}$

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

12.5 x 107 x 110, height from upper-edge of DIN-rail

Weight

86 g

\*(Additional setting options via interface configuration software or interface configuration app)



## 2857-401

## DIP Switch Adjustability

● = ON

## DIP Switch S1

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

## DIP Switch S1

## DIP Switch S2

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

## DIP Switch S2

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

\* Bipolar only applies to ranges starting with 0.

\*\* acc. to NAMUR NE 43

# JUMPFLEX® Signal Conditioners

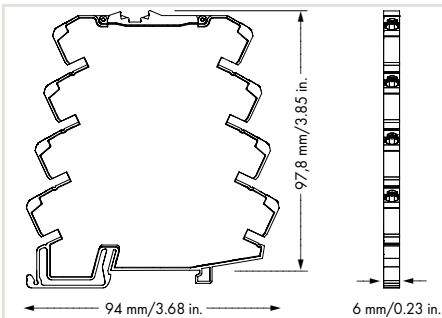
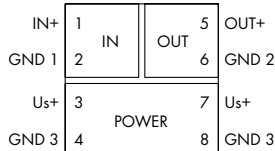
## Isolation Amplifier, Configurable with Zero/Span Adjustment

### 857 Series



JUMPFLEX® Isolation Amplifier, current and voltage input signal, current and voltage output signal, zero/span adjustment, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-400	1



#### Short description:

The configurable isolation amplifier converts, amplifies, filters, and electrically isolates standard analog signals.

#### Features:

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

#### Special Functions



#### Configuration via



Accessories,  
see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch

##### Input

Input signal

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

Load impedance

≤ 600 Ω (Out = mA)  
≥ 2 kΩ (Out = V)

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

US -30 ... +30 %

Current consumption at 24 VDC

≤ 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

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

(input/output/supply)

2.5 kV AC, 50 Hz, 1 min.

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid/fine-stranded:  
0.2 ... 2.5 mm<sup>2</sup> / 24 ... 12 AWG

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

36.8 g

For additional approvals, see page 180.

## 857-400

## DIP Switch Adjustability

● = ON

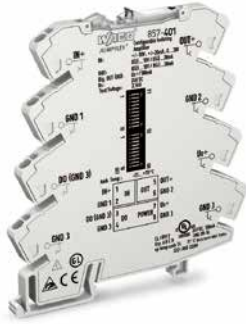
Dip Switch S1 (2-fold)		Dip Switch S2 (6-fold)					Max. Operating Frequency							
1	2	1	2	3	4	5		6						
●		0 ... 20 mA						0 ... 20 mA		5 kHz				
						●			4 ... 20 mA	●	100 Hz			
			●	●						0 ... 10 V				
			●	●		●				2 ... 10 V				
			●	●	●					0 ... 5 V				
			●	●	●	●				1 ... 5 V				
●		4 ... 20 mA					●			0 ... 20 mA				
											4 ... 20 mA			
			●	●					●			0 ... 10 V		
			●	●								2 ... 10 V		
			●	●	●				●			0 ... 5 V		
			●	●	●							1 ... 5 V		
●		0 ... 10 V						●			0 ... 20 mA			
							●					4 ... 20 mA		
			●	●								0 ... 10 V		
			●	●		●						2 ... 10 V		
			●	●	●							0 ... 5 V		
			●	●	●	●						1 ... 5 V		
●		2 ... 10 V						●			0 ... 20 mA			
												4 ... 20 mA		
			●	●					●				0 ... 10 V	
			●	●									2 ... 10 V	
			●	●	●				●				0 ... 5 V	
			●	●	●								1 ... 5 V	
		0 ... 5 V						●			0 ... 20 mA			
												4 ... 20 mA		
			●	●									0 ... 10 V	
			●	●		●							2 ... 10 V	
			●	●	●								0 ... 5 V	
			●	●	●	●							1 ... 5 V	
		1 ... 5 V						●			0 ... 20 mA			
												4 ... 20 mA		
			●	●					●				0 ... 10 V	
			●	●									2 ... 10 V	
			●	●	●				●				0 ... 5 V	
			●	●	●								1 ... 5 V	

## Default Settings

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

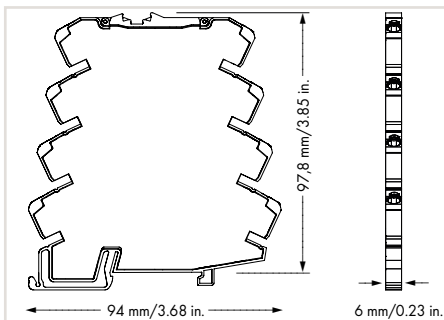
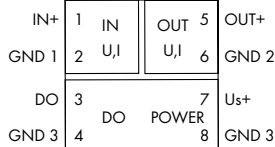
# JUMPFLEX® Signal Conditioners Isolation Amplifier, Configurable with Digital Output

## 857 Series



JUMPFLEX® Isolation Amplifier, current and voltage input signal, current and voltage output signal, digital output, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-401	1



### Short description:

The configurable isolation amplifier converts, amplifies, filters, and electrically isolates standard analog signals.

### Features:

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

### Special Functions



### Configuration via



Accessories,  
see page 258

### Technical Data

#### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

#### Input

Input signal

-20 ... +20 mA, -10 ... +10 V, 0 ... +30 V \*

Input resistance

≤ 200 Ω (I input)  
> 100 kΩ (U input)

Max. input signal

31.2 V (U<sub>IN</sub>) 100 mA (I<sub>IN</sub>)

#### Output

Output signal

0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V,  
0 ... 10 V, 2 ... 10 V, 0 ... 10 mA,  
2 ... 10 mA \*

Load impedance

≤ 600 Ω (Out = mA)  
≥ 2 kΩ (Out = V)

#### General Specifications

Nominal supply voltage U<sub>s</sub>

24 VDC

Supply voltage range

U<sub>s</sub> -30 ... +30 %

Current consumption at 24 VDC

≤ 40 mA

Max. measuring span

1 V, 2 mA

Max. measuring span

30 V, 40 mA

Transmission error

≤ 0.1 % of the full scale value

Temperature coefficient

≤ 0.01 % / K

EMC immunity to interference

EN 61000-6-2; EN 50121-3-2

EMC emission of interference

EN 61000-6-3

Conformity marking

CE

Standards/approvals

EN 61373; EN 61326-1

#### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

#### Safety and Protection

Test voltage

2.5 kV AC, 50 Hz, 1 min.

(input/output/supply)

#### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

#### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

42 g

For additional approvals, see page 180.

\* (Additional setting options via interface configuration software or interface configuration app)

## 857-401

## DIP Switch Adjustability

● = ON

Input Signal Start Value																
DIP S1																
1	2	3	4	5	6	7	V	mA	2	3	4	5	6	7	V	mA
							0	0							●	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

Input Signal End Value																	
DIP S1			DIP S2			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 <sub>N</sub> (switching)
		●			2 ... 10 mA						
●					0 ... 10 V	●	Lower limit of output range	Upper limit of output range	●	●	U <sub>N</sub> → GND (switching)
●					2 ... 10 V						
●		●			0 ... 5 V		Lower limit of output range	Upper limit of output range			
●		●			1 ... 5 V	●					

## Digital Output DO/Signaling

\*acc. to NAMUR NE 43

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).

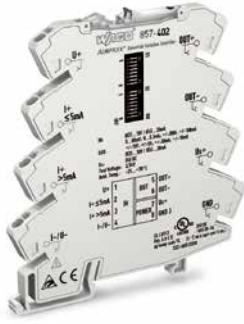
## Default Settings

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® Signal Conditioners

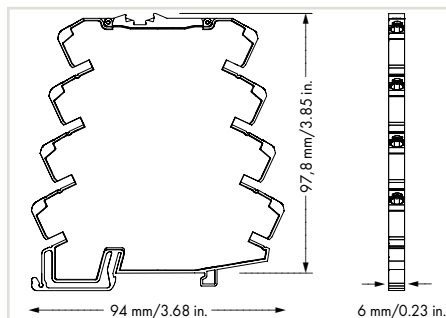
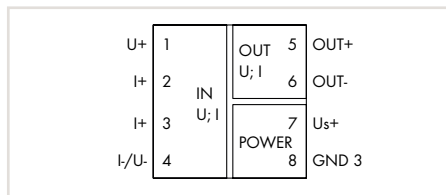
## Universal Isolation Amplifier

### 857 Series



JUMPFLEX® Isolation Amplifier, current and voltage input signal, bipolar current and voltage output signal, zero/span adjustment, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-402	1



#### Short description:

The universal isolation amplifier converts unipolar and bipolar standard signals and amplifies, filters and electrically isolates analog standard signals.

#### Features:

- 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 provides the analog signal limitation to output end values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal

± 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

± 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 (Out = mA)  
≥ 2 kΩ (Out = V)

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

$U_s -30 \dots +30 \%$

Current consumption at 24 VDC

≤ 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

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

(input/output/supply)

2.5 kV AC, 50 Hz, 1 min.

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

54.3 g

For additional approvals, see page 180.

## 857-402

## DIP Switch Adjustability

● = ON

DIP Switch S1

Input Signal Ranges						Zero/Span Adjustment	Max. Operating Frequency
1	2	3	4	5	6	7	8
							Inactive
				●		●	Active
				●	●		
			●				
			●	●			
			●	●	●		
			●	●	●		
	●						
	●			●			
	●		●	●			
	●	●					
	●	●		●			
	●	●	●				
	●	●	●	●			
●							
●				●			
●			●				
●			●	●			
●	●						
●	●			●			
●	●	●					
●	●	●	●				

DIP Switch S1

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

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

DIP Switch S2

Output Signal Ranges					Reserve	Clipping	Rocker Switch Lock
1	2	3	4	5	6	7	8
							inactive (analog response)
		●				●	active (limiting response)
		●		●			
		●	●				
	●						
	●			●			
	●	●					
	●	●	●				
●							
●				●			
●			●				

\*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® Signal Conditioners

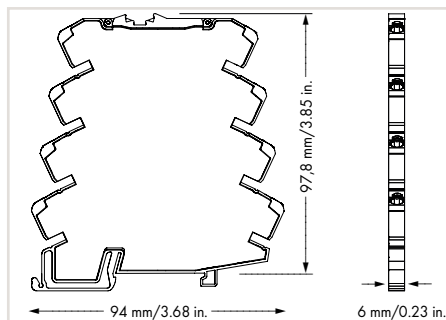
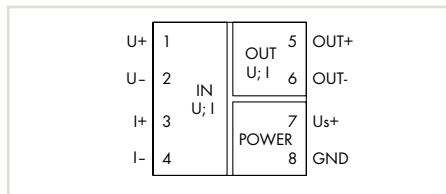
## Bipolar Isolation Amplifier, Configurable with Zero/Span Adjustment

### 857 Series



**JUMPFLEX®** Isolation Amplifier, bipolar current and voltage input signal, bipolar current and voltage output signal, zero/span adjustment, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-409	1



#### Short description:

The bipolar isolation amplifier converts unipolar and bipolar standard signals and amplifies, filters and electrically isolates analog standard signals.

#### Features:

- 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
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch

##### Input

Input 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

Input resistance

approx. 1 MΩ (U input)  
approx. 50 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 (Out = mA)  
≥ 2 kΩ (Out = V)

Overload capacity

32 V / 50 mA

Residual ripple

< 10 mV rms

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

$U_s -30 \dots +30 \%$

Current consumption at 24 VDC

≤ 25 mA

Max. operating frequency

100 Hz / 5 kHz (switchable via DIP switch)

Response time ( $T_{10-90}$ )

< 3.5 ms / < 60 μs

Transmission error

≤ 0.1 % of the full scale value

Temperature coefficient

≤ 0.01 % / K

Zero/span adjustment

± 5 % of upper-range value (adjustable via zero/span potentiometer)

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

2.5 kV AC, 50 Hz, 1 min.

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

42 g

For additional approvals, see page 180.



## 857-409

## DIP Switch Adjustability

● = ON

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	5 kHz	
●	●			± 10 mA			●	●		± 10 mA	●	100 Hz
●				± 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

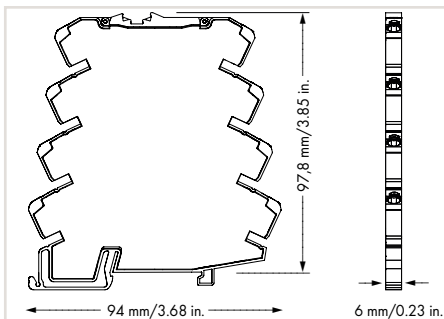
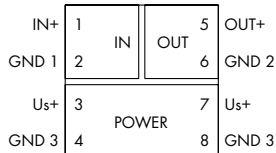
## JUMPFLEX® Signal Conditioners Isolation Amplifiers, Fixed Setting for Voltage or Current Signals

### 857 Series



JUMPFLEX® Isolation Amplifier, supply voltage:  
24 VDC, 6 mm wide

	Item No.	Pack. Unit
See tech. data	857-411	1
	857-412	1
	857-413	1
	857-414	1
	857-415	1
	857-416	1



#### Short description:

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

#### Features:

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

#### Technical Data

<b>Configuration</b>	
Configuration	DIP switch
<b>Input</b>	
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 (In = mA) ≥ 100 kΩ (In = V)
<b>Output</b>	
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 (Out = mA) ≥ 2 kΩ (Out = V)
Overload capacity	30 V / 50 mA
<b>General Specifications</b>	
Nominal supply voltage $U_s$	24 VDC
Supply voltage range	$U_s -30 \dots +30 \%$
Current consumption at 24 VDC	≤ 25 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
Conformity marking	CE
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
<b>Safety and Protection</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and Mounting Type</b>	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	49.2 g

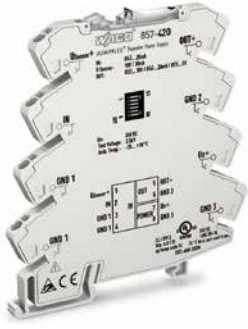
For additional approvals, see page 180.



# JUMPFLEX® Signal Conditioners

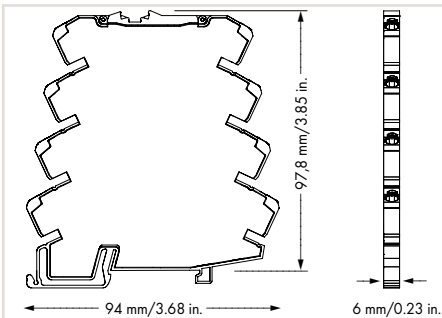
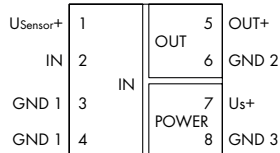
## Repeater Power Supply, Configurable with Current and Voltage Output

### 857 Series



JUMPFLEX® Isolation Amplifier, current input signal, current and voltage output signal, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-420	1



#### 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.

#### Features:

- Supplies SMART transmitters
- Calibrated scale switching
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Technical Data

Configuration	
Configuration	DIP switch
Input	
Input signal	0 ... 20 mA, 4 ... 20 mA (calibrated switchable)
Input resistance	≤ 50 Ω
Transmitter supply	U <sub>v</sub> = 18 V at 30 mA
Output	
Output signal	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V (calibrated switchable)
Load impedance	≤ 600 Ω (Out = mA) ≥ 2 kΩ (Out = V)
Offset	< 20 μA / < 10 mV
Residual ripple	< 10 mV rms
General Specifications	
Nominal supply voltage U <sub>s</sub>	24 VDC
Supply voltage range	U <sub>s</sub> -30 ... +30 %
Current consumption at 24 VDC	≤ 45 mA
Max. operating frequency	100 Hz
Response time (T <sub>10-90</sub> )	< 3.5 ms
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % / K
Conformity marking	CE
Environmental Requirements	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Safety and Protection	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
Connection and Mounting Type	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Dimensions and Weight	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	46.7 g

For additional approvals, see page 180.

#### Configuration via



Accessories,  
see page 258

# 857-420

## DIP Switch Adjustability

● = ON

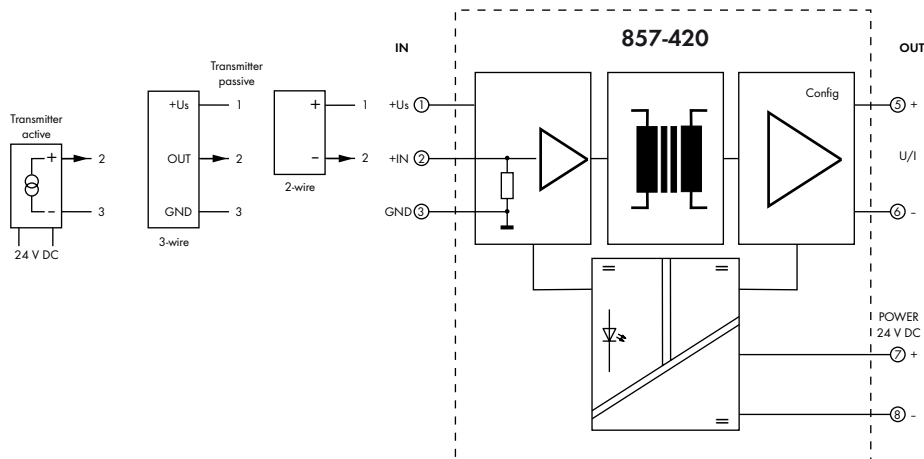
Dip Switch S1 (6-fold)

						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® Signal Conditioners

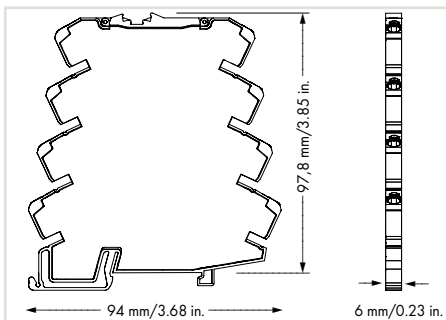
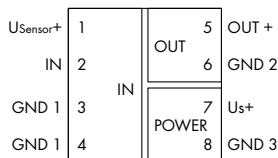
### Repeater Power Supply, HART

#### 857 Series



JUMPFLEX® Isolation Amplifier, current input signal, current output signal, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-421	1



#### 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.

#### Features:

- HART communication
- Supplies SMART transmitters
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

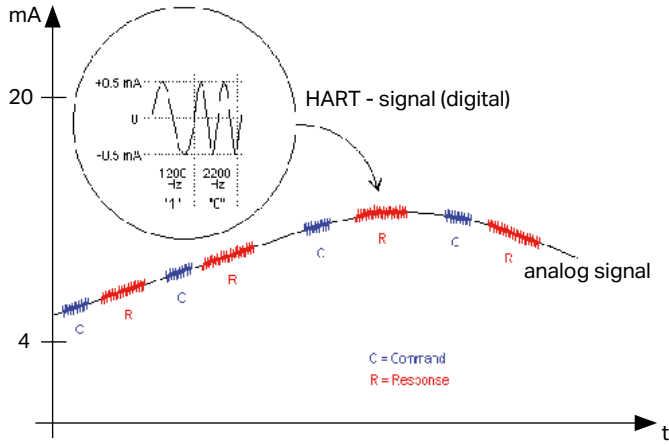
#### Technical Data

<b>Input</b>	
Input signal	4 ... 20 mA (with superimposed HART signal)
Input resistance	≤ 50 Ω
Transmitter supply	U <sub>v</sub> = 18 V at 30 mA
Max. input current	Max. power supply
<b>Output</b>	
Output signal	4 ... 20 mA (with superimposed HART signal)
Load impedance	230 ... 600 Ω
Offset	< 20 μA
Residual ripple	< 10 mV rms
<b>General Specifications</b>	
Nominal supply voltage U <sub>s</sub>	24 VDC
Supply voltage range	U <sub>s</sub> -30 ... +30 %
Current consumption at 24 VDC	≤ 45 mA
Max. operating frequency	100 Hz / ≥ 2.5 kHz HART signal
Response time (T <sub>10-90</sub> )	< 3.5 ms
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % / K
Conformity marking	CE
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
<b>Safety and Protection</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and Mounting Type</b>	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	47.8 g

For additional approvals, see page 180.

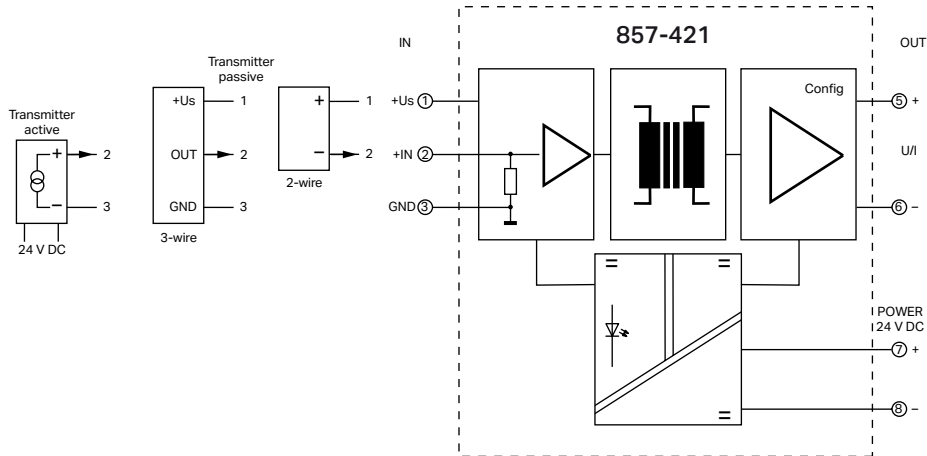
857-421

Simultaneous transmission of analog and digital signals



3

Connection assignment



# JUMPFLEX® Signal Conditioners

## Signal Splitter with 2 Configurable Current Outputs

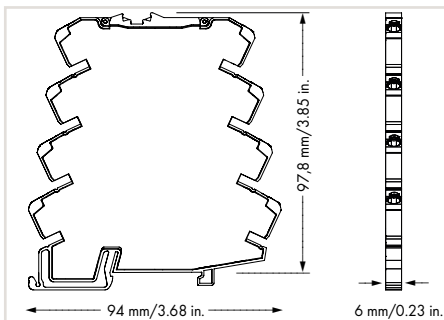
### 857 Series



JUMPFLEX® Isolation Amplifier, current and voltage input signal, 2 x current output signal, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-423	1

IN+	1	IN	5	OUT 1+
GND 1	2	OUT 1	6	GND 2
OUT 2+	3	OUT 2	7	U <sub>s</sub> +
GND 4	4	POWER	8	GND 3



#### Short description:

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

#### Features:

- Two configurable current outputs
- Calibrated scale switching
- Switchable max. operating frequency
- Safe 4-way isolation with 2.5 kV test voltage per EN 61140

#### Technical Data

Configuration	
Configuration	DIP switch
Input	
Input signal	0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V (calibrated switchable)
Input resistance	≤ 50 Ω (I <sub>n</sub> = mA) ≥ 100 kΩ (I <sub>n</sub> = V)
Output	
Output signal	2 x 0(4) ... 20 mA (calibrated switchable)
Load impedance	2 x 300 Ω
General Specifications	
Nominal supply voltage U <sub>s</sub>	24 VDC
Supply voltage range	U <sub>s</sub> -30 ... +30 %
Current consumption at 24 VDC	≤ 35 mA
Max. operating frequency	100 Hz / 1 kHz (configurable via DIP switch)
Response time (T <sub>10-90</sub> )	< 3.5 ms / < 300 μs
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % / K
Conformity marking	CE
Environmental Requirements	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Safety and Protection	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
Connection and Mounting Type	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Dimensions and Weight	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	40.6 g

For additional approvals, see page 180.

#### Configuration via



Accessories,  
see page 258



**857-423****DIP Switch Adjustability**

● = ON

**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				

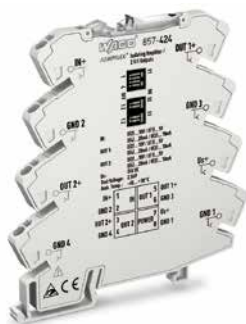
**Default Settings**

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

# JUMPFLEX® Signal Conditioners

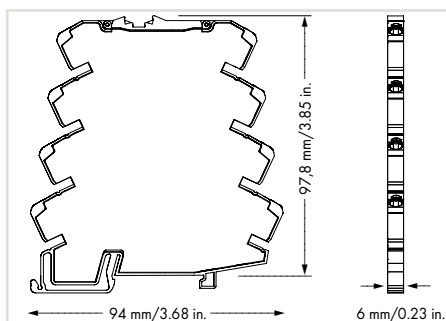
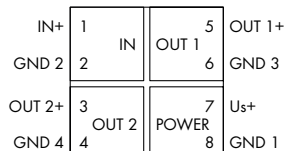
## Signal Splitter with 2 Configurable Voltage and Current Outputs

### 857 Series



JUMPFLEX® Isolation Amplifier, current and voltage input signal, 2 x current and voltage output signal, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-424	1



#### Short description:

The 857-423 Signal Splitter converts, amplifies, filters and electrically isolates analog standard signals. In addition, the input signal is split into two separate outputs.

#### Features:

- Two configurable voltage/current outputs
- Switchable max. operating frequency
- Safe 4-way isolation with 3 kV test voltage per EN 61010-1

#### Technical Data

Configuration	
Configuration	DIP switch
Input	
Input 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
Max. input signal	12 V, 24 mA
Overload capacity	30 V, 50 mA
Input resistance	< 50 Ω (I input) > 100 kΩ (U input)
Output	
Output signal	0 ... 10 V, 2 ... 10 V (calibrated switchable), 0 ... 20 mA, 4 ... 20 mA (calibrated switchable), max. 12 V, 24 mA
Load impedance	≤ 600 Ω (Out = mA) ≥ 2 kΩ (Out = V)
General Specifications	
Nominal supply voltage U <sub>S</sub>	24 VDC
Supply voltage range	U <sub>S</sub> -30 ... +30 %
Current consumption at 24 VDC	≤ 35 mA
Max. operating frequency	100 Hz / > 1 kHz (switchable via DIP switch)
Response time (T <sub>10-90</sub> )	< 3.5 ms / < 300 μs
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % / K
Conformity marking	CE
Standards/Approvals	EN 61010-1, EN 61326-1
Environmental Requirements	
Ambient operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +85 °C
Safety and Protection	
Test voltage (input/output/supply)	3 kV (AC), 50 Hz, 1 min.
Protection type	IP20
Connection and Mounting Type	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Dimensions and Weight	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	37.9 g

For additional approvals, see page 180.

#### Configuration via



Accessories,  
see page 258

## 857-424

## DIP Switch Adjustability

● = ON

## DIP Switch S1 (4 positions)

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

## DIP Switch S2 (2 positions)

Output Signal 1	
1	2
●	
	●
●	●

## DIP Switch S3 (2 positions)

Output Signal 2	
1	2
●	
	●
●	●

## Default Settings

Input	0 ... 20 mA
Output Signal 1	0 ... 10 V
Output Signal 2	0 ... 10 V
Max. Operating Frequency	> 1 kHz

# JUMPFLEX® Signal Conditioners Loop-Powered Isolation Amplifier

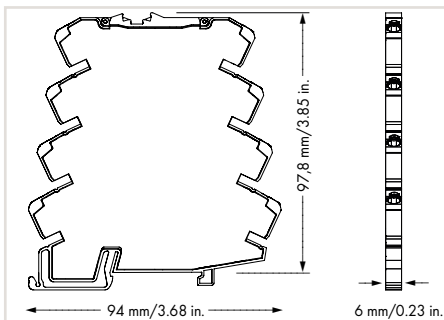
## 857 Series



**JUMPFLEX®** Loop-Powered Isolation Amplifier, bipolar current and voltage input signal, current output signal, configuration via DIP switch, power via input, 6 mm wide

Item No.	Pack. Unit
857-450	1

U+	1	IN U, I	OUT	5	U <sub>s</sub> +
U-	2		4-20 mA	6	OUT 1
I+	3	N.C.	N.C.	7	N.C.
I-	4		8	N.C.	



### Short description:

The 857-450 Loop-Powered Isolation Amplifier converts unipolar and bipolar standard signals and amplifies, filters and electrically isolates analog standard signals.

### Features:

- 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 per EN 61140

### Special Functions



### Configuration via



Accessories,  
see page 258

### Technical Data

#### Configuration

Configuration

DIP switch

#### Input

Input signal

Current:

± 5 mA, 0 ... 5 mA,  
± 10 mA, 0 ... 10 mA, 2 ... 10 mA,  
± 20 mA, 0 ... 20 mA, 4 ... 20 mA

Voltage:

± 1 V, 0 ... 1 V,  
± 5 V, 0 ... 5 V, 1 ... 5 V,  
± 10 V, 0 ... 10 V, 2 ... 10 V,  
± 20 V, ± 2 V, 0 ... 2 V

Input resistance

≤ 50 Ω (I<sub>n</sub> = mA)  
≥ 1 MΩ (U 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<sub>10-90</sub>)

< 3.5 ms

Transmission error

≤ 0.1 % of the full scale value

Temperature coefficient

≤ 0.01 % / K

Zero/span adjustment

± 5 % of upper range value

Conformity marking

CE

#### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

#### Safety and Protection

Test voltage

(input/output/supply)

2.5 kV AC, 50 Hz, 1 min.

#### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

#### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

37.9 g

For additional approvals, see page 180.

## 857-450

## DIP Switch Adjustability

● = ON

DIP switch (6 positions)

Input Signal					Output Signal	Max. Operating Frequency		
1	2	3	4	5		6		
					4 ... 20 mA	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			
	●	●	●	●	± 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

# JUMPFLEX® Signal Conditioners

## Passive Isolator, 1 Channel

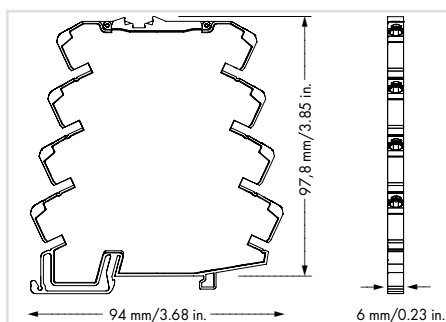
### 857 Series



JUMPFLEX® Passive Isolator, 1-channel, current input signal, current output signal, power via input, 6 mm wide

Item No.	Pack. Unit
857-451	1

IN+	1	IN	5	OUT+
GND 1	2	OUT	6	GND 2
N.C.	3		7	N.C.
N.C.	4		8	N.C.



#### Short description:

The 1-channel 857-451 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.

#### Features:

- No additional supply voltage required
- Safe 2-way isolation with 2.5 kV test voltage per EN 61140

#### Technical Data

Input	
Input signal	0(4) ... 20 mA
Response current	< 200 $\mu$ A
Voltage drop at input	< 2.5 V at 20 mA (output)
Max. input voltage	< 20 V
Max. input signal	40 mA
Output	
Output signal	0(4) ... 20 mA
Load impedance	$\leq$ 600 $\Omega$ (Temperature range restrictions may occur.)
General Specifications	
Max. operating frequency	100 Hz
Response time ( $T_{10-90}$ )	< 3.5 ms
Transmission error	$\leq$ 0.1 % of the full scale value
Load error	$\leq$ 0.05 % of upper range value per 100 $\Omega$ load
Temperature coefficient	$\leq$ 0.01 % / K
Conformity marking	CE
Environmental Requirements	
Ambient operating temperature	-25 ... +70 $^{\circ}$ C
Storage temperature	-40 ... +85 $^{\circ}$ C
Connection and Mounting Type	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Dimensions and Weight	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	33.8 g

For additional approvals, see page 180.

# JUMPFLEX® Signal Conditioners

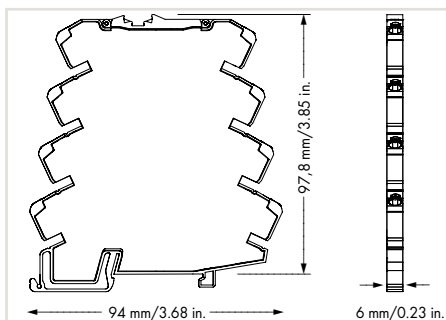
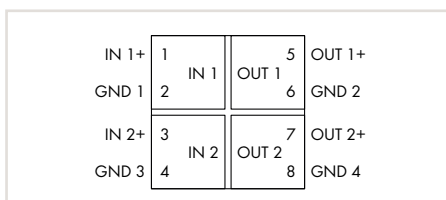
## Passive Isolator, 2-Channel

### 857 Series



JUMPFLEX® Passive Isolator, 2-channel, current input signal, 2 x current output signal, power via input, 6 mm wide

Item No.	Pack. Unit
857-452	1



#### Short description:

The 2-channel 857-452 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.

#### Features:

- No additional supply voltage required
- Safe 2-way isolation with 2.5 kV test voltage per EN 61140

#### Technical Data

Input (information per channel)	
Input signal	0(4) ... 20 mA
Response current	< 200 µA
Voltage drop at input	< 2.5 V at 20 mA (output)
Max. input voltage	< 20 V
Max. input signal	40 mA
Output (information per channel)	
Output signal	0(4) ... 20 mA
Load impedance	≤ 600 Ω (Temperature range restrictions may occur.)
General Specifications	
Max. operating frequency	100 Hz
Response time (T <sub>10-90</sub> )	< 3.5 ms
Transmission error	≤ 0.1 % of the full scale value
Load error	≤ 0.05 % of upper range value per 100 Ω load
Temperature coefficient	≤ 0.01 % / K
Conformity marking	CE
Environmental Requirements	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Connection and Mounting Type	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Dimensions and Weight	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	37.8 g

For additional approvals, see page 180.

# JUMPFLEX® Signal Conditioners

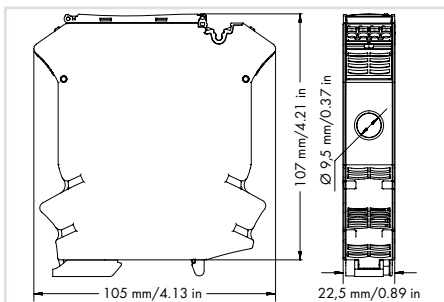
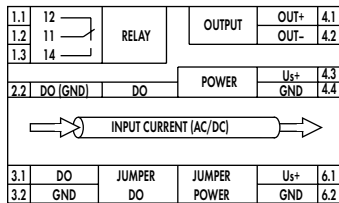
## Current Signal Conditioner 100 A AC/DC

### 857 Series



**JUMPFLEX®** Current Signal Conditioner, current input signal: 100 A AC/DC, current and voltage output signal, digital and relay output, configuration via software, supply voltage: 24 VDC, 22.5 mm wide

Item No.	Pack. Unit
2857-550	1



#### Short description:

The 2857-550 Current Signal Conditioner measures AC/DC currents up to 100 A, while converting the measured current into an analog standard signal at the output.

#### Features:

- Both digital signal output and relay with changeover contact react to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Clipping capability provides the analog signal limitation to output end values.
- Adjustable software filter
- Input/Output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

##### Input

Input signal

Response threshold

Resolution

Frequency range

##### Output

Output signal

Current:

Voltage:

Overcurrent

Measuring range overflow/underflow

Load impedance

Current:

Voltage:

Measuring procedure

##### Output – Digital:

Max. switching voltage

Max. continuous current ( $I_{BO}$ )

##### Output – Relay

Contact type

Contact material

Max. switching voltage

Max. continuous current (terminal blocks in a row)

Dielectric strength, open contact (AC, 1 min)

Pull-in/drop-out/bounce time typ.

##### General Specifications

Nominal supply voltage  $U_S$

Supply voltage range

Current consumption at 24 VDC

Max. operating frequency

Response time

Response time ( $T_{10-90}$ )

Linearity error

Measurement error

Temperature coefficient

Conformity marking

Standards/Approvals

##### Environmental Requirements

Ambient operating temperature

Storage temperature

##### Safety and Protection

Test voltage

(input/output/supply)

Test voltage

(measuring circuit – output)

##### Connection and Mounting Type

Connection technology

Conductor range

Solid

Fine-stranded

Strip length

Feedthrough for Measurement Conductor

##### Dimensions and Weight

Dimensions (mm) W x H x D

Weight

DIP switch, interface configuration software, interface configuration app, configuration display

500 ... 100 A (AC) / -100 A ... 100 A (DC)\*

500 mA (AC) / 250 mA (DC)

10 mA

15 ... 1000 Hz

$\pm 10$  mA, 0 ... 10 mA, 2 ... 10 mA,  $\pm 20$  mA, 0 ... 20 mA, 4 ... 20 mA\*

$\pm 5$  V, 0 ... 5 V, 1 ... 5 V,  $\pm 10$  V, 0 ... 10 V, 2 ... 10 V\*

0 % or +5 % (e.g., 10.5 V / 24 mA)

0 % or +2.5 %

$\leq 600 \Omega$

$\geq 1 \text{ k}\Omega$

True RMS measurement (TRMS) or Arithmetic mean value\*

Supply voltage applied -0.3 V

100 mA (no internal limitation)

1 changeover contact (1 u)

AgNi (gold-plated)

250 VAC

6A

1 kV<sub>rms</sub>

8 ms / 4 ms / 8 ms

24 VDC

$U_S -30 \dots +30 \%$

$\leq 50$  mA (+  $I_{BO}$ )

3.3 kHz

Signal cycle duration + 1 ms

max. 60 ms

$\leq 1 \%$

$\leq 0.2 \%$  (of the full scale value)

$\leq 0.01 \%$  / K

CE

DIN EN 60664-1;  
Safe isolation acc. to  
DIN EN 61140

-40 ... +70 °C

-40 ... +85 °C

2.5 kV AC, 50 Hz, 1 min.

4 kV AC, 50 Hz, 1 min.

Push-in CAGE CLAMP® (picoMAX® 5.0)

0.2 ... 2.5 mm<sup>2</sup>

24 ... 12 AWG

9 ... 10 mm / 0.35 ... 0.39 inch

9.5 mm  $\varnothing$

22.5 x 107 x 105, height from upper-edge of DIN-rail

106 g

(\* Additional setting options via interface configuration software or interface configuration app)



## 2857-550

## DIP Switch Adjustability

● = ON

## DIP Switch S1

Measuring Method		Filter		Analog Output Inverted		Output Signal (Bipolar for Arithmetic Mean Value)			
1		2		3		4	5	6	Analog Output
	True RMS		inactive		not inverted				(±) 0 ... 20 mA
●	Arithmetic mean value (bipolar output)	●	active	●	inverted		●		4 ... 20 mA
						●			(±) 0 ... 10 V
						●	●		2 ... 10 V
								●	(±) 0 ... 10 mA
							●	●	2 ... 10 mA
						●		●	(±) 0 ... 5 V
						●	●	●	1 ... 5 V

## DIP Switch S1

Measuring Range Underflow		Measuring Range Overflow		Overcurrent (Input Signal - End Value +20%)		Digital Output (DO)/ Relay	
7	8					9	10
		Lower measuring range -5%*	Upper measuring range +2.5%*	Upper measuring range +5%			Off
●		Lower measuring range	Upper measuring range +2.5%	Upper measuring range +5%	●		DO Us+ switching – relay pulls in
	●	Lower measuring range	Upper measuring range	Lower measuring range		●	DO GND switching – relay drops out
●	●	Lower measuring range -5 %	Upper measuring range +5%	Upper measuring range	●	●	Off

\*acc. to NAMUR NE 43

## DIP Switch S2

Lower Value				Upper value		
1	2	3	4	5	6	7
A / % (RMS)		A / % (arithmetic mean value)		A / %		
			Software configuration (0)			Software configuration (100)
●			0	●		100
	●		5		●	90
●	●		8	●	●	70
		●	10			50
●		●	12	●		30
	●	●	14		●	20
●	●	●	16	●	●	10
			●			
●			18			
	●		20			
		●	25			
●	●		30			
		●	35			
●		●	40			
	●	●	45			
●	●	●	50			

# JUMPFLEX® Signal Conditioners

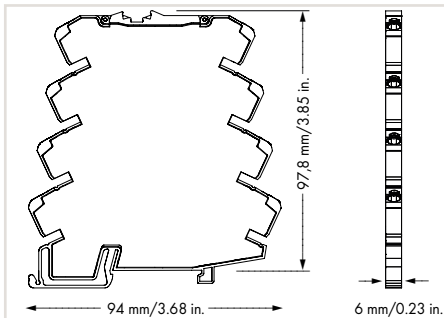
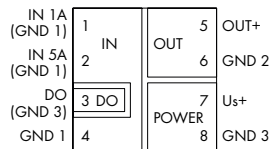
## Current Signal Conditioner 0 ... 1 A, 0 ... 5 A AC/DC

### 857 Series



**JUMPFLEX®** Current Signal Conditioner, current input signal: 5 A AC/DC, current and voltage output signal, digital output, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-550	1



#### Short description:

The 857-550 Current Signal Conditioner measures both 0 ... 1 A and 0 ... 5 A AC/DC currents, while converting the input signal to an analog standard signal at the output.

#### Features:

- PC configuration interface
- True RMS measurement or arithmetic mean value
- Digital switching output (configurable switching thresholds)
- Switchable filter function
- Calibrated scale switching
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140
- Extremely fast response times
- Measuring range overflow indication

#### Special Functions



#### Configuration via



Accessories,  
see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal  
Input resistance  
Frequency range  
Response threshold  
Current carrying capacity

0 ... 1 A AC/DC, 0 ... 5 A AC/DC\*  
10 mΩ (5 A), 47 mΩ (1 A)  
16 ... 400 Hz  
< 0.5 % (of measuring range nominal)  
2 x I<sub>N</sub> (continuous)

##### Output

Output signal  
Current:  
Voltage:

0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V\*  
0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA\*  
≤ 600 Ω (I output)\*\*  
≥ 2 kΩ (Out = V)  
\*\* Temperature range restrictions may occur.

Load impedance

260 ms (DC), 600 ms (AC 50 Hz)

Filter (T<sub>10-90</sub>)

##### Output – Digital:

Max. switching voltage  
Max. continuous current

Supply voltage applied  
500 mA (to 60 °C)  
100 mA (60 ... 70 °C)

##### General Specifications

Nominal supply voltage U<sub>s</sub>  
Supply voltage range  
Current consumption at 24 VDC

24 VDC  
U<sub>s</sub> -30 ... +30 %  
≤ 40 mA

Measuring procedure

Arithmetic mean value  
True RMS measurement (TRMS)\*

Response time

1.5 ms + signal cycle duration

Max. response time

60 ms

Max. measuring span

2 ... 1 A, 4 ... 5 A

Transmission error

≤ 0.1 % typ. (≤ 0.4 % max.)

Temperature coefficient

≤ 0.01 % / K

Linearity error

< 0.5 % (of measuring range nominal)

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature  
Storage temperature

-25 °C ... +70 °C (at nominal current)  
-40 ... +85 °C

##### Safety and Protection

Test voltage

2.5 kV AC, 50 Hz, 1 min.

(input/output/supply)

##### Connection and Mounting Type

Connection technology  
Conductor range

Push-in CAGE CLAMP®

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

50 g

For additional approvals, see page 180.

(\* Additional setting options via interface configuration software or interface configuration app)

## 857-550

## DIP Switch Adjustability

● = ON

## 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 <sub>S</sub> + switching
	●	Lower limit of measuring range	Upper limit of measuring range	Lower limit of measuring range	●	DO GND switching
●	●	Lower limit of measuring range	Upper limit of measuring range	Upper limit of measuring range	●	DO GND switching

\*acc. to NAMUR NE 43

## Digital Output DO/Signaling

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

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

## Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input Signal	0 ... 5 A
Measuring Method	Mean square value
Filter	not active
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	not active

# JUMPFLEX® Signal Conditioners

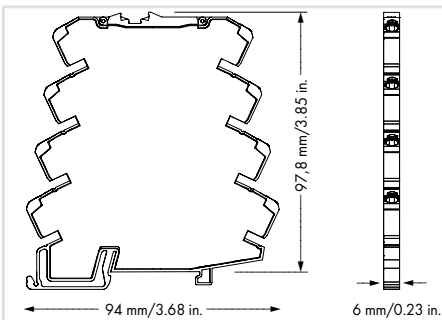
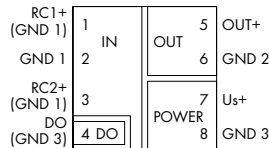
## Rogowski Signal Conditioner

### 857 Series



**JUMPFLEX® Current Signal Conditioner, input for Rogowski coils, current and voltage output signal, digital output, configuration via software, supply voltage: 24 VDC, 6 mm wide**

Item No.	Pack. Unit
857-552	1



#### Short description:

The 857-552 Rogowski Signal Conditioner records RMS values from alternating currents via a Rogowski coil, converting the input signal into an analog standard 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 per EN 61140
- No current bar interruption during installation
- Measuring range overflow indication

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal, current

50 Hz sinusoidal signals  
RC1 500 A: Sensitivity 10.05 mV  
RC2A 2000 A: Sensitivity 40.2 mV  
RC2B: 100 A Sensitivity 22.5 mV

Measurement range

RC1 ≤ 500 A  
RC2A ≤ 2000 A  
RC2B ≤ 4000 A

Frequency range

16 ... 1000 Hz

Response threshold

< 1 % (of measuring range nominal value)

##### Output

Output signal

Current:

0 ... 10 mA, 2 ... 10 mA,  
0 ... 20 mA, 4 ... 20 mA\*

Voltage:

0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V\*

Load impedance

I output ≤ 600 Ω, U output ≥ 1000 Ω

Overcurrent

0 % or +5 % (e.g., 10.5 V/21 mA)\*

Measuring range overflow/underflow

0 % or +2.5 %\*

Filter (T<sub>10-90</sub>)

600 ms (50 Hz)

##### Output – Digital:

Max. switching voltage

Supply voltage applied

Max. continuous current

100 mA

##### General Specifications

Nominal supply voltage U<sub>s</sub>

24 VDC

Supply voltage range

U<sub>s</sub> -30 ... +30 %

Current consumption at 24 VDC

≤ 40 mA

Resolution

RC1 250 mA  
RC2A 1000 mA  
RC2B 1500 mA

Measuring procedure

True RMS measurement (TRMS)

Response time

1.5 ms + signal cycle duration

Max. operating frequency

< 2 kHz

Response time (T<sub>10-90</sub>)

max. 60 ms

Linearity error

≤ 0.1 %

Temperature coefficient

≤ 0.01 % / K

Measurement error

< 1 %

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

2.5 kV AC, 50 Hz, 1 min.

(input/output/supply)

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Solid

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Fine-stranded

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

36.2 g

For additional approvals, see page 180.

(\* Additional setting options via interface configuration software or interface configuration app)

## 857-552

## DIP Switch Adjustability

● = ON

## DIP Switch S1

Input Signal		RC Configuration Input		Filter		Output Signal			
1		2		3		4	5	6	
	RC1 = RT500 from LEM		RC2A = RT2000 from LEM		off				0 ... 20 mA
●	RC2	●	RC2B = 22.5 mV/kA	●	active		●		4 ... 20 mA
						●			0 ... 10 V
						●	●		2 ... 10 V
								●	0 ... 10 mA
							●	●	2 ... 10 mA
						●		●	0 ... 5 V
						●	●	●	1 ... 5 V

## Filter

The filter function allows a low-pass filter to be switched on in order to mask or "smooth out" oscillating measured values (e.g., during trailing edge flows).

## DIP Switch S1

		Measuring Range Underflow	Measuring Range Overflow	Overcurrent (Input Signal - End Value + 20%)			Digital Output DO Signaling
7	8				9	10	
		Lower limit of measuring range +5 %'	Upper limit of measuring range +2.5 %'	Upper limit of measuring range +5 %'			DO not active
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	Upper limit of measuring range +5 %		●	DO U <sub>S</sub> + switching
	●	Lower limit of measuring range	Upper limit of measuring range	Lower limit of measuring range	●	●	DO GND switching
●	●	Lower limit of measuring range	Upper limit of measuring range	Upper limit of measuring range			

\*acc. to NAMUR NE 43

## Digital Output DO/Signaling

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

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

## Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input Signal	RC1 500 A
Measuring Method	Mean square value
Filter	not active
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	not active

# JUMPFLEX® Signal Conditioners

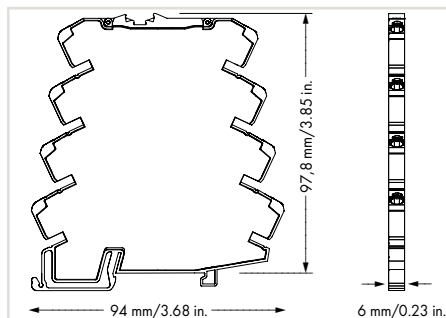
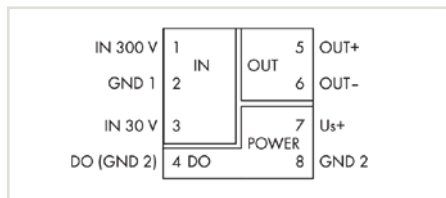
## Voltage Signal Conditioner

### 857 Series



**JUMPFLEX® Voltage Signal Conditioner**, current input signal for AC and DC voltages, current and voltage output signal, digital output, configuration via software/DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-560	1



#### Short description:

The 857-560 Voltage Signal Conditioner measures AC and DC voltages up to 300 V AC/DC and converts the input signal into an analog standard signal at the output.

#### Features:

- Two isolated measurement inputs for 30 V and 300 V AC/DC
- True RMS measurement or arithmetic mean value
- A digital signal output reacts to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values)
- Switchable filter function
- Safe 3-way isolation with 3 kV test voltage per EN 61010-1

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

##### Input

Input signal

Response threshold

Input resistance

Frequency range

Overload capacity

Resolution

##### Output

Output signal

Load impedance

##### Output – Digital:

Max. switching voltage

Max. continuous current

##### General Specifications

Nominal supply voltage  $U_s$

Supply voltage range

Current consumption at 24 VDC

Measuring procedure

Max. operating frequency

Response time typ. signal cycle duration

Response time ( $T_{10-90}$ )

Temperature coefficient

Linearity error

Measurement error

Conformity marking

Standards/Approvals

##### Environmental Requirements

Ambient operating temperature

Storage temperature

##### Safety and Protection

Test voltage

(input/output/supply)

Protection type

##### Connection and Mounting Type

Connection technology

Conductor range

Solid

Fine-stranded

Strip length

##### Dimensions and Weight

Dimensions (mm) W x H x D

Weight

DIP switch, interface configuration software, interface configuration app

300 V AC/DC or 30 V AC/DC

IN 1: 300 mV, IN 2: 30 mV

> 300 k $\Omega$

AC 10 ... 100 Hz

IN 1: 600 V; IN 2: 60 V (permanent)

IN 1: 30 mV, IN 2: 3 mV

$\pm 0 \dots 20$  mA, 4 ... 20 mA,

$\pm 0 \dots 10$  mA, 2 ... 10 mA

$\pm 0 \dots 10$  V, 2 ... 10 V,

$\pm 0 \dots 5$  V, 1 ... 5 V

$\leq 600 \Omega$  (I output);

$\geq 1$  k $\Omega$  (U output)

Supply voltage applied

100 mA

24 VDC

$U_s -30 \dots +30$  %

46 mA +  $I_{D0}$

Effective value (RMS) or arithmetic mean value

2 kHz

+ 1 ms

60 ms

$\leq 0.01$  % / K

$\leq 0.1$  %

< 0.5 %

CE

EN 61010-1, EN 61326-1

-40 ... +70 °C

-40 ... +85 °C

3 kV (AC), 50 Hz, 1 min.

IP20

Push-in CAGE CLAMP®

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

9 ... 10 mm / 0.35 ... 0.39 inch

6 x 97.8 x 94, height from upper-edge of DIN-rail

55 g

## 857-560

## DIP Switch Adjustability

● = ON

## DIP Switch S1

1	2	Input	3	Measuring Method	4	Filter
		300 V		RMS		Off
	●	150 V	●	Arithmetic mean value	●	Active
●		30 V				
●	●	15 V				

## DIP Switch S1

5	6	7	Output Signal Range
			(+/-) 0 ... 20 mA
	●		4 ... 20 mA
●			(+/-) 0 ... 10 V
●	●		2 ... 10 V
		●	(+/-) 0 ... 10 mA
	●	●	2 ... 10 mA
●		●	(+/-) 0 ... 5 V
●	●	●	1 ... 5 V

## DIP Switch S1

8	9	Measuring Range Underflow	Measuring Range Overflow	10	Digit Output DO/ Signaling
		Lower limit of measuring range -5 %*	Upper limit of measuring range +2.5 %*		DO V <sub>S</sub> + switching
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	●	DO GND switching
	●	Lower limit of measuring range	Upper limit of measuring range		
●	●	Lower limit of measuring range	Upper limit of measuring range		

\*per NAMUR NE 43

## 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).

## 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.

## Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input	300 V
Measuring Method	RMS
Filter	Off
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	V <sub>S</sub> + switching

# JUMPFLEX® Signal Conditioners

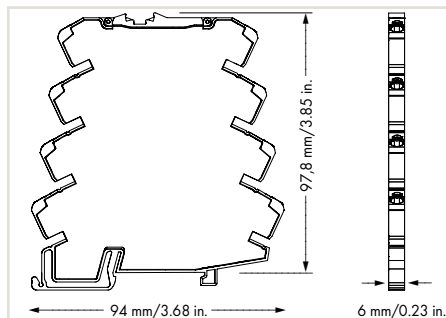
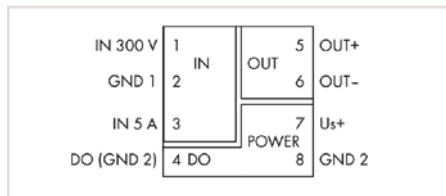
## Power Signal Conditioner

### 857 Series



JUMPFLEX® Power Signal Conditioner, current and voltage input signal, current and voltage output signal, digital output, configuration via software/DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-569	1



#### Short description:

The 857-569 Power Signal Conditioner measures AC and DC voltages and AC and DC currents and converts the input signal into an analog standard signal at the output. Measured value processing can be switched between effective, apparent or reactive power and the phase angle.

#### Features:

- Two isolated measurement inputs for AC and DC voltages and AC and DC currents
- RMS measurement (RMS)
- A digital signal output reacts to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values)
- Switchable filter function
- Safe 3-way isolation with 3 kV test voltage per EN 61010-1

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal

IN 1: 300 V AC/DC, IN 2: 5 A AC/DC

Response threshold

IN 1: 300 mV  
IN 2: 10 mA

Resolution

IN 1: 30 mV  
IN 2: 1 mA

Input resistance

≤ 10 mΩ (I input);  
> 300 kΩ (U output)

Frequency range

AC 15 ... 70 Hz

Overload capacity

10 A AC/DC (permanent)

##### 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  
(can be inverted, also bipolar)

Load impedance

≤ 600 Ω (I output);  
≥ 1 kΩ (U output)

##### Output – Digital:

Max. switching voltage

Supply voltage applied

Max. continuous current

100 mA

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

$U_s -30 \dots +30 \%$

Current consumption at 24 VDC

≤ 46 mA

Measuring procedure

RMS measurement (RMS)

Measured variables

Effective power, apparent power, reactive power, power factor

Max. operating frequency

2 kHz

Response time typ. signal cycle duration

+ 1 ms

Response time ( $T_{10-90}$ )

100 ms

Temperature coefficient

≤ 0.01 % / K

Linearity error

≤ 0.1 %

Measurement error

(relative to upper limit of measuring range)

Voltage: < 0.5%  
Current: < 0.5%  
Phase angle: < 0.5%

Conformity marking

CE

Standards/Approvals

EN 61010-1, EN 61326-1

##### Environmental Requirements

Ambient operating temperature

-40 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

3 kV (AC), 50 Hz, 1 min.

Protection type

IP20

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Solid

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Fine-stranded

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

55 g



## 857-569 DIP Switch Adjustability

● = ON

### DIP Switch S1

1	2	Input	3	4	Filter
		Active Power			Off
	●	Apparent Power	●		Active
●		Reactive Power			
●	●	Power factor			

### DIP Switch S1

5	6	7	Output Signal Range
			0 ... 20 mA
	●		4 ... 20 mA
●			0 ... 10 V
●	●		2 ... 10 V
		●	0 ... 10 mA
	●	●	2 ... 10 mA
●		●	0 ... 5 V
●	●	●	1 ... 5 V

### DIP Switch S1

8	9	Measuring Range Underflow	Measuring Range Overflow	10	Digit Output DO/ Signaling
		Lower limit of measuring range -5 %	Upper limit of measuring range +2.5 %		DO V <sub>S</sub> + switching
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	●	DO GND switching
	●	Lower limit of measuring range	Upper limit of measuring range		
●	●	Lower limit of measuring range	Upper limit of measuring range		

#### 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).

#### 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.

#### Default Setting <sup>1</sup> per NAMUR NE 43

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input	Power
Measuring Method	Active power
Filter	Off
<b>Output</b>	
Output	Current
Output Signal Range	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	V <sub>S</sub> + switching

# JUMPFLEX® Signal Conditioners

## Millivolt Signal Conditioner from -100 ... +100 mV and 0 ... 1000 mV

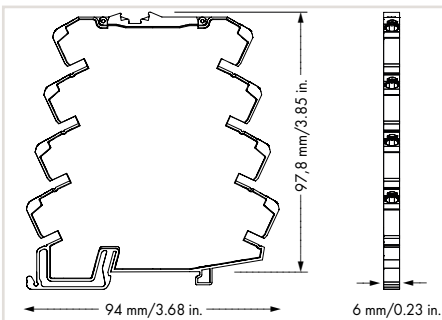
### 857 Series



**JUMPFLEX® Voltage Signal Conditioner, bipolar voltage input signal, current and voltage output signal, configuration via software, supply voltage: 24 VDC, 6 mm wide**

Item No.	Pack. Unit
857-819	1

IN+	1	IN	OUT	5	OUT+
IN-	2	mV	U <sub>I</sub>	6	GND 1
N.C.	3			7	U <sub>s</sub> +
N.C.	4		POWER	8	GND 2



#### Short description:

The 857-819 Millivolt Signal Conditioner converts input millivolt signals into an analog standard signal on the output side.

#### Features:

- PC configuration interface
- Calibrated scale switching
- Clipping capability provides the analog signal limitation to output end values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories,  
see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal

-100 mV ... +100 mV,  
0 ... 200 mV, 0 ... 1000 mV\*  
(in 100 mV increments)

Input resistance

> 1 MΩ

Max. input signal

31.2 V

##### 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)

Step response

50 ms

##### General Specifications

Nominal supply voltage U<sub>s</sub>

24 VDC

Supply voltage range

U<sub>s</sub> -30 ... +30 %

Current consumption at 24 VDC

≤ 40 mA

Max. measuring span

10 mV

Transmission error

≤ 0.1 % of upper range value

Temperature coefficient

≤ 0.01 % / K

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

(input/output/supply)

2.5 kV AC, 50 Hz, 1 min.

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

50 g

For additional approvals, see page 180.

(\* Additional setting options via interface configuration software or interface configuration app)



# JUMPFLEX® Signal Conditioners

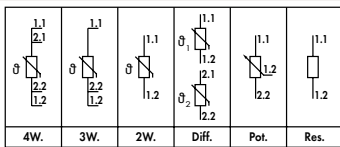
## RTD Threshold Value Switch

### 2857 Series

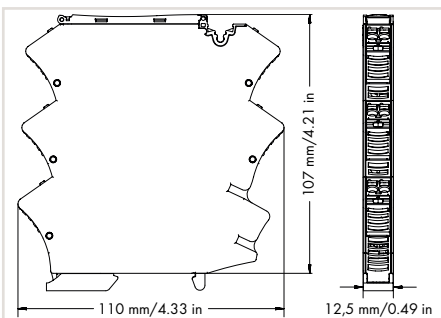


JUMPFLEX® Threshold Value Switch, RTD sensors, relay/1 make contact, digital output, configuration via software, supply voltage: 24 VDC, 12.5 mm wide

Item No.	Pack. Unit
2857-533	1



1.1	INPUT SENSOR	DO	DO	4.1
1.2			GND	4.2
2.1			Us+	5.1
2.2		GND	5.2	
3.1	RELAY	JUMPER POWER	Us+	6.1
3.2			GND	6.2



#### Short description:

The 2857-533 RTD Threshold Value Switch for RTD sensors, potentiometers and resistors monitors and reports signals of up to two switching thresholds.

#### Features:

- Both digital signal output and relay with make contact react to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Configurable RTD factor
- Adjustable software filter
- Input/Output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app, configuration display

##### Input

Input signal

RTD sensors, potentiometers and resistors\*

Sensor types

Pt100, Pt200, Pt500, Pt1000, Pt5000, Pt10000, Pt10 ... Pt20000 (expanded) \*

Sensor Connection

2-, 3-, 4-wire, difference

Sensor power supply

< 0.5 mA

Temperature range

-200 ... +850 °C

Resistor input

0 ... 100 kΩ

##### Output

###### Output – Digital:

Max. switching voltage

Supply voltage applied -0.3 V

Max. continuous current ( $I_{DC}$ )

100 mA (no internal limitation)

Number of switching thresholds

1 or 2

Configurable rise and fall delay time

0 ... 10 s (via DIP switch);  
0 ... 60 s (expanded)

###### Output – Relay

Contact type

1 make contact (1 a)

Contact material

AgNi (gold-plated)

Max. switching voltage

250 VAC

Max. continuous current (terminal blocks in a row)

6 A (up to 60 °C),  
3 A (60 ... 70 °C)

Dielectric strength, open contact (AC, 1 min)

1 kV<sub>rms</sub>

Pull-in/drop-out/bounce time typ.

8 ms / 4 ms / 8 ms

Number of switching thresholds

1 or 2 (adjustable)

Configurable rise and fall delay time

0 ... 10 s (via DIP switch); 0 ... 60 s (expanded)

##### General Specifications

Nominal supply voltage  $U_S$

24 VDC

Supply voltage range

$U_S$  -30 ... +30 %

Current consumption at 24 VDC

≤ 40 mA +  $I_{DC}$

Measurement error

± 1 K

##### Environmental Requirements

Ambient operating temperature

-40 ... +70 °C

Storage temperature

-40 ... +85 °C

Conformity marking

CE

Standards/Approvals

DIN EN 60664-1;  
Safe isolation acc. DIN EN 61140

##### Safety and Protection

Test voltage

4 kV AC, 50 Hz, 1 min.

(input/output/supply)

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP® (picoMAX® 5.0)

Conductor range

0.2 ... 2.5 mm<sup>2</sup>

Solid

24 ... 12 AWG

Fine-stranded

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

12.5 x 107 x 110, height from upper-edge of DIN-rail

Weight

86 g

(\* Additional setting options via interface configuration software or interface configuration app)

## 2857-533

## DIP Switch Adjustability

● = ON

## DIP Switch S1

Sensor Type			Connection Technology			Hysteresis		Rise/Fall Delay Time Relay/ Digital Output (DO)				
1	2	3	4	5	6	T / K	7	8	9	t / s	10	Not assigned
						3				0		
●						5				1		
	●								●	2		
●	●								●	3		
		●								4		
●		●							●	5		
	●	●								8		
●	●	●							●	10		

## DIP Switch S2

Starting Value									End Value						
1	2	3	4	5	Temperature / °C	Resistance / Ω	Potentiometer Position	6	7	8	9	10	Temperature / °C	Resistance / Ω	Potentiometer Position
					0	OFF	OFF						100	OFF	OFF
●					OFF	10	0 %	●					OFF	10	0 %
	●				-200	15	5 %		●				-200	15	5 %
●	●				-150	22	10 %	●	●				-150	22	10 %
		●			-100	33	15 %			●			-100	33	15 %
●		●			-50	47	20 %	●		●			-50	47	20 %
	●	●			-10	68	25 %		●	●			-10	68	25 %
●	●	●			10	100	30 %	●	●	●			10	100	30 %
			●		20	120	35 %				●		20	120	35 %
●			●		30	150	40 %	●			●		30	150	40 %
	●	●			40	220	45 %		●	●	●		40	220	45 %
●	●		●		50	330	50 %	●	●		●		50	330	50 %
		●	●		60	470	55 %			●	●		60	470	55 %
●		●	●		70	560	60 %	●		●	●		70	560	60 %
	●	●	●		80	680	65 %		●	●	●		80	680	65 %
●	●	●	●		90	1000	70 %	●	●	●	●		90	1000	70 %
				●	100	1200	75 %					●	100	1200	75 %
●				●	150	1500	80 %	●				●	150	1500	80 %
	●			●	200	2200	85 %		●			●	200	2200	85 %
●	●			●	250	3300	90 %	●	●			●	250	3300	90 %
		●		●	300	4700	95 %			●		●	300	4700	95 %
●	●	●		●	350	5600	100 %	●	●	●		●	350	5600	100 %
	●	●		●	400	6800	OFF		●	●	●		400	6800	OFF
●	●	●		●	450	10000	OFF	●	●	●		●	450	10000	OFF
			●	●	500	12000	OFF				●	●	500	12000	OFF
●			●	●	550	15000	OFF	●			●	●	550	15000	OFF
	●	●		●	600	22000	OFF		●	●	●		600	22000	OFF
●	●	●		●	650	33000	OFF	●	●	●	●		650	33000	OFF
		●	●	●	700	47000	OFF			●	●	●	700	47000	OFF
●		●	●	●	750	56000	OFF	●		●	●	●	750	56000	OFF
	●	●	●	●	800	68000	OFF		●	●	●	●	800	68000	OFF
●	●	●	●	●	850	100000	OFF	●	●	●	●	●	850	100000	OFF

## Default Settings

Sensor Type	Pt100
Connection Technology	2-wire
Starting Value	0 °C
End Value	100 °C
Hysteresis	3 K
Rise/Fall Delay Time Relay/Digital Output (DO)	0 s

# JUMPFLEX® Signal Conditioners

## TC Threshold Value Switch

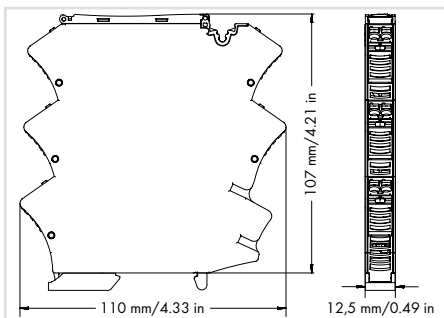
### 2857 Series



JUMPFLEX® Threshold Value Switch, thermocouple, relay/1 changeover contact, digital output, configuration via software, supply voltage: 24 VDC, 12.5 mm wide

Item No.	Pack. Unit
2857-534	1

1.1	TC+	INPUT SENSOR	DO	DO	4.1	
1.2	TC-			GND	4.2	
2.1	11	RELAY	POWER	Us+	5.1	
2.2	12			GND	5.2	
3.1	11			JUMPER	Us+	6.1
3.2	14			POWER	GND	6.2



#### Short description:

The 2857-534 Thermocouple Threshold Value Switch for TC sensors monitors and reports signals of up to two switching thresholds.

#### Features:

- Both digital signal output and relay with changeover contact react to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Adjustable software filter
- Input/Output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app, configuration display

##### Input

Input signal

Thermocouples\*

Sensor types

Thermocouple  
Type J, K, E, N, R, S, T, B, C\*

Temperature range

Type J: -210 ... +1200 °C  
Type K: -200 ... +1372 °C

Cold junction compensation

On/Off (default: On)

Cold junction error

3 K (type 2 K)

##### Output

###### Output – Digital:

Max. switching voltage

Supply voltage applied -0.3 V

Max. continuous current ( $I_{DO}$ )

100 mA (no internal limitation)

Number of switching thresholds

1 or 2

Configurable rise and fall delay time

0 ... 10 s (via DIP switch);  
0 ... 60 s (expanded)

###### Output – Relay

Contact type

1 changeover contact (1 u)

Contact material

AgNi (gold-plated)

Max. switching voltage

250 VAC

Max. continuous current (terminal blocks in a row)

6 A (up to 60 °C),  
3 A (60 ... 70 °C)

Dielectric strength, open contact (AC, 1 min)

1 kV<sub>rms</sub>

Pull-in/drop-out/bounce time typ.

8 ms / 4 ms / 8 ms

Number of switching thresholds

1 or 2 (adjustable)

Configurable rise and fall delay time

0 ... 10 s (via DIP switch); 0 ... 60 s (expanded)

##### General Specifications

Nominal supply voltage  $U_S$

24 VDC

Supply voltage range

$U_S$  -30 ... +30 %

Current consumption at 24 VDC

≤ 40 mA +  $I_{DO}$

Measurement error

± 1 K

Temperature coefficient

≤ 0.01 % / K

Conformity marking

CE

Standards/Approvals

DIN EN 60664-1;  
Safe isolation acc. DIN EN 61140

##### Environmental Requirements

Ambient operating temperature

-40 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

4 kV AC, 50 Hz, 1 min.

(input/output/supply)

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP® (picoMAX® 5.0)

Conductor range

0.2 ... 2.5 mm<sup>2</sup>

Solid

24 ... 12 AWG

Fine-stranded

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

12.5 x 107 x 110, height from upper-edge of DIN-rail

Weight

87 g

(\* Additional setting options via interface configuration software or interface configuration app)

## 2857-534

## DIP Switch Adjustability

● = ON

## DIP Switch S1

Sensor Type Thermocouple					Cold Junction Compensation		Hysteresis		Rise/Fall Delay Time Relay/Digital Output (DO)					
1	2	3	4	Type	5		6	T / K	7	8	9	t / s	10	Not assigned
				J		ON		3				0		
●				K	●	OFF	●	5	●			1		
	●			E						●		2		
●	●			R					●	●		3		
			●	N							●	4		
●			●	S					●		●	5		
	●	●		T						●	●	8		
●	●	●		B					●	●	●	10		
			●	C										

## DIP Switch S2

Lower Value					Upper Value						
1	2	3	4	5	6	7	8	9	10		
Temperature / °C					Temperature / °C						
										0	100
●						●				OFF	OFF
	●						●			-200	-200
●	●					●	●			-150	-150
		●						●		-100	-100
●		●				●		●		-50	-50
	●	●					●	●		50	50
●	●	●				●	●	●		100	100
			●						●	150	150
●			●			●			●	200	200
	●		●				●		●	250	250
●	●		●			●	●		●	300	300
		●	●					●	●	350	350
●		●	●			●		●	●	400	400
	●	●	●				●	●	●	450	450
●	●	●	●			●	●	●	●	500	500
				●						550	550
●				●		●			●	600	600
	●			●			●		●	650	650
●	●			●		●	●		●	700	700
		●		●				●	●	750	750
●	●			●		●		●	●	800	800
	●	●		●			●	●	●	850	850
●	●	●		●		●	●		●	900	900
			●	●					●	950	950
●			●	●		●			●	1000	1000
	●		●	●			●		●	1050	1050
●	●		●	●		●	●		●	1100	1100
		●	●	●				●	●	1150	1150
●		●	●	●		●		●	●	1200	1200
	●	●	●	●			●	●	●	1300	1300
●	●	●	●	●		●	●	●	●	1400	1400

## Default Settings

Cold Junction Compensation	ON
Sensor Type	Thermocouple of type J
Lower Value	0 °C
Upper Value	100 °C
Hysteresis	3 K
Rise/Fall Delay Time Relay/Digital Output (DO)	0 s

# JUMPFLEX® Signal Conditioners

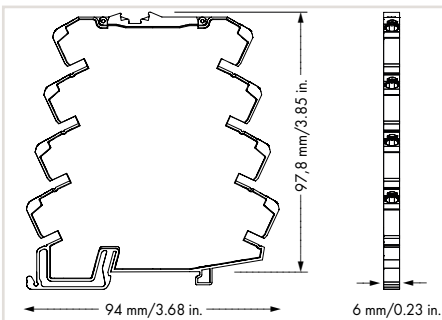
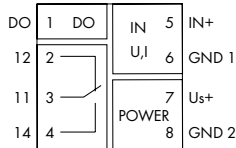
## Threshold Value Switch with Analog Input and Changeover Relay Output

### 857 Series



**JUMPFLEX®** Threshold Value Switch, analog values, relay/1 changeover contact, digital output, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-531	1



#### Short description:

The 857-531 Threshold Value Switch for analog signals monitors analog standard signals and reports signals exceeding a preset threshold.

#### Features:

- 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 2.5 kV test voltage per EN 61140

#### Technical Data

Configuration	
Configuration	DIP switch, push/slide switch, interface configuration software, interface configuration app
Input	
Input signal	-10 ... +10 V, -20 ... +20 mA, 0 ... +30 V*
Input resistance	≤ 200 Ω (I input) > 100 kΩ (U input)
Max. input signal	31.2 V (U <sub>IN</sub> ) / 100 mA (I <sub>IN</sub> )
Output	
Output – Relay	
Contact type	1 changeover contact
Max. switching voltage	250 VAC
Max. continuous current (terminal blocks in a row)	max. 6 A (to 60 °C), 2 A (60 ... 70 °C)
Max. switching power (resistive)	1250 VA (AC)
Number of switching thresholds	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 ... 70 °C)
General Specifications	
Response time	≤ 16 ms
Nominal supply voltage U <sub>s</sub>	24 VDC
Supply voltage range	U <sub>s</sub> -30 ... +30 %
Current consumption at 24 VDC	≤ 25 mA
Transmission error	≤ 0.1 % of the full scale value
Temperature coefficient	≤ 0.01 % / K
EMC immunity to interference	EN 61000-6-2; EN 50121-3-2
EMC emission of interference	EN 61000-6-3
Standards/Approvals	EN 61373; EN 61326-1
Conformity marking	CE
Environmental Requirements	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Safety and Protection	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
Connection and Mounting Type	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Dimensions and Weight	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	49 g
For additional approvals, see page 180.	

(\* Additional setting options via interface configuration software or interface configuration app)

#### Special Functions



#### Configuration via



Accessories,  
see page 258



857-531

DIP Switch Adjustability

● = ON

DIP Switch S1

Input signal limits ± 0.25 V; ± 0.5 mA				Hysteresis	
1	2	3	4	5	
					± 10 V
●					0 ... 10 V
	●			●	5 mV; 10 µA
		●			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
				DO not active
●				GND → U <sub>N</sub> (switching)
	●		●	U <sub>N</sub> → GND (switching)
●	●			
		●		
●		●		
	●	●		
●	●	●		
		●		
●		●		
	●	●		
●	●	●		

Default Settings

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

Input	
Input range	± 10 V
Hysteresis	5 mV
Output	
Configurable rise/fall delay time	0 s
Digital output DO	not active

Push/Slide Switch Operation



Digital Output DO/Signaling

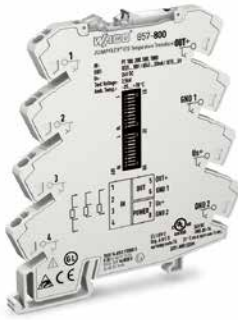
The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

Switching Behavior	Configuration							
	Number of Switching Thresholds	Values for Switching Thresholds	Switching Threshold 1, Relay	Switching Threshold 2, Relay	Press for 1 sec.	Yellow LED flashes	Red LED flashes briefly	No flashing LED
1 	1	S1	„On“	-				
2 	1	S1	„Off“	-				
3 	2	S1 < S2	„On“	„Off“				
4 	2	S1 < S2	„Off“	„On“				
5 	2	S1 > S2	„On“	„Off“				
6 	2	S1 > S2	„Off“	„On“				
Leave param. mode without storing a value	-	-	-	-				

# JUMPFLEX® Signal Conditioners

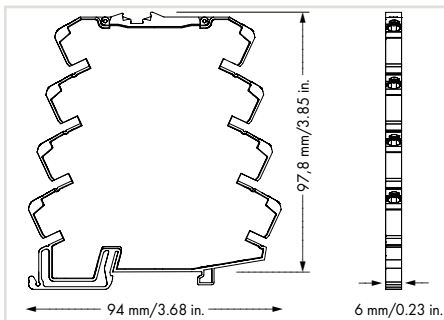
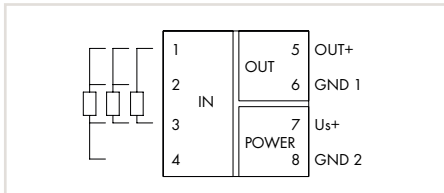
## Temperature Signal Conditioner for Pt100, Pt200, Pt500 and Pt1000 as well as Resistance Sensors

### 857 Series



JUMPFLEX® Temperature Signal Conditioner for Pt Sensors, current and voltage output signal, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-800	1



#### Short description:

The temperature signal conditioner records Pt100, Pt200, Pt500, and Pt1000 Sensors, as well as resistors up to 4.5 kOhm, converting the temperature signal into an analog standard signal on the output side.

#### Features:

- 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 wire break/short circuit
- Measuring range underflow/overflow
- Clipping capability provides the analog signal limitation to output end values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

<b>Configuration</b>	DIP switch
<b>Input</b>	
Input signal	Pt sensors and resistors
Sensor types	Pt100, Pt200, Pt500, Pt1000
Sensor Connection	2-wire, 3-wire, 4-wire (switchable)
Temperature range	-200 ... +850 °C
Sensor power supply	< 0.5 mA
Resistor input	0 ... 1 kΩ, 0 ... 4.5 kΩ
<b>Output</b>	
Output signal	0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V
Load impedance	≤ 600 Ω (Out = mA) ≥ 2 kΩ (Out = V)
Step response	180 ms (360 ms at 3-wire)
<b>General Specifications</b>	
Nominal supply voltage $U_s$	24 VDC
Supply voltage range	$U_s$ -30 ... +30 %
Current consumption at 24 VDC	≤ 40 mA
Transmission error	≤ 0.1 % of upper range value
Transmission error of set measuring span	((10 K / set measuring span [K]) + 0.1)%
Temperature coefficient	≤ 0.02% /K
Conformity marking	CE
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
<b>Safety and Protection</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and Mounting Type</b>	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	42 g

For additional approvals, see page 180.

## 857-800

## DIP Switch Adjustability

● = ON

## 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			Lower limit of output range	Upper limit of output range +2,5 %	Upper limit of output range +5 %	Lower limit of output range
	●	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			Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %	Upper limit of output range +5 %
				●	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			Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
						●	●	0 ... 5 V	●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
						●	●	1 ... 5 V			Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range

\* acc. to NAMUR NE 43

## DIP Switch S2

Start temperature				End temperature																																									
1	2	3	4	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F																
														●						75	167							●						210	410				●	●	475	887			
●				-200	-328	●						0	32	●						80	176	●					●						220	428	●			●	●	500	932				
	●			-175	-283		●					5	41		●					85	185		●				●						230	446		●		●	●	525	997				
●	●			-150	-238	●	●					10	50	●	●					90	194	●	●				●						240	464	●	●		●	●	550	1022				
		●		-125	-193			●				15	59			●				95	203			●			●							250	482			●	●	●	575	1067			
●		●		-100	-148	●		●				20	68	●		●				100	212	●		●			●							260	500	●		●	●	●	600	1112			
	●	●		-90	-130		●	●				25	77		●	●				110	230		●	●			●							270	518		●	●	●	●	625	1157			
●	●	●		-80	-112	●	●	●				30	86	●	●	●				120	248	●	●	●			●							280	536	●	●	●	●	●	650	1202			
			●	-70	-94				●			35	95				●	●		130	266				●		●							290	554			●	●	●	675	1247			
●			●	-60	-76	●			●			40	104	●			●	●		140	284	●			●		●								300	572	●		●	●	●	700	1292		
	●		●	-50	-58		●		●			45	113		●			●	●	150	302		●		●		●									325	617		●	●	●	●	725	1337	
●	●	●		-40	-40	●	●	●				50	122	●	●	●				160	320	●	●	●	●		●									350	662	●	●	●	●	●	750	1382	
		●	●	-30	-22			●	●			55	131			●	●	●		170	338			●	●	●	●									375	707			●	●	●	●	775	1427
●		●	●	-20	-4	●		●	●			60	140	●		●	●	●		180	356	●		●	●	●	●									400	752	●		●	●	●	800	1472	
	●	●	●	-10	14		●	●	●			65	149		●	●	●	●		190	374		●	●	●	●	●									425	797		●	●	●	●	825	1517	
●	●	●	●	0	32	●	●	●	●			70	158	●	●	●	●	●		200	392	●	●	●	●	●	●									450	842	●	●	●	●	●	850	1562	

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

## Default Settings

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

## JUMPFLEX® Signal Conditioners

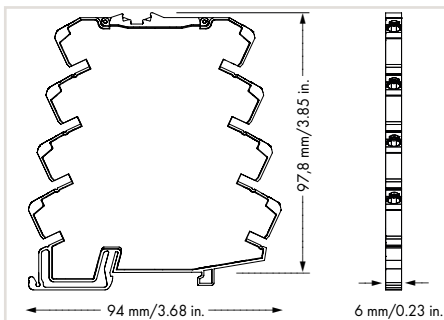
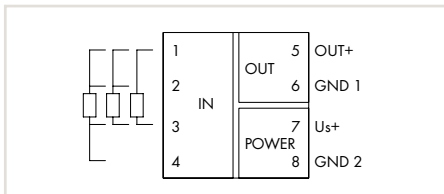
### Temperature Signal Conditioner for Pt100, Pt200, Pt500 and Pt1000 as well as Resistance Sensors

#### 857 Series



**JUMPFLEX®** Temperature Signal Conditioner for Pt Sensors, current and voltage output signal, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-801	1



#### Short description:

The temperature signal conditioner records Pt100, Pt200, Pt500, and Pt1000 Sensors, as well as resistors up to 4.5 kOhm, converting the temperature signal into an analog standard signal on the output side.

#### Features:

- 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 wire break/short circuit
- Measuring range underflow/overflow
- Clipping capability provides the analog signal limitation to output end values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration 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 ... +850 °C

Sensor power supply

< 0.5 mA

Resistor input

0 ... 1 kΩ, 0 ... 4.5 kΩ\*

##### 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)

Step response

180 ms (360 ms at 3-wire)

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

$U_s$  -30 ... +30 %

Current consumption at 24 VDC

≤ 40 mA

Max. measuring span

50 K (50 Ω)

Transmission error

≤ 0.1 % of upper range value

Transmission error of set measuring span

((10 K / set measuring span [K]) + 0.1)%

Temperature coefficient

≤ 0.02% /K

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

(input/output/supply)

2.5 kV AC, 50 Hz, 1 min.

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

49.2 g

For additional approvals, see page 180.

(\* Additional setting options as well as output signal inversion via PC configuration software or smartphone app)

## 857-801

## DIP Switch Adjustability

● = ON

## 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			Lower limit of output range	Upper limit of output range +2,5 %	Upper limit of output range +5 %	Lower limit of output range
	●	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			Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %	Upper limit of output range +5 %
				●	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			Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %	Upper limit of output range +5 %
						●	●	0 ... 5 V		●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
						●	●	1 ... 5 V	●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range

\* acc. to NAMUR NE 43

## DIP Switch S2

Start temperature						End temperature																																				
1	2	3	4	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F													
														●						75	167							●						210	410				●	●	475	887
●				-200	-328	●						0	32	●						80	176	●						●					220	428	●			●	●	500	932	
	●			-175	-283		●					5	41		●					85	185		●					●					230	446		●		●	●	525	997	
●	●			-150	-238	●	●					10	50	●	●					90	194	●	●					●					240	464	●	●		●	●	550	1022	
		●		-125	-193			●				15	59			●				95	203			●				●					250	482			●	●	●	575	1067	
●		●		-100	-148	●		●				20	68	●		●				100	212	●		●				●					260	500	●		●	●	●	600	1112	
	●	●		-90	-130		●	●				25	77		●	●				110	230		●	●				●					270	518		●	●	●	●	625	1157	
●	●	●		-80	-112	●	●	●				30	86	●	●	●				120	248	●	●	●				●					280	536	●	●	●	●	●	650	1202	
			●	-70	-94				●			35	95				●	●		130	266				●			●					290	554			●	●	●	675	1247	
●			●	-60	-76	●		●				40	104	●			●	●		140	284	●		●				●					300	572	●		●	●	●	700	1292	
	●		●	-50	-58		●	●				45	113		●			●	●	150	302		●		●			●					325	617		●	●	●	●	725	1337	
●	●	●		-40	-40	●	●	●				50	122	●	●	●				160	320	●	●	●				●					350	662	●	●	●	●	●	750	1382	
		●	●	-30	-22			●	●			55	131			●	●	●		170	338			●	●	●			●				375	707			●	●	●	●	775	1427
●		●	●	-20	-4	●		●	●			60	140	●		●	●	●		180	356	●		●	●			●					400	752	●		●	●	●	●	800	1472
	●	●	●	-10	14		●	●	●			65	149		●	●	●	●		190	374		●	●	●			●					425	797		●	●	●	●	●	825	1517
●	●	●	●	0	32	●	●	●	●			70	158	●	●	●	●	●		200	392	●	●	●	●			●					450	842	●	●	●	●	●	●	850	1562

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

## Default Settings

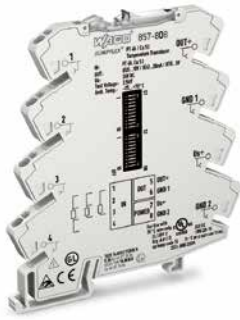
All DIP switches are in „OFF“ position for delivery. This is the position used to parameterize the device via PC configuration software.

Sensor connection	2-wire
Sensor type	Pt 100
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA

# JUMPFLEX® Signal Conditioners

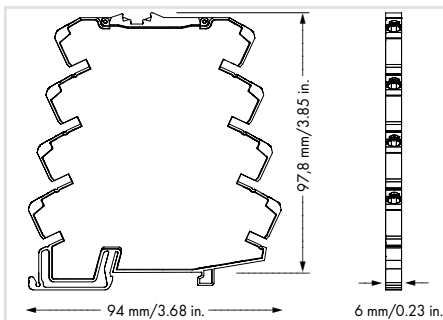
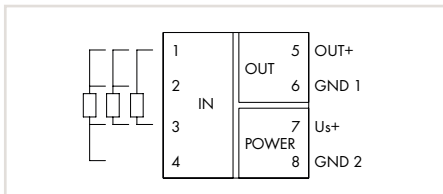
## Temperature Signal Conditioner for Pt46 and Cu53

### 857 Series



**JUMPFLEX®** Temperature Signal Conditioner for Pt and Cu Sensors, Pt46 and Cu53, current and voltage output signal, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-808	1



#### Short description:

The 857-808 Temperature Signal Conditioner records signals from Pt46 and Cu53 sensors and converts the temperature signal into an analog standard signal on the output side.

#### Features:

- 2-, 3-, and 4-wire connection technology
- Calibrated scale switching
- Detection: wire break/sensor short circuit
- Detection: measuring range underflow/overflow
- Clipping capability allows analog standard signal limitation to upper range values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions

#### Configuration via



Accessories, see page 258

#### Technical Data

<b>Configuration</b>	DIP switch
<b>Input</b>	
Input signal	Pt46 and Cu53 sensors
Sensor types	Pt46, Cu53
Sensor Connection	2-wire, 3-wire, 4-wire (switchable)
Temperature range	Pt46: -200 ... +300 °C Cu53: 0 ... +180 °C
Sensor power supply	< 0.5 mA
<b>Output</b>	
Output signal	0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V
Load impedance	≤ 600 Ω (I output); ≥ 2 kΩ (Out = V)
Step response	180 ms (360 ms at 3-wire)
<b>General Specifications</b>	
Nominal supply voltage $U_s$	24 VDC
Supply voltage range	$U_s$ -30 ... +30 %
Current consumption at 24 VDC	≤ 40 mA
Max. measuring span	50 K
Transmission error	≤ 0.1 % of upper range value
Transmission error of set measuring span	((10 K / set measuring span [K]) + 0.1)%
Temperature coefficient	≤ 0.02% /K
Conformity marking	CE
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
<b>Safety and Protection</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and Mounting Type</b>	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	26.7 g

For additional approvals, see page 180.

## 857-808

## DIP Switch Adjustability

● = ON

## 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			Pt46						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	●		Cu53	●					Lower limit of output range	Upper limit of output range +2,5 %	Upper limit of output range +5 %	Lower limit of output range
	●	4-wire					●			●	Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %	Lower limit of output range
							●	●		●	Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %	Upper limit of output range +5 %
							●	●		●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
							●	●		●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range

\* acc. to NAMUR NE 43

## 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	
				0	32							100	212						●		75	167						●	210	410
●				-200	-328	●						0	32	●					●		80	176	●					●	220	428
	●			-175	-283		●					5	41		●				●		85	185		●				●	230	446
●	●			-150	-238	●	●					10	50	●	●				●		90	194	●	●				●	240	464
		●		-125	-193			●				15	59			●			●		95	203			●			●	250	482
●		●		-100	-148	●		●				20	68	●		●			●		100	212	●		●			●	260	500
	●	●		-90	-130		●	●				25	77		●	●			●		110	230		●	●			●	270	518
●	●	●		-80	-112	●	●	●				30	86	●	●	●			●		120	248	●	●	●			●	280	536
			●	-70	-94				●			35	95				●	●		●	130	266				●		●	290	554
●			●	-60	-76	●			●			40	104	●			●	●		●	140	284	●			●		●	300	572
	●	●		-50	-58		●		●			45	113		●			●	●		150	302								
●	●	●		-40	-40	●	●		●			50	122	●	●			●	●		160	320								
		●	●	-30	-22			●	●			55	131				●	●	●		170	338								
●		●	●	-20	-4	●		●	●			60	140	●		●	●	●		●	180	356								
	●	●	●	-10	14		●	●	●			65	149		●	●	●	●		●	190	374								
●	●	●	●	0	32	●	●	●	●			70	158	●	●	●	●	●		●	200	392								

## Default Settings

All DIP switches are in „OFF“ position for delivery.	
Sensor connection	2-wire
Sensor type	Pt46
Start temperature	0 °C
End temperature	100 °C
Output signal	0 ... 20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	0 mA

# JUMPFLEX® Signal Conditioners

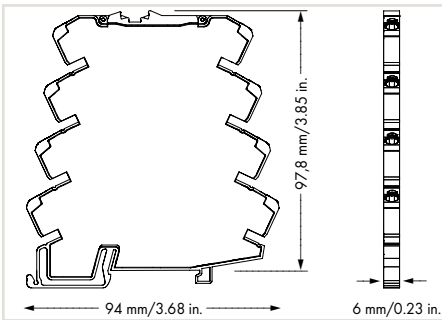
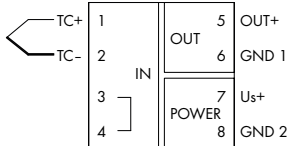
## Temperature Signal Conditioner for Thermocouples of Types J and K

### 857 Series



JUMPFLEX® Temperature Signal Conditioner for Thermocouples, current and voltage output signal, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-810	1



#### Short description:

This 857-810 Temperature Signal Conditioner records signals from type J and K thermocouples and converts the temperature signal into a standard analog signal on the output side.

#### Features:

- For type J and K thermocouples
- Cold junction compensation (on/off)
- Calibrated scale switching
- Sensor's wire break
- Measuring range underflow/overflow
- Clipping capability provides the analog signal limitation to output end values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories,  
see page 258

#### Technical Data

<b>Configuration</b>	DIP switch
<b>Input</b>	Thermocouples
Input signal	Thermocouples of types J and K
Sensor types	Typ J: -150 ... +1200 °C Typ K: -150 ... +1350 °C
Temperature range	
<b>Output</b>	
Output signal	0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V
Load impedance	≤ 600 Ω (Out = mA) ≥ 2 kΩ (Out = V)
Cold junction compensation	On/Off (default: On)
Cold junction error	3 K (type 2 K)
Step response	60 ms without cold junction compensation/ 120 ms with cold junction compensation
<b>General Specifications</b>	
Nominal supply voltage $U_s$	24 VDC
Supply voltage range	$U_s$ -30 ... +30 %
Current consumption at 24 VDC	≤ 40 mA
Max. measuring span	100 K
Transmission error	≤ 0.1% at max. measuring span (type J, K)
Transmission error of set measuring span	(150 K / set measuring span [K]) %
Temperature coefficient	≤ 0.04 % /K
Conformity marking	CE
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
<b>Safety and Protection</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and Mounting Type</b>	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 24 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	44.7 g

For additional approvals, see page 180.



## 857-810

## DIP Switch Adjustability

● = ON

## DIP Switch S1

1	Cold junction compensation	Sensor type			Output signal			7	8	Measuring range underflow	Measuring range overflow	Wire break
		2	3	4	5	6						
	on			J			0 ... 20 mA			Lower limit of output range -5 % *	Upper limit of output range +2,5 % *	Upper limit of output range +5 % *
●	off	●		K	●		4 ... 20 mA			Lower limit of output range	Upper limit of output range +2,5 %	Upper limit of output range +5 %
						●	0 ... 10 mA	●		Lower limit of output range	Upper limit of output range +2,5 %	Upper limit of output range +5 %
						●	2 ... 10 mA			Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %
						●	0 ... 10 V		●	Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %
						●	2 ... 10 V		●	Lower limit of output range	Upper limit of output range	Lower limit of output range
						●	0 ... 5 V		●	Lower limit of output range	Upper limit of output range	Lower limit of output range
						●	1 ... 5 V		●	Lower limit of output range	Upper limit of output range	Lower limit of output range

DIP 9 and 10 n.c.

\* acc. to NAMUR NE 43

## DIP Switch S2

Start temperature						End temperature																															
1	2	3	4	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F	5	6	7	8	9	10	°C	°F								
														●						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® Signal Conditioners

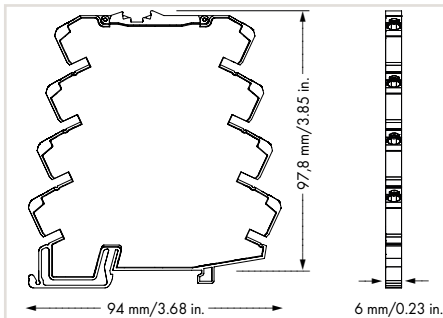
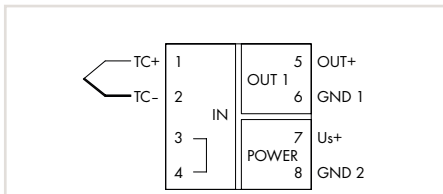
## Temperature Signal Conditioner for Thermocouples of Types J and K

### 857 Series



**JUMPFLEX®** Temperature Signal Conditioner for Thermocouples, current and voltage output signal, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-811	1



#### Short description:

The 857-811 Temperature Signal Conditioner records signals from type J and K (E, R, N, S, T, B, C) thermocouples and converts the temperature signal into a standard analog signal.

#### Features:

- PC configuration interface
- For type J and K (E, R, N, S, T, B, C) thermocouples
- Cold junction compensation (on/off)
- Calibrated scale switching
- Sensor's wire break
- Measuring range underflow/overflow
- Clipping capability provides the analog signal limitation to output end values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal

Thermocouples

Sensor types

Thermocouples of types J, K (E, R, N, S, T, B, C, L)\*

Temperature range

Typ J: -150 ... +1200 °C  
Typ K: -150 ... +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 (type 2 K)

Step response

60 ms without cold junction compensation/  
120 ms with cold junction compensation

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

$U_s -30 \dots +30 \%$

Current consumption at 24 VDC

≤ 40 mA

Max. measuring span

100 K

Transmission error

≤ 0.1% at max. measuring span (type J, K)

Transmission error of set measuring span

(150 K / set measuring span [K]) %

Temperature coefficient

≤ 0.04 % /K

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

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

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

49.2 g

For additional approvals, see page 180.

(\* Additional setting options as well as output signal inversion via PC configuration software or smartphone app)

## 857-811

## DIP Switch Adjustability

● = ON

## DIP Switch S1

1	Cold junction compensation	Sensor type			Output signal			7	8	Measuring range underflow	Measuring range overflow	Wire break
		2	3	4	5	6						
	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									
														●						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® Signal Conditioners

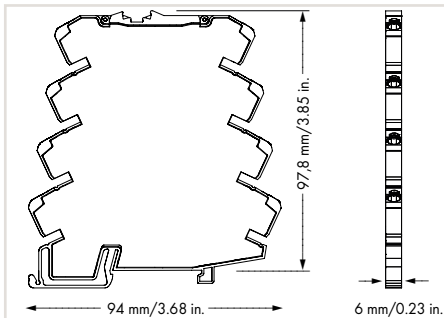
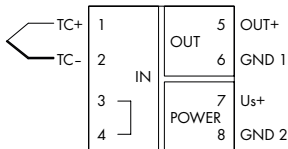
## Temperature Signal Conditioner for Thermocouples of Types K, S, B and R

### 857 Series



JUMPFLEX® Temperature Signal Conditioner for Thermocouples, current and voltage output signal, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-812	1



#### Short description:

The 857-812 Temperature Signal Conditioner records signals from type K, S, B and R thermocouples and converts the temperature signal into a standard analog signal on the output side.

#### Features:

- For type K, S, B and R thermocouples
- Cold junction compensation (on/off)
- Calibrated scale switching
- Sensor's wire break
- Detection: measuring range underflow/overflow
- Clipping capability allows analog standard signal limitation to upper range values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions

#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch

##### Input

Input signal

Thermocouples

Sensor types

Thermocouples of types K, S, B, R

Temperature range

Type K: 0 ... +1200 °C  
Type S: 0 ... +1600 °C  
Type B: +600 ... +1800 °C  
Type R: 0 ... +1600 °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 (I output);  
≥ 2 kΩ (Out = V)

Cold junction compensation

On/Off (default: On)

Cold junction error

3 K (type 2 K)

Step response

60 ms without cold junction compensation/  
120 ms with cold junction compensation

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

$U_s -30 \dots +30 \%$

Current consumption at 24 VDC

≤ 40 mA

Transmission error

≤ 0.1 % of upper range value

Transmission error of set measuring span

(150 K / set measuring span [K]) %

Temperature coefficient

≤ 0.04 % /K

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

2.5 kV AC, 50 Hz, 1 min.

(input/output/supply)

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Solid

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Fine-stranded

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

45 g

For additional approvals, see page 180.

## 857-812

## DIP Switch Adjustability

● = ON

## 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			K			0 ... 20 mA			Lower limit of output range -5 % *	Upper limit of output range +2.5 % *	Upper limit of output range +5 % *
●	off	●		S	●		4 ... 20 mA					
			●	B		●	0 ... 10 mA	●		Lower limit of output range	Upper limit of output range +2.5 %	Upper limit of output range +5 %
			●	R	●	●	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 Switch S1 (9) n.c.

\* acc. to NAMUR NE 43

## DIP Switch S1+S2

Start temperature					End temperature														
S1		S2			°C	S2					°C	S2					°C		
10	1	2	3	4		5	6	7	8	9	10		5	6	7	8	9	10	
					0							1000	●		●		●		1000
●					50	●						0		●	●		●		1050
	●				100		●					50	●	●	●		●		1100
●	●				150	●	●					100				●	●		1150
		●			200			●				150	●			●	●		1200
●		●			250	●		●				200		●		●	●		1250
	●	●			300		●	●				250	●	●		●	●		1300
●	●	●			350	●	●	●				300			●	●	●		1350
			●		400				●			350	●		●	●	●		1400
●			●		450	●			●			400		●	●	●	●		1450
	●		●		500		●		●			450	●	●	●	●	●		1500
●	●		●		550	●	●		●			500						●	1550
		●	●		600			●	●			550	●					●	1600
●		●	●		650	●		●	●			600		●				●	1650
	●	●	●		700		●	●	●			650	●	●				●	1700
●	●	●	●		750	●	●	●	●			700			●			●	1750
				●	800					●		750	●		●			●	1800
●				●	850	●				●		800							
	●			●	900		●			●		850							
●	●			●	950	●	●			●		900							
		●		●	1000			●		●		950							

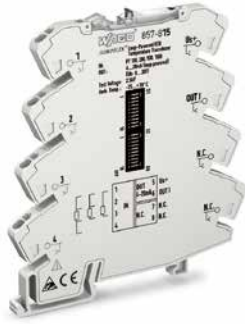
## Default Settings

All DIP switches are in „OFF“ position for delivery.	
Cold junction compensation	on
Thermocouple	Type K
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® Signal Conditioners

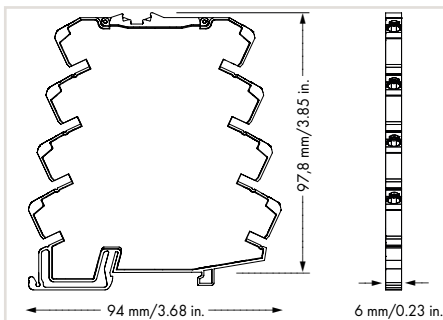
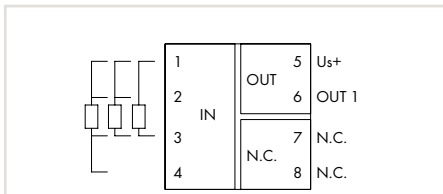
## Loop-Powered RTD Temperature Signal Conditioner

### 857 Series



**JUMPFLEX®** Loop-Powered RTD Temperature Signal Conditioner for Pt Sensors, current output signal, configuration via DIP switch, power via output, 6 mm wide

Item No.	Pack. Unit
857-815	1



#### Short description:

The 857-815 Loop-Powered RTD Temperature Signal Conditioner records Pt100, Pt200, Pt500 and Pt1000 sensors and resistors up to 4.5 kΩ, converting the temperature signal into an analog standard signal on the output side.

#### Features:

- No additional supply voltage required
- For Pt100, Pt200, Pt500 and Pt1000 sensors, as well as resistors up to 4.5 kΩ
- 2-, 3-, and 4-wire connection technology
- Calibrated scale switching
- Detection: wire break/sensor short circuit
- Safe 3-way isolation with 3 kV test voltage per EN 61010-1

#### Technical Data

<b>Configuration</b>	
Configuration	DIP switch
<b>Input</b>	
Input signal	Pt sensors and resistors
Sensor types	Pt100, Pt200, Pt500, Pt1000
Sensor Connection	2-wire, 3-wire, 4-wire (switchable)
Temperature range	-200 ... +850 °C
Sensor power supply	< 0.5 mA
Resistor input	0 ... 1 kΩ, 0 ... 4.5 kΩ
<b>Output</b>	
Output signal	4 ... 20 mA, 20 ... 4 mA
Load impedance	≤ 600 Ω (Out = mA)
Refresh cycle	< 1 s (acc. to NAMUR NE 89)
<b>General Specifications</b>	
Nominal supply voltage $U_S$	8 ... 30 V, power is derived from the output circuit
Max. measuring span	50 K
Transmission error	≤ 0.1 % of upper range value
Transmission error of set measuring span	((40 K / set measuring span [K]) + 0.1)%
Temperature coefficient	≤ 0.02% / K
Conformity marking	CE
Standards/Approvals	EN 61010-1, EN 61326-1
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
<b>Safety and Protection</b>	
Test voltage (input/output/supply)	3 kV (AC), 50 Hz, 1 min.
Protection type	IP20
<b>Connection and Mounting Type</b>	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	39 g

#### Configuration via



Accessories,  
see page 258

## 857-815

## DIP Switch Adjustability

● = ON

## DIP Switch S1

Sensor connection		Sensor type			Output Signal		N.C.			Measuring range underflow	Measuring range overflow	Wire break	Short circuit
1	2	3	4	5	6	7	8	9	10				
	2-wire			Pt100	4 ... 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	20 ... 4 mA					Lower limit of output range	Upper limit of output range +2,5 %	Upper limit of output range +5 %	Lower limit of output range
	4-wire		●	Pt500				●		Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %	Upper limit of output range +5 %
●	2-wire	●	●	Pt1000					●	Lower limit of output range	Upper limit of output range	Upper limit of output range +5 %	Upper limit of output range +5 %
				1 kΩ					●	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						Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range

\*per NAMUR NE 43

## DIP Switch S2

Output Signal Start temperature				Output Signal 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								
				0	32							100	212						●	75	167						●	210	410				●	●	475	887	
●				-200	-328	●						0	32	●					●	80	176	●					●	220	428	●			●	●	500	932	
	●			-175	-283		●					5	41		●				●	85	185		●				●	230	446		●		●	●	525	997	
●	●			-150	-238	●	●					10	50	●	●				●	90	194	●	●				●	240	464	●	●		●	●	550	1022	
		●		-125	-193			●				15	59			●			●	95	203			●			●	250	482			●	●	●	575	1067	
●	●			-100	-148	●	●					20	68	●	●				●	100	212	●	●				●	260	500	●	●		●	●	600	1112	
	●	●		-90	-130		●	●				25	77		●	●			●	110	230		●	●			●	270	518		●	●		●	●	625	1157
●	●	●		-80	-112	●	●	●				30	86	●	●	●			●	120	248	●	●	●			●	280	536	●	●	●		●	●	650	1202
		●		-70	-94				●			35	95				●	●	●	130	266				●		●	290	554			●	●	●	675	1247	
●		●		-60	-76	●			●			40	104	●			●	●	●	140	284	●			●		●	300	572	●			●	●	700	1292	
	●	●		-50	-58		●	●	●			45	113		●		●	●	●	150	302				●		●	325	617			●	●	●	725	1337	
●	●	●		-40	-40	●	●	●	●			50	122	●	●	●	●	●	●	160	320	●	●	●	●	●	●	●	350	662	●	●	●	●	●	750	1382
		●	●	-30	-22			●	●	●		55	131			●	●	●	●	170	338			●	●	●	●	●	375	707			●	●	●	775	1427
●		●	●	-20	-4	●	●	●	●			60	140	●		●	●	●	●	180	356	●	●	●	●	●	●	●	400	752	●	●	●	●	●	800	1472
	●	●	●	-10	14		●	●	●			65	149		●	●	●	●	●	190	374		●	●	●	●	●	●	425	797		●	●	●	●	825	1517
●	●	●	●	0	32	●	●	●	●			70	158	●	●	●	●	●	●	200	392	●	●	●	●	●	●	●	450	842	●	●	●	●	●	850	1562

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

## Default Settings

All DIP switches are in „OFF“ position for delivery.	
Sensor connection	2-wire
Sensor type	Pt100
Start temperature	0 °C
End temperature	100 °C
Output signal	4 ... 20 mA
Measuring range underflow	3.8 mA
Measuring range overflow	20.5 mA
Wire break	21 mA
Short circuit	3.5 mA

## JUMPFLEX® Signal Conditioners

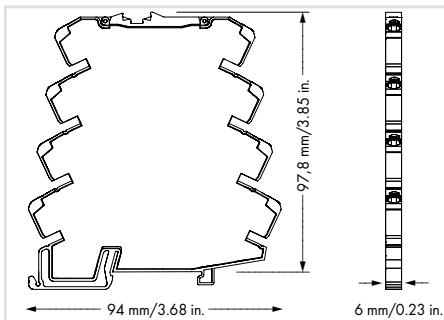
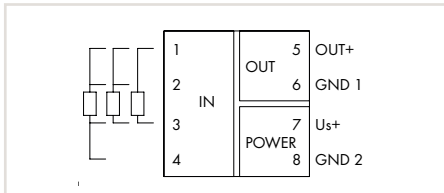
### Ni Signal Conditioner for Ni100, Ni120, Ni200, Ni500, Ni1000

#### 857 Series



JUMPFLEX® Temperature Signal Conditioner for Ni Sensors, current and voltage output signal, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-818	1



#### Short description:

The 857-818 Ni Signal Conditioner (Ni = nickel) records signals from Ni sensors featuring all standard characteristics and converts the temperature signal into a standard analog signal at the output side.

#### Features:

- For Ni100, Ni120, Ni200; Ni500 und Ni1000 sensors
- Calibrated scale switching
- Clipping capability provides the analog signal limitation to output end values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories,  
see page 258

#### Technical Data

<b>Configuration</b>	DIP switch
<b>Input</b>	Ni sensors
Input signal	$\pm 31.2$ VDC
Max. input signal	Ni100, Ni120, Ni200, Ni500, Ni1000
Sensor types	2-wire, 3-wire, 4-wire (switchable)
Sensor Connection	
<b>Output</b>	
Output signal	0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA, 0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V
Load impedance	$\leq 600 \Omega$ (Out = mA) $\geq 2 \text{ k}\Omega$ (Out = V)
Step response	< 60 ms at 2-wire and 4-conductor measurement < 120 ms at 3-conductor measurement
<b>General Specifications</b>	
Nominal supply voltage $U_s$	24 VDC
Supply voltage range	$U_s -30 \dots +30 \%$
Current consumption at 24 VDC	$\leq 40$ mA
Transmission error	$\leq 0.1 \%$ of the full scale value
Conformity marking	CE
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
<b>Safety and Protection</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and Mounting Type</b>	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	50 g

For additional approvals, see page 180.



## 857-818

## DIP Switch Adjustability

● = ON

## 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			Lower limit of output range	Upper limit of output range +2.5 %	Upper limit of output range 5 %	Lower limit of output range
	●		0 ... 10 mA	●		Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
●	●		2 ... 10 mA		●	Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
		●	0 ... 10 V			Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
●		●	2 ... 10 V		●	Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
	●	●	0 ... 5 V	●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●	●	●	1 ... 5 V			Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range

\* 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

# JUMPFLEX® Signal Conditioners

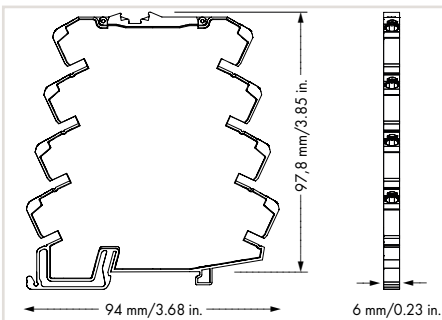
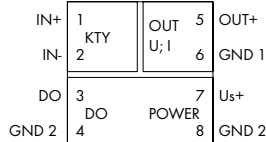
## KTY Signal Conditioner

### 857 Series



JUMPFLEX® Temperature Signal Conditioner for KTY Sensors, current and voltage output signal, configuration via DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-820	1



#### Short description:

The 857-820 KTY Signal Conditioner records signals from KTY sensors featuring all standard characteristics and converts the temperature signal into a standard analog signal at the output side.

#### Features:

- 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 per EN 61140

#### Special Functions



#### Configuration via



Accessories,  
see page 258

#### Technical Data

##### Configuration

Configuration

##### Input

Input signal

Max. input signal

Sensor types

Sensor Connection

##### Output

Output signal

Load impedance

Step response

##### Output – Digital:

Max. switching voltage

Max. continuous current

##### General Specifications

Nominal supply voltage  $U_s$

Supply voltage range

Current consumption at 24 VDC

Transmission error

Conformity marking

##### Environmental Requirements

Ambient operating temperature

Storage temperature

##### Safety and Protection

Test voltage

(input/output/supply)

##### Connection and Mounting Type

Connection technology

Conductor range

Solid

Fine-stranded

Strip length

##### Dimensions and Weight

Dimensions (mm) W x H x D

Weight

For additional approvals, see page 180.

DIP switch

KTY sensors

$\pm 30$  VDC

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

2 conductors

0 ... 10 mA, 2 ... 10 mA,  
0 ... 20 mA, 4 ... 20 mA,  
0 ... 5 V, 1 ... 5 V,  
0 ... 10 V, 2 ... 10 V

$\leq 600 \Omega$  (Out = mA)  
 $\geq 2 \text{ k}\Omega$  (Out = V)

< 50 ms

Supply voltage applied

500 mA (to 60 °C)  
100 mA (60 ... 70 °C)

24 VDC

$U_s -30 \dots +30 \%$

$\leq 40$  mA

$\leq 0.1 \%$  of the full scale value

CE

-25 ... +70 °C

-40 ... +85 °C

2.5 kV AC, 50 Hz, 1 min.

Push-in CAGE CLAMP®

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

9 ... 10 mm / 0.35 ... 0.39 inch

6 x 97.8 x 94, height from upper-edge of DIN-rail

50 g

## 857-820

## DIP Switch Adjustability

● = ON

## 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			9	10	Measuring Range Underflow	Measuring Range Overflow	Wire Break	Short Circuit
6	7	8						
					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
●					Lower limit of output range	Upper limit of output range +2.5 %	Upper limit of output range 5 %	Lower limit of output range
	●		●		Lower limit of output range	Upper limit of output range	Upper limit of output range 5 %	Upper limit of output range 5 %
●		●		●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●	●		●	●	Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range
●	●	●			Lower limit of output range	Upper limit of output range	Lower limit of output range	Lower limit of output range

\* but not when lower limit of output range = 0V or 0mA

\*\*2 acc. to NAMUR NE 43

## Default Setting

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

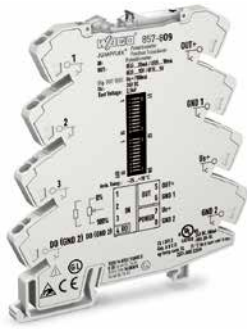
## DIP Switch S2

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

# JUMPFLEX® Signal Conditioners

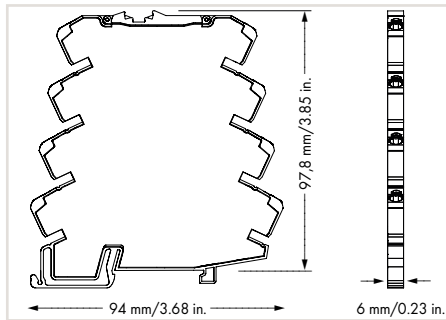
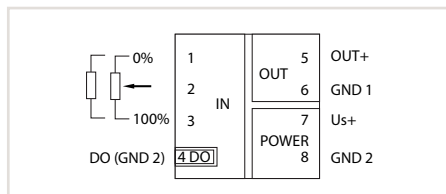
## Potentiometer Position Signal Conditioner

### 857 Series



**JUMPFLEX® Potentiometer Position Signal Conditioner, current and voltage output signal, digital output, configuration via software, supply voltage: 24 VDC, 6 mm wide**

Item No.	Pack. Unit
857-809	1



#### Short description:

The 857-809 Potentiometer Signal Conditioner records resistance (e.g. from potentiometers), converting them into an analog standard signal. The device is supplied with 24 VDC (nominal voltage). It is set via DIP switches or push and slide switch.

#### Features:

- PC configuration interface
- Calibrated scale switching
- Automatic potentiometer identification
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories,  
see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, push/slide switch, interface configuration software, interface configuration app

##### Input

Input signal

Potentiometer and Resistors \*

Input range

Potentiometer

100 ... 100 kΩ\*

Resistors

10 ... 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 (Out = mA)  
≥ 2 kΩ (Out = V)

Step response

< 32 ms

Output – Digital:

Max. switching voltage

Supply voltage applied

Max. continuous current

100 mA

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

$U_s -30 \dots +30 \%$

Current consumption at 24 VDC

≤ 40 mA

Transmission error

≤ 0.1 % of the full scale value

Temperature coefficient

≤ 0.01 % / K

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature

-25 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

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

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

49.2 g

For additional approvals, see page 180.

(\* Additional setting options via interface configuration software or interface configuration app)

## 857-809

## DIP Switch Adjustability

● = ON

## DIP Switch S1 and S2

Input	
DIP S1	
1	Potentiometer
<input type="checkbox"/>	Resistor

Start Value						Resistor Ω
DIP S1						
2	3	4	5	6		
					0*	
●					0	
	●				10	
●	●				11	
		●			12	
●		●			13	
	●	●			15	
●	●	●			16	
			●		18	
●			●		20	
	●		●		22	
●	●		●		24	
		●	●		27	
●		●	●		30	
	●	●	●		33	
●	●	●	●		36	
				●	39	
●				●	43	
	●			●	47	
●	●			●	51	
		●		●	56	
●		●		●	62	
	●	●		●	68	
●	●	●		●	75	
			●	●	82	
●			●	●	91	
	●		●	●	40	
●	●		●	●	50	
		●	●	●	60	
●		●	●	●	70	
	●	●	●	●	80	
●	●	●	●	●	90	

End Value						Resistor Ω
DIP S1				DIP S2		
7	8	9	10	1		
					100000*	
●					0	
	●				10	
●	●				11	
		●			12	
●		●			13	
	●	●			15	
●	●	●			16	
			●		18	
●			●		20	
	●		●		22	
●	●		●		24	
		●	●		27	
●		●	●		30	
	●	●	●		33	
●	●	●	●		36	
				●	39	
●				●	43	
	●			●	47	
●	●			●	51	
		●		●	56	
●		●		●	62	
	●	●		●	68	
●	●	●		●	75	
			●	●	82	
●			●	●	91	
	●		●	●	40	
●	●		●	●	50	
		●	●	●	60	
●		●	●	●	70	
	●	●	●	●	80	
●	●	●	●	●	90	

\*Default setting

## DIP Switch S2

Factor of Initial Value			Factor of End Value			Output		Output Signal Range		
2	3		4	5		6		7	8	
		x1*					Current*			0 – 10 V/0 – 20 mA
●		x10	●			●	Voltage	●		2 – 10 V/4 – 20 mA
	●	x100		●					●	0 – 5 V/0 – 10 mA
●	●	x1000	●	●				●	●	1 – 5 V/2 – 10 mA

\*Default setting

9	10	Measuring Range Underflow	Measuring Range Overflow	Wire Break
		Upper limit of output range <sup>1</sup> +2.5 %	Lower limit of output range <sup>1</sup> -5 %	Upper limit of output range <sup>1</sup> +5 %
●		Upper limit of output range +2.5 %	Lower limit of output range	Upper limit of output range +5 %
	●	Upper limit of output range	Lower limit of output range	Upper limit of output range +5 %
●	●	Upper limit of output range	Lower limit of output range	Lower limit of output range

<sup>1</sup>acc. to NAMUR NE 45

## Digital Output DO/Signaling

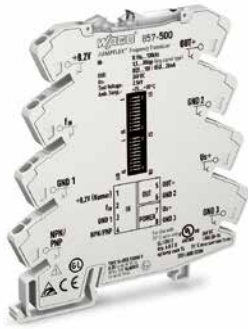
The digital output (DO) signals error messages and can be configured as follows: 24 V → 0 V/0 V → 24 V.

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

# JUMPFLEX® Signal Conditioners

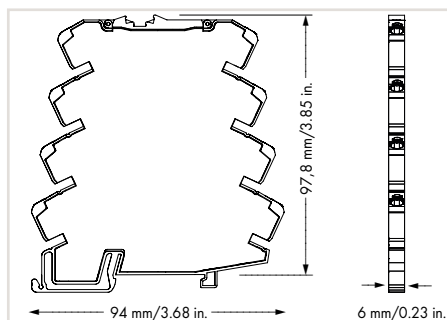
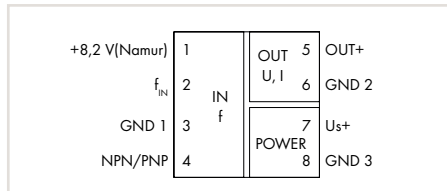
## Frequency Signal Conditioner 0.1 ... 120 kHz

### 857 Series



JUMPFLEX® Frequency Signal Conditioner, current and voltage output signal, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-500	1



#### Short description:

The 857-500 Frequency Signal Conditioner collects 0.1 to 120 kHz signals from NAMUR, NPN or PNP sensors and converts the frequency signals into analog standard signals.

#### Features:

- PC configuration interface
- Signal acquisition from NAMUR, NPN or PNP sensors
- Calibrated scale switching
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Special Functions



#### Configuration via



Accessories, see page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Sensor types\*

- Frequency generators
- NAMUR sensors
- NPN/PNP transistor outputs without pull-up or pull-down resistor
- Mechanical contact (dry contact)

##### Input for frequency generators or NPN/PNP transistor outputs with pull-up or pull-down resistor

Frequency range

0.1 ... 120 kHz

Signal level

1.5 V, 10 V, 20 V (switchable)

Max. input signal

± 31.2 VDC

Pulse length

≥ 1 μs

Signal form

Any

Coupling

AC/DC (AC above 10 Hz) (adjustable)

Max. measuring span

10 Hz

Input resistance

10 kΩ

##### Input for NAMUR sensors per DIN EN 50227

Sensor supply

8.2 VDC

Signal current (0)

≤ 1.2 mA

Signal current (1)

≥ 2.1 mA

Hysteresis

0.45 mA

Input resistance

< 600 Ω

Frequency range

0.1 ... 1 kHz

Pulse length

≥ 500 μs

Max. 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 ... 20 kHz

Pulse length

≥ 25 μs

Max. measuring span

100 Hz

Open-circuit voltage

5 VDC

NPN residual voltage

< 1.5 V

PNP switching voltage

> 7.5 V + residual voltage U<sub>CE sat</sub>

##### Output

Output signal

0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V\*

Voltage:

Current:

0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA\*

Load impedance

≤ 600 Ω (Out = mA)

≥ 2 kΩ (Out = V)

Gate time measurement method

(> 400 Hz): < 20 ms

Pulse-time measurement method (< 400 Hz):

< 200 μs + T<sub>Cycle duration</sub>\*

##### General Specifications

Nominal supply voltage U<sub>S</sub>

24 VDC

Supply voltage range

U<sub>S</sub> -30 ... +30 %

Current consumption at 24 VDC

≤ 40 mA

Transmission error

≤ 0.1 % of the full scale value

Temperature coefficient

≤ 0.01 % / K

Conformity marking

CE

**Technical Data**

<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
<b>Safety and Protection</b>	
Test voltage (input/output/supply)	2.5 kV AC, 50 Hz, 1 min.
<b>Connection and Mounting Type</b>	
Connection technology	Push-in CAGE CLAMP®
Conductor range	
Solid	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	38.7 g

For additional approvals, see page 180.

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

(\* Additional setting options as well as output signal inversion via PC configuration software or interface configuration app)

857-500

DIP Switch Adjustability

● = ON

DIP Switch S1

Source Input			Coupling		Operation with disturbed frequency signals for acceptable signal level (applies only to $f_{IN}$ input)			
1	2		3		4	5	High	Low
		Frequency generator or NPN/PNP transistor outputs with pull-up or pull-down resistor		AC/DC			> 1.5 V	< 0.4 V
●		NAMUR	●	AC (without DC), see Figure 1	●		> 10 V	< 8 V
	●	NPN/PNP transistor outputs without pull-up or pull-down resistor input Dry Contact				●	> 20 V	< 16 V
					●	●	> 1.5 V	< 0.4 V

DIP Switch S1

DIP Switch S2

DIP Switch S1					DIP Switch S2						
Input Start Value					Frequency/ Hz	Input End Value					Frequency/ Hz
6	7	8	9	10		1	2	3	4	5	
●					0.1	●					0.1
	●				1		●				1
●	●				100	●	●				100
		●			200			●			200
●	●	●			300	●		●			300
	●	●			400		●	●			400
●	●	●			500	●	●	●			500
			●		600				●		600
●			●		700	●			●		700
	●		●		800		●		●		800
●	●		●		900	●	●		●		900
		●	●		1000			●	●		1000
●		●	●		2000	●		●	●		2000
	●	●	●		3000		●	●	●		3000
●	●	●	●		4000	●	●	●	●		4000
			●		5000					●	5000
●			●		6000	●				●	6000
	●		●		7000		●			●	7000
●	●		●		8000	●	●			●	8000
		●	●		9000			●	●		9000
●		●	●		10000	●		●	●		10000
	●	●	●		20000		●	●	●		20000
●	●	●	●		30000	●	●	●		●	30000
			●	●	40000				●	●	40000
●			●	●	50000	●			●	●	50000
	●		●	●	60000		●	●	●		60000
●	●		●	●	70000	●	●		●	●	70000
		●	●	●	80000			●	●	●	80000
●		●	●	●	90000	●		●	●	●	90000
	●	●	●	●	100000		●	●	●	●	100000
●	●	●	●	●	120000	●	●	●	●	●	120000

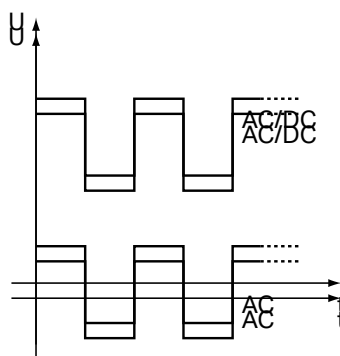


Figure 1: Coupling

Default Setting

Input:	
Input source	Frequency generator/transistor output with pull-up or pull-down resistor
Coupling	AC/DC
Signal level	> 1.5 V
Start value	100 Hz
End value	1000 Hz
Measuring technique	Gate time measurement method
Output:	
Output signal	Current
Start value	0 mA
End value	20 mA
Measuring range underflow	0 mA
Measuring range overflow	20.5 mA

DIP Switch S2

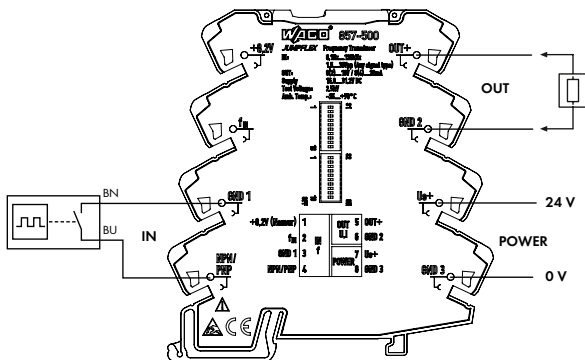
Output Signal				Measuring Range Underflow		Measuring Range Overflow		Only for NAMUR Sensors	
6	7	8		9	10			Wire Break	Short Circuit
			0 ... 20 mA			Lower limit of output range* -5 %	Upper limit of output range* +2.5 %	Upper limit of output range* 5 %	Lower limit of output range* -12.5 %
	●		4 ... 20 mA						
		●	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

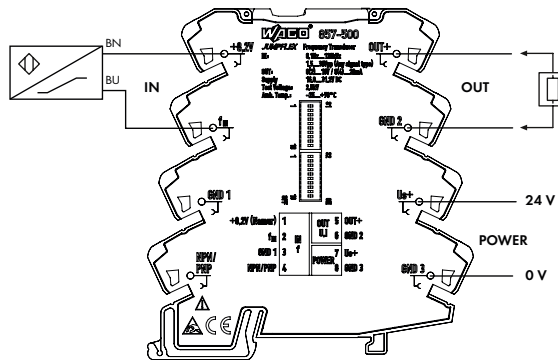


### 857-500, Wiring Material

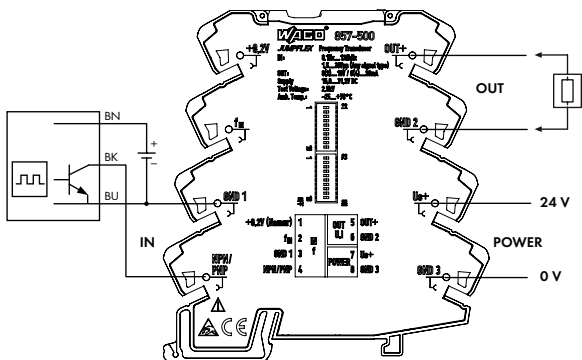
2-Conductor DC (Mechanical Contact)



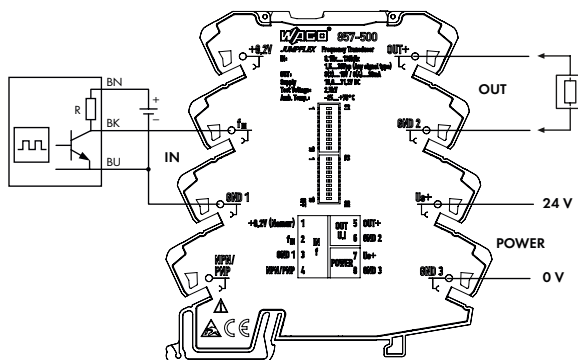
2-Conductor DC NAMUR Sensor



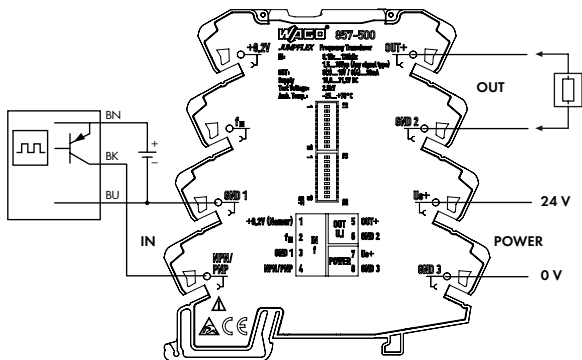
NPN Transistor Output



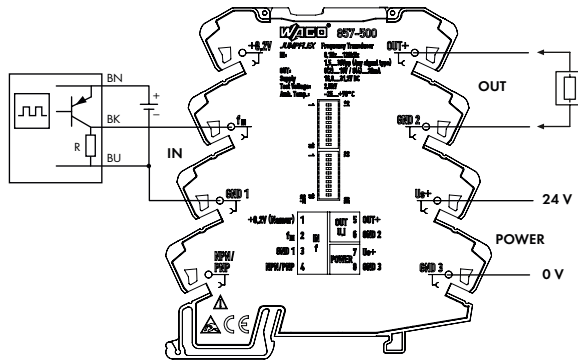
NPN Transistor Output with Pull-Up Resistor



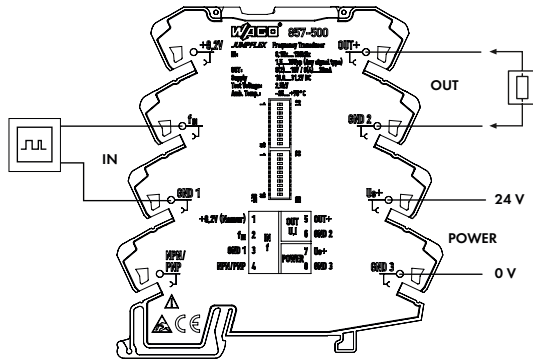
PNP Transistor Output



PNP Transistor Output with Pull-Down Resistor



Frequency Generator



3

## Interface Configuration Software

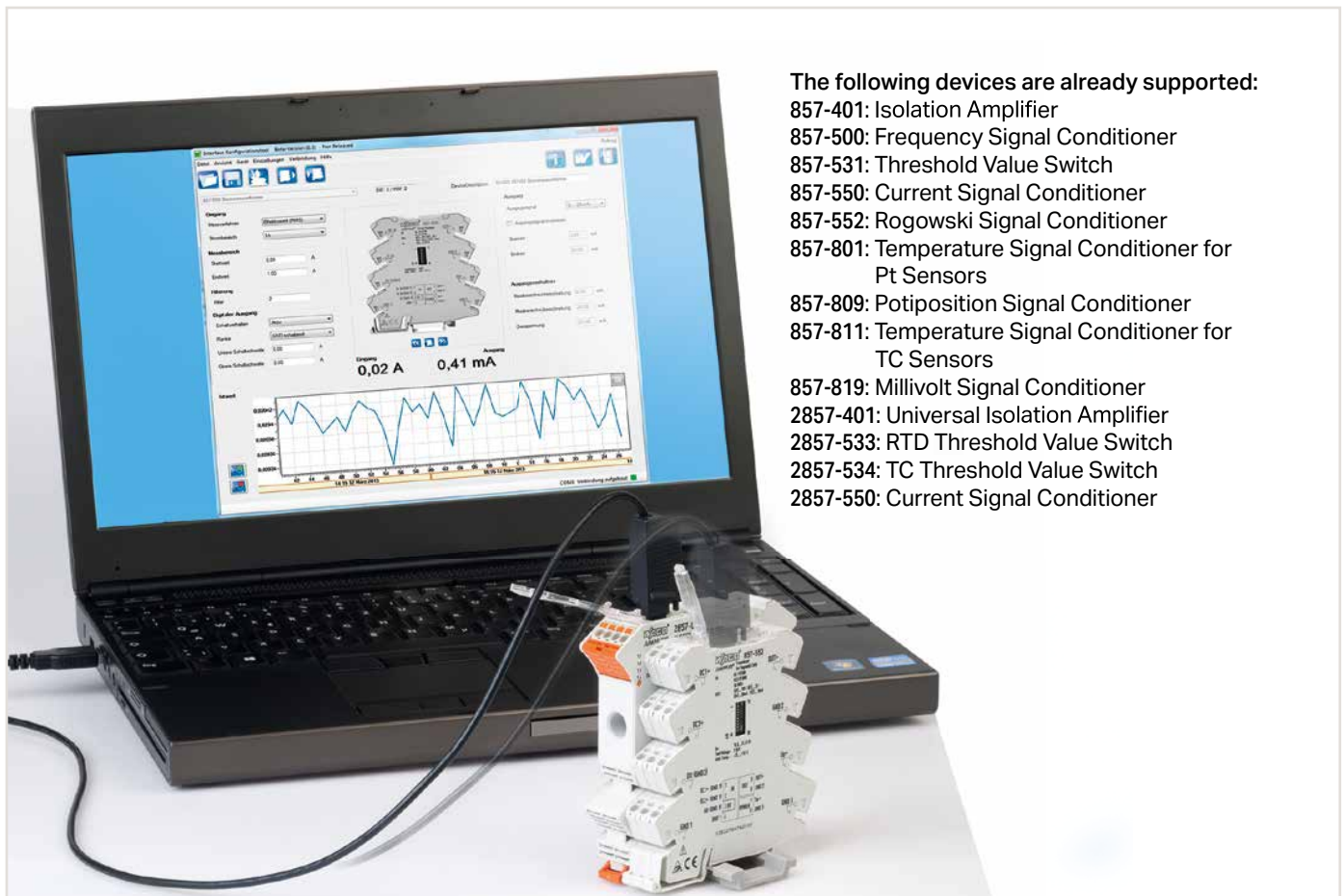
### Interface Configuration Software – DIP Switch Alternative

#### Software features:

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

#### Description:

Interface Configuration Software  
Download: [www.wago.com](http://www.wago.com)



The following devices are already supported:

- 857-401: Isolation Amplifier
- 857-500: Frequency Signal Conditioner
- 857-531: Threshold Value Switch
- 857-550: Current Signal Conditioner
- 857-552: Rogowski Signal Conditioner
- 857-801: Temperature Signal Conditioner for Pt Sensors
- 857-809: Potipotision Signal Conditioner
- 857-811: Temperature Signal Conditioner for TC Sensors
- 857-819: Millivolt Signal Conditioner
- 2857-401: Universal Isolation Amplifier
- 2857-533: RTD Threshold Value Switch
- 2857-534: TC Threshold Value Switch
- 2857-550: Current Signal Conditioner

## Interface Configuration App

### Interface Configuration App – DIP Switch Alternative

WAGO's Interface Configuration App brings the power of a PC-based configuration software to mobile end-user devices. WAGO's 857 Series signal conditioner's input and output parameters can be configured via finger swipe on an Android-based smartphone or tablet. Furthermore, both configuration data and actual measured values can be easily displayed.

WAGO's 750-921 *Bluetooth*® Adapter seamlessly communicates between a smartphone and the signal conditioner.



3

#### Device Information



#### Input Parameter



#### Output Parameter



#### Digital Output



#### Actual Value



The following devices are already supported:

- 857-401: Isolation Amplifier
- 857-500: Frequency Signal Conditioner
- 857-531: Threshold Value Switch
- 857-550: Current Signal Conditioner
- 857-552: Rogowski Signal Conditioner
- 857-801: Temperature Signal Conditioner for Pt Sensors
- 857-809: Potiposition Signal Conditioner
- 857-811: Temperature Signal Conditioner for TC Sensors
- 857-819: Millivolt Signal Conditioner

- 2857-401: Universal Isolation Amplifier
- 2857-533: RTD Threshold Value Switch
- 2857-534: TC Threshold Value Switch
- 2857-550: Current Signal Conditioner



Download from  
Google Play

## Configuration Display

### 2857 Series



Housing width: 22.5 mm

Housing width: 12.5 mm

#### Configuration Display

Item No.	Pack. Unit
2857-900	1

#### Features:

- Easy mounting on 2857 Series devices
- Automatic module recognition
- Capacitive user interface with slider function
- Intuitive menu navigation
- Color backlight for status indication
- Device configuration and process value visualization
- Easy copying of device configuration

#### Technical Data

##### Environmental Requirements

Ambient operating temperature	-20 ... +70 °C
Storage temperature	-30 ... +80 °C

##### Dimensions and Weight

Dimensions (mm) W x H x D	22 x 13 x 59
---------------------------	--------------

##### Standards/Approvals

Conformity marking	CE
--------------------	----

# Switched-Mode Power Supply in 2857 Series Housing

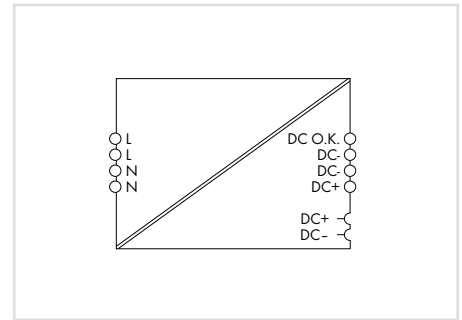
## EPSITRON® Power for JUMPFLEX®

### 787 Series



#### Features:

- Switched-mode power supply in 22.5 mm wide 2857 Series housing, same profile as 2857 and 857 Series JUMPFLEX® Signal Conditioners
- Both 24 VDC and 0 V output voltage can be easily supplied to adjacent JUMPFLEX® Modules via 859-4xx Jumpers
- Pluggable *picoMAX*® connection technology
- Natural convection cooling
- DC OK message as active signal output (24 VDC, 20 mA)
- Integrated redundancy diode enables easy fail-safe power supply via parallel connection of two power supplies
- Approvals for worldwide applications with JUMPFLEX® Modules (pending)



EPSITRON® – Switched-Mode Power Supply, in a JUMPFLEX® housing, 1-phase, output voltage: 24 VDC, output current: 1 A, DC OK contact

Item No.	Pack. Unit
787-2852	1

Technical Data		Degree of pollution	
<b>Input</b>		2 (acc. to EN 50178)	
Nominal input voltage $U_{i\text{nom}}$	100 ... 240 VAC	Climatic category	3K3 (acc. to EN 60721)
Input voltage range	85 ... 264 VAC, 90 ... 370 VDC	Test voltage	4.2 kV DC (input – output)
Frequency	47 ... 63 Hz, 0 Hz	Protection class	II
Input current $I_i$	< 0.2 A (230 VAC, nominal load); < 0.9 A (90 VAC, nominal load)	Protection type	IP20 per EN 60529
Power factor	> 0.6 (230 VAC, nominal load, acc. to EN 61000-3-2)	Overvoltage protection	Varistor (input side); internal protective circuit, < 29 ... 31 VDC (output side in case of an error)
Discharge current	< 1 mA (230 VAC)	Short circuit protection	Yes
Inrush current	< 30 A (230 VAC), limited	No-load proof	Yes
Mains failure hold-up time	120 ms (230 VAC)	Feedback voltage	Max. 60 VDC
<b>Output</b>		Parallel operation	Yes, for 2 devices of the same type
Nominal output voltage $U_{o\text{nom}}$	24 VDC, SELV	Series connection	Yes, for 2 devices of the same type
Factory preset	24 VDC	MTBF	> 500000 h (at 25 °C) Calculation acc. to IEC 61709
Nominal load $P_{a\text{nom}}$	24 W	Standards/Approvals	EN 61000-6-2, EN 61000-6-3, EN 60950-1, UL 60950 *, cULus 508 *, ANSI-ISA 12.12.01 (Class I Div 2) *, ATEX/IEC Ex *, GL *
Output current $I_o$	1 ADC	<b>Connection and Mounting Type</b>	
Deviation, dynamic load change 10 ... 90 %	< ± 1 %	Connection technology	Input/Output/Signaling: Push-in CAGE CLAMP® ( <i>picoMAX</i> ® 5.0)
Adjustment accuracy	< 2 %	Conductor range	Input/Output/Signaling: Solid/fine-stranded: 0.2 ... 2.5 mm <sup>2</sup> / 24 ... 10 AWG
Residual ripple	< 100 mV (peak-peak) at 20 MHz	Strip length	Input/Output/Signaling: 9 ... 10 mm / 0.35 ... 0.39 inch
Current limitation	1.1 x $I_o$ typ.	Type of mounting	DIN-rail mounting (EN 60715)
Overload behavior	Constant current	<b>Dimensions and Weight</b>	
Operational indication	LED green ( $U_o > 21.5$ V)	Dimensions (mm) W x H x D	22.5 x 110 x 118, length from up-per-edge of DIN-rail
<b>Efficiency/Power Losses:</b>		Weight	195 g
Efficiency	86 % typ. (230 VAC, nominal load); 84 % typ. (110 VAC, nominal load)		
Power loss $P_V$	< 1 W (230 VAC, no load); 4.3 W (230 VAC, nominal load)		
Max. Power loss $P_V$	4.6 W typ. (100 VAC / 24 VDC, 1 A)		
<b>Fuse Protection:</b>			
Internal fuse	T 2 A / 250 V		
External fuse	Circuit breakers 6 A, B or C characteristic		
<b>Environmental Requirements</b>			
Ambient operating temperature	-25 ... +70 °C		
Storage temperature	-40 ... +85 °C		
Relative humidity	30 % ... 85 % (no condensation permissible)		
Derating	-2 % / K (> +60 °C)		
<b>Technical Data</b>			

## Bluetooth® Adapter

### 750 Series



Application Example: 750 Series



Application Example: 857 Series

#### Bluetooth® Adapter

Item No.	Pack. Unit
750-921	1

**Bluetooth® Adapter in Connection with 750 Series**  
The *Bluetooth®* Adapter wirelessly connects a notebook computer with *Bluetooth®* functionality to the service interface of the buscoupler/controller. It also provides an active connection to a programmable fieldbus controller.

As a cable substitute, the *Bluetooth®* adapter allows communication between two fieldbus controllers, as well as between fieldbus couplers/controllers via WAGO software tools (e.g. *WAGO-I/O-CHECK*, *WAGO-I/O-PRO*, ...). Configurable coexistence properties ensure trouble-free operation in the presence of other radio systems.

#### Bluetooth® Adapter in Connection with 857/2857 Series


The *Bluetooth®* Adapter wirelessly connects a notebook computer with *Bluetooth®* functionality to the service interface of a configurable 857 Series *JUMPFLEX®* Module.

As a cable substitute, the *Bluetooth®* adapter allows communication between *JUMPFLEX®* Modules and the WAGO software tool (*WAGOframe*) or configuration app for Android-based end-devices.

If required, adapter configuration may be performed via AT commands.

The adapter is supplied via both service interface and power supply of coupler/controller or *JUMPFLEX®* module.

#### Technical Data

Data transmission rate	9600 ... 115000 bps
Frequency range	2.4 ... 2.4835 GHz (ISM-Band)
Type of communication	Point-to-point connection
Profiles supported	Serial Port Profile (SPP)
Version	2.1
Radio class	Class 2
RF output power	Max. +4 dBm (Class 2)
RF input sensitivity	Typ. -82 dBm
Antenna	Integrated
Ports	4-pole service connectors
Configuration	AT commands (e.g. via Hyper Terminal)
Function	Master or Slave
LED	Operating status
Operating temperature	-20 ... +60 °C
Current consumption (internal)	60 mA
Security authentication	Pin code or configurable access list
Security encryption	128-bit encryption
Dimensions (mm) W x H x D	15 x 50 x 19
Weight	7 g
Coexistence	Frequency Hopping Spread Spectrum (FHSS), Adaptive Frequency Hopping (AFH), Adaptive transmission power with configurable upper limit, configurable channel blacklist, supports coexistence optimized inquiry (transmission time ≤ 0.1 s; transmission cycle ≥ 2.9 s)
Conformity marking	CE
	 Bluetooth®
	<b>Bluetooth® Approval</b>

## WAGO USB Communication Cable

### 750 Series



WAGO USB Communication Cable		
Length	Item No.	Pack. Unit
2.5 m	750-923	1
5.0 m	750-923/000-001	1

The WAGO USB Communication Cable connects a PC (notebook) to either the service interface of the 857/2857 Series Signal Conditioners and Relay Modules (*JUMPFLEX*®) or to WAGO-I/O-SYSTEM buscouplers/controllers.

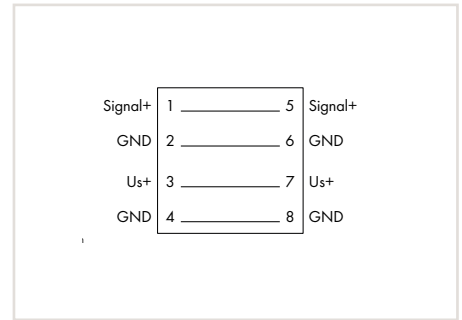
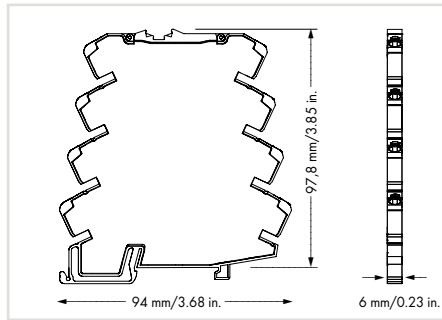
#### Notice!

Using the WAGO 750-923 USB Communication Cable in combination with select programmable fieldbus controllers requires the specific firmware versions listed below (or higher):  
 750-841 from firmware version 12  
 750-872/0020-0000 from firmware version 2

#### 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 ... +70 °C
Interface USB	Type A/m
Length	2.5 m (750-923) 5.0 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
Conformity marking	CE

## Supply and Through Module 857 Series



### Supply and Through Module

Item No.	Pack. Unit
857-979	25

#### Short description:

The 857-979 Supply and Through Module transmits electrically isolated signals (e.g., in conjunction with the 857-980 Interface Adapter for analog signals), 857-980. 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.

### Technical Data

#### General Specifications

Max. voltage	33 V AC/DC
Current carrying capacity	8 A
Contact resistance	< 10 mΩ
Conformity marking	CE

#### Environmental Requirements

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

#### Connection and Mounting Type

Connection technology	Push-in CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm² / 28 ... 14 AWG
Solid	0.34 ... 2.5 mm² / 22 ... 14 AWG
Fine-stranded	9 ... 10 mm / 0.35 ... 0.39 inch
Strip length	

#### Dimensions and Weight

Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	30 g

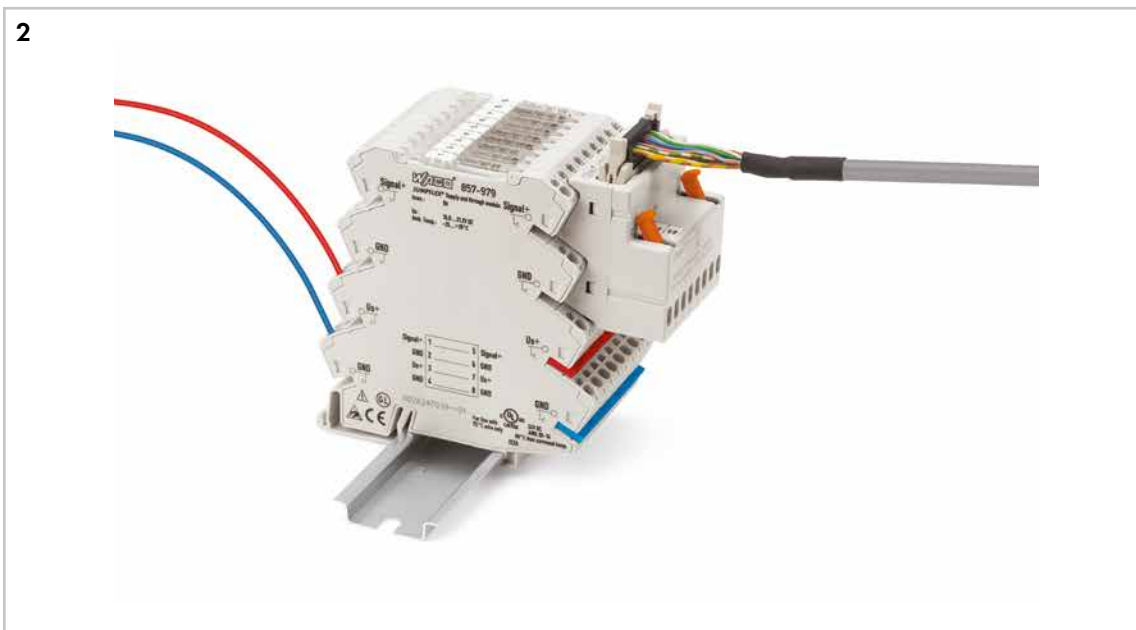
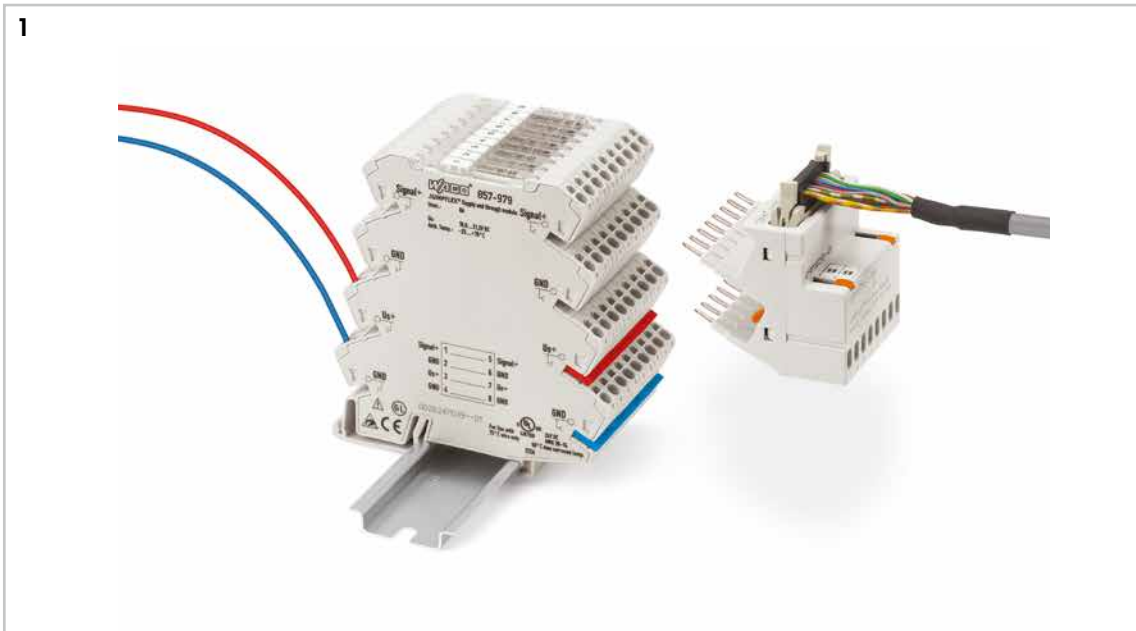
For additional approvals, see page 180.



**Application example:****857-979**

Power supply for 8 JUMPFLEX® modules with plugged interface adapter

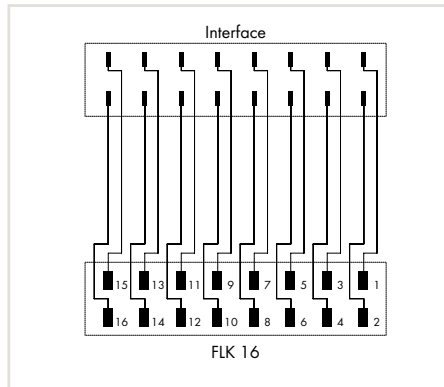
- WAGO interface adapter, 857-980
- WAGO Interface Cable, 706-100/1602-200, 16-pole socket/open-ended
- Push-in type jumper bar, 9-way, 859-409



## Interface Modules for System Wiring

### Interface Adapters

#### 857 Series



JUMPFLEX® Adapter, with 16-pole pluggable ribbon cable connector

Item No.	Pack. Unit
857-980	1

#### Technical Data

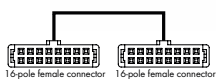
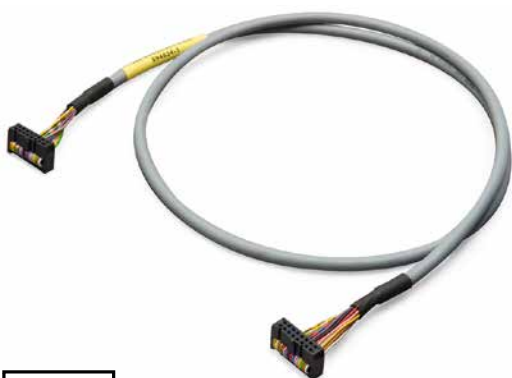
Connection type, signal level	16-pin ribbon cable connector acc. to DIN 41651
Contact resistance	≤ 20 mΩ
Current carrying capacity	1 A
Test voltage	500 V / 50 Hz / 1 min.
Overvoltage category	III
Degree of pollution	2
Conformity marking	CE

For additional approvals, see page 180.

FLK = ribbon cable

## WAGO Interface Cables for Interface Adapters

### 706 Series



The 16-pin WAGO Interface Cables transmit signals one-to-one from the 16-pole connector and are available in 1-, 2- and 3-meter lengths. Signal transmission from the 857-980 Interface Adapter is also possible.

Suitable for system wiring when combined with the Interface Adapter (Item No. 857-980)

Color coding acc. to DIN VDE 47100		HE 10 16-pole Contact number
white		1
brown		2
green		3
yellow		4
grey		5
pink		6
blue		7
red		8
black		9
violet		10
grey/pink		11
red/blue		12
white/green		13
brown/green		14
white/yellow		15
yellow/brown		16

#### WAGO Interface Cables 16/16

Length	Item No.	Pack. Unit
1 m	706-753/301-100	10
2 m	706-753/301-200	10
3 m	706-753/301-300	10

#### Technical Data

Ports	2 x 16-pole connector, FLK acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color coding	acc. to DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20
Length	1 m (706-753/301-100) 2 m (706-753/301-200) 3 m (706-753/301-300)
	FLK = ribbon cable

#### WAGO Interface Cable, 16-pole/free end

Length	Item No.	Pack. Unit
2 m	706-100/1602-200	10

#### Technical Data

Ports	16-pole HE 10 pluggable connector/one free cable end
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color coding	acc. to DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20
Length	2 m

## Accessories

### Software

#### Interface Configuration Software



Description	Item No.	Pack. Unit
Configuration and display tool for PC		
Download: <a href="http://www.wago.com">www.wago.com</a>	-	

#### JUMPFLEX®-ToGo Smartphone App



Description	Item No.	Pack. Unit
Configuration and display tool for smartphones (Android)		
Download: Google Play	-	

#### WAGO USB Communication Cable



Description	Item No.	Pack. Unit
Connects a PC (notebook) to the service interface of the 857/2857 Series signal conditioner		
Length: 2.5 m	750-923	1
Length: 5.0 m	750-923/000-001	1

#### Bluetooth® Adapter



Description	Item No.	Pack. Unit
Connects a PC (notebook) to the service interface of the 857 Series signal conditioner		
	750-921	1

### Push-In Type Jumper Bars

#### Push-in type jumper bars, light gray, insulated, 18 A



Description	Item No.	Pack. Unit
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. suffixes for colored, push-in type jumper bars		
yellow	.../000-029	
red	.../000-005	
blue	.../000-006	

#### Comb-style jumper bar




Description	Item No.	Pack. Unit
2-way	281-482	100

## Current Transformers, Rogowski Coils and Power Supplies

### Current transformers




 For additional information, see Section 4, page 266

Primary current: 50 ... 2500 A, secondary current: 1 A or 5 A 855 Series (other values upon request or at www.wago.com)	Item No.	Pack. Unit
	-	

### Rogowski coils



 For additional information, see Section 4, page 276

Primary current up to 4000 A 855 Series	Item No.	Pack. Unit
	-	

### JUMPFLEX® POWERED BY EPSITRON®



	Item No.	Pack. Unit
	787-2852	1

## Wiring

### Interface Adapter for System Wiring



	Item No.	Pack. Unit
	857-980	1

### Supply and Through Module



	Item No.	Pack. Unit
	857-979	1

### WAGO Interface Cable, 16-pole/free end




Length: 2 m	Item No.	Pack. Unit
	706-100/1602-200	1

## Relay

### Relay with 1 Changeover Contact, 24 / 250 VDC / 6 A



 See also, 857 Series Relay


	Item No.	Pack. Unit
	857-304	1

## Accessories

### Marking

WMB Multi Marking System



 Marking software and printer, see Section 11

	Item No.	Pack. Unit
plain	793-501	5 cards
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

Marking strip for TOPJOB® S, white, plain, 11 mm wide,

	Item No.	Pack. Unit
50 m reel	2009-110	1

WMB Multi Marking System



	Item No.	Pack. Unit
See <a href="http://www.wago.com">www.wago.com</a>	-	

### Other Accessories

Operating tool, with a partially insulated shaft



Type 2, (3.5 x 0.5) mm blade	Item No.	Pack. Unit
	210-720	1

End stops



Width	Item No.	Pack. Unit
6 mm	249-116	1
10 mm	249-117	1
14 mm	249-197	1









Test pin








	Item No.	Pack. Unit
	735-500	1

# JUMPFLEX® SIGNS AND SYMBOLS






## Signal Conditioners and Isolation Amplifiers

-  Isolation Amplifiers
-  Temperature signal conditioner
-  Threshold Value Switches
-  Frequency signal conditioner
-  Potentiometer Signal Conditioner
-  Resistance signal conditioner
-  Current Signal Conditioner
-  Voltage Signal Conditioner




## Special Functions

-  Zero/span adjustment
-  Clipping capability
-  Digital output (DO)
-  Relay 1 changeover contact
-  Relay, 1 make contact







## Configuration

-  DIP switch
-  Interface configuration software
-  Interface configuration app
-  Interface configuration display
-  Push/slide switch




## General

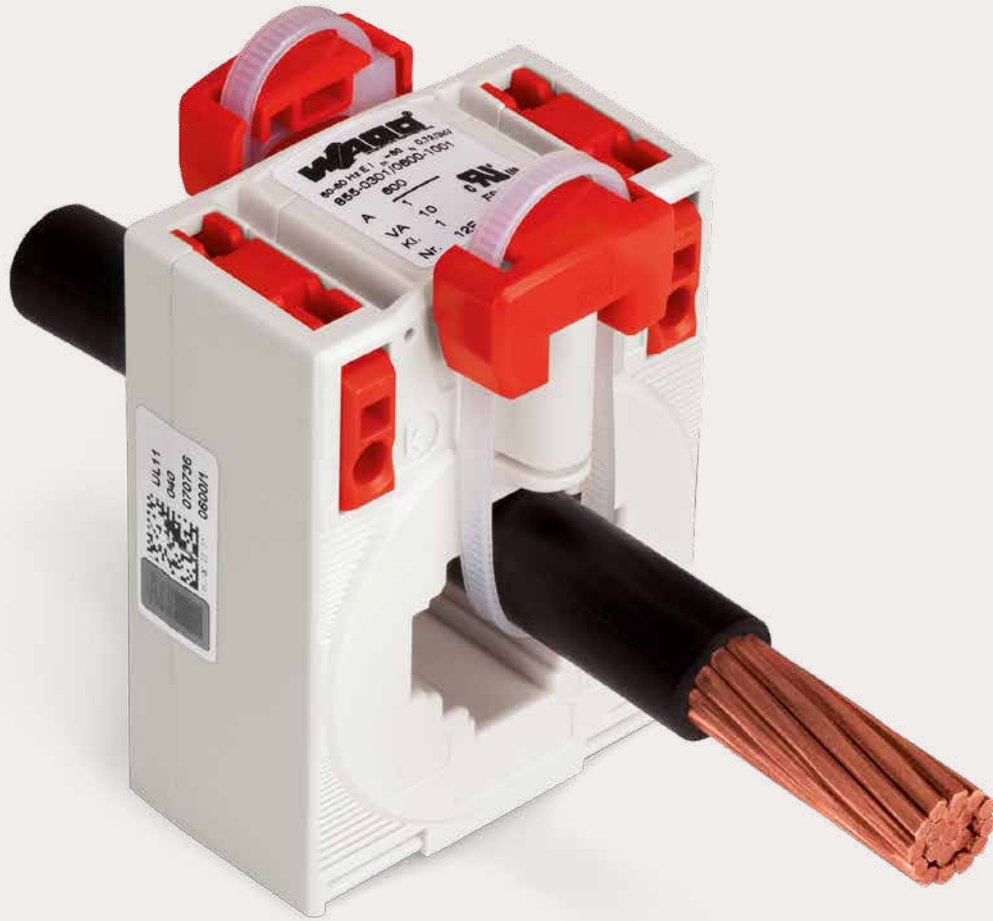
-  Temperature sensors
-  Connection technology
-  Supply voltage

## Input signals

-  Frequencies
-  Potentiometer
-  Resistors
-  Current:
-  Voltage:
-  Bipolar signals current and voltage

## Output signals









-  Current:
-  Voltage:
-  Bipolar signals current and voltage



# Current and Energy Measurement Technology




## Current and Energy Measurement Technology

		Page
	<b>Current Transformers</b>	
	Plug-In Current Transformers with CAGE CLAMP® Connection Technology, 855 Series	266
	Plug-In Current Transformers with a <i>picoMAX</i> ® Pluggable Connector, 855 Series	270
	Split-Core Current Transformers, 855 Series	272
	<b>Rogowski Coils and Current Signal Conditioners</b>	
	Rogowski Coils, 855 Series	276
	<b>Terminal Block Assemblies</b>	
	Terminal Block Assemblies for Current and Voltage Transformers, 2007 Series	280
	<b>Current Sensors with Bus Connection</b>	
	Current Sensors, 789 Series	282
	Accessories for Current Sensors	288
	<b>Voltage Taps</b>	
	Voltage Taps, 855 Series	290
	<b>Power and Energy Measurement</b>	
	3-Phase Power Measurement Modules, 750 Series	292
	<b>JUMPFLEX® Current and Voltage Signal Conditioners</b>	
	2857 Series	294
	857 Series	296
	<b>Line Length Calculator</b>	
	Line Length Calculation for Current Transformers	306


## Current Transformers Selection Guide



Current Transformers, 855 Series	Split-Core Current Transformers	Plug-In Current Transformers with CAGE CLAMP® Connection Technology
Applications	Backfitting	New systems
Coil bobbin	Separable	Closed
Connection technology	Connection cable (color coded)	CAGE CLAMP®
Mounting	Round cable (insulated), copper current bar (insulated)	Round cable, copper current bar, carrier rail, mounting plate
Compatibility with other WAGO components		750-493, (750-493/000-001) 750-494, (750-494/000-001) 750-495, (750-495/000-001) 857-550
Primary rated current	60 A to 1000 A	50 A to 2500 A
Secondary rated current	1 A / 5 A	1 A / 5 A
Accuracy class	0.5, 1 or 3	1 or 3
Ambient operating temperature	-10 ... +55 °C	-5 ... +50 °C
Standards	EN 61869-2	EN 61869-2
Approvals	-	

\*In the measurement range between 0.8 ... 32 A and in combination with WAGO's 3-Phase Power Measurement Modules, the accuracy class 0.5 is met per EN 61869-2.


**Plug-In Current Transformers with a *picoMAX*<sup>®</sup> Pluggable Connector**
**Rogowski Coils  
RT 500 / RT 2000**
**Rogowski Coils  
RC 70 / RC 125 / RC 175**

New systems		Backfitting	Backfitting
Closed		Separable	Bayonet connector, separable
<i>picoMAX</i> <sup>®</sup>		Connection cable	Connection cable
Round cable, carrier rail, mounting plate		Round cable (insulated), copper current bar (insulated)	Round cable, copper current bar
750-493 750-494 750-495 857-550		750-495/000-002 857-552 789-652 / 789-654	750-495/000-002 857-552
32 A	35 / 64 A	up to 2000 A	up to 4000 A
320 mA	1 A	(up to 40.02 mV)	22.5 mV / kA
0.5*	1	–	1
-10 ... +55 °C		-40 ... +80 °C	-40 ... +80 °C
EN 61869-2		IEC 61010-1	EN 61010-1/EN 61869-2
–			UL pending

# Plug-In Current Transformers with CAGE CLAMP® Connections

## 855 Series



### Short description:

The 855 Series Plug-In Current Transformers are inductive, single-conductor current transformers. Due to the measurement principle used, these current transformers are exclusively designed for AC network applications.

### Features:

- Screwless CAGE CLAMP® connection technology
- Several mounting options available
- Vibration- and shock-resistant
- High mechanical retention forces
- High-current carrying capacity
- Continuous overload of 120 % the nominal primary current
- Low-voltage current transformer for operating voltages up to 1.2 kV
- Can be used in 690 V power networks
- UL recognized components

### Technical Data

<b>Input</b>	
Rated continuous thermal current $I_{cth}$	$1.2 \times I_N$
Rated short-time thermal current $I_{th}$	$60 \times I_N$ (max. 100 kA), 1 s
Max. operating voltage $U_m$	$1.2 \text{ kV}_{rms}$
Rated frequency	50 ... 60 Hz
Overcurrent limiting factor	FS5 or FS10 (type dependent, see type plate inscription)
<b>General Specifications</b>	
Conformity marking	CE
Standards/Approvals	EN 61869-1; EN 61869-2
<b>UL (recognized components)</b>	E356480
<b>Environmental Requirements</b>	
Ambient operating temperature	-5 ... +50 °C
Storage temperature	-25 ... +70 °C
Max. operating altitude	1000 m
<b>Safety and Protection</b>	
Test voltage	$6 \text{ kV}_{rms} \text{ AC} / 50 \text{ Hz} / 1 \text{ min}$
Insulation class	E
<b>Connection</b>	
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 4 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch

### Accessories (Selection)

Carrier Rail Adapter for Plug-In Current Transformers (for 855-3xx/xxx-xxx and 855-4xx/xxx-xxx)

Quick-Mount Kit

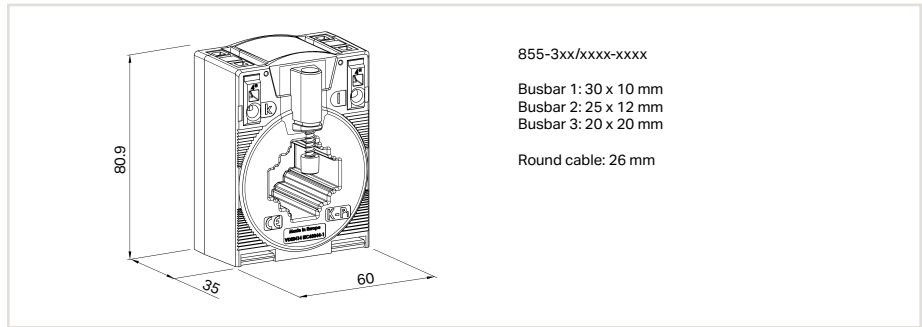


Operating Tool, type 2, blade (3.5 x 0.5) mm, with partially insulated shaft

Terminal Block Assembly for Current Transformers see page 280

3-Phase Power Measurement Module, see page 292

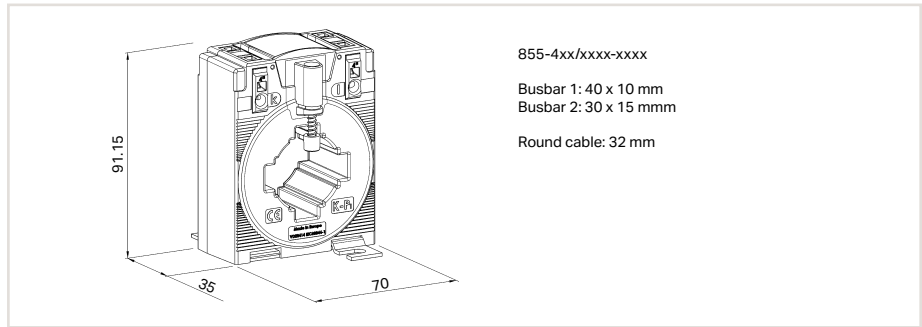
	Item No.	Pack. Unit
Carrier Rail Adapter for Plug-In Current Transformers (for 855-3xx/xxx-xxx and 855-4xx/xxx-xxx)	855-9900	1
Quick-Mount Kit	855-9910	1
Operating Tool, type 2, blade (3.5 x 0.5) mm, with partially insulated shaft	210-720	1
Terminal Block Assembly for Current Transformers see page 280		
3-Phase Power Measurement Module, see page 292		



Plug-In Current Transformers

Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Item No.	Pack. Unit
50 A	1 A	1.25 VA	3	855-301/050-103	1
50 A	5 A	1.25 VA	3	855-305/050-103	1
60 A	1 A	1.25 VA	1	855-301/060-101	1
60 A	5 A	1.25 VA	1	855-305/060-101	1
75 A	1 A	2.5 VA	1	855-301/075-201	1
75 A	5 A	2.5 VA	1	855-305/075-201	1
100 A	1 A	2.5 VA	1	855-301/100-201	1
100 A	5 A	2.5 VA	1	855-305/100-201	1
150 A	1 A	5 VA	1	855-301/150-501	1
150 A	5 A	5 VA	1	855-305/150-501	1
200 A	1 A	5 VA	1	855-301/200-501	1
200 A	5 A	5 VA	1	855-305/200-501	1
250 A	1 A	5 VA	1	855-301/250-501	1
250 A	5 A	5 VA	1	855-305/250-501	1
300 A	5 A	5 VA	1	855-305/300-501	1
400 A	1 A	10 VA	1	855-301/400-1001	1
400 A	5 A	10 VA	1	855-305/400-1001	1
600 A	1 A	10 VA	1	855-301/600-1001	1
600 A	5 A	10 VA	1	855-305/600-1001	1

4

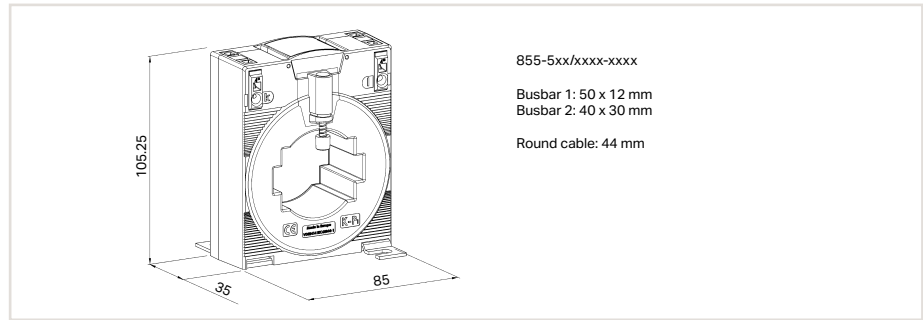


Plug-In Current Transformers

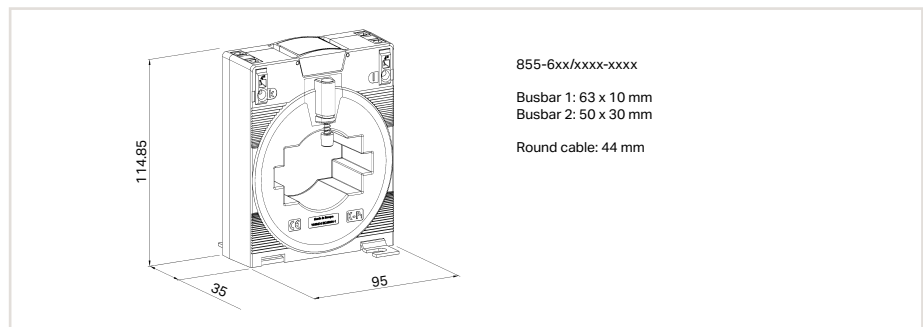
Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Item No.	Pack. Unit
250 A	5 A	5 VA	1	855-405/250-501	1
400 A	1 A	5 VA	1	855-401/400-501	1
400 A	5 A	5 VA	1	855-405/400-501	1
600 A	1 A	5 VA	1	855-401/600-501	1
750 A	5 A	5 VA	1	855-405/750-501	1

## Plug-In Current Transformers with CAGE CLAMP® Connections

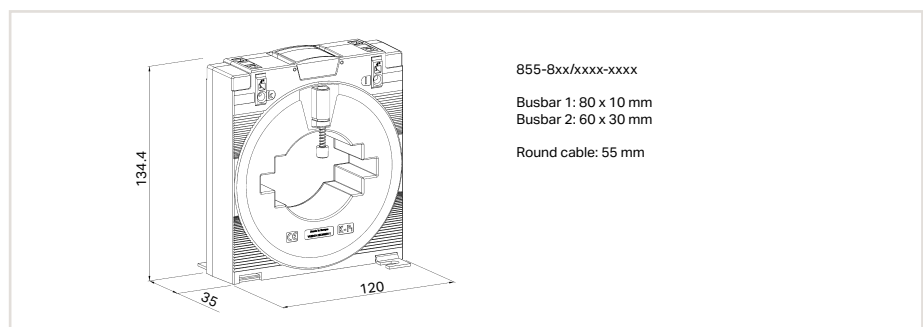
### 855 Series



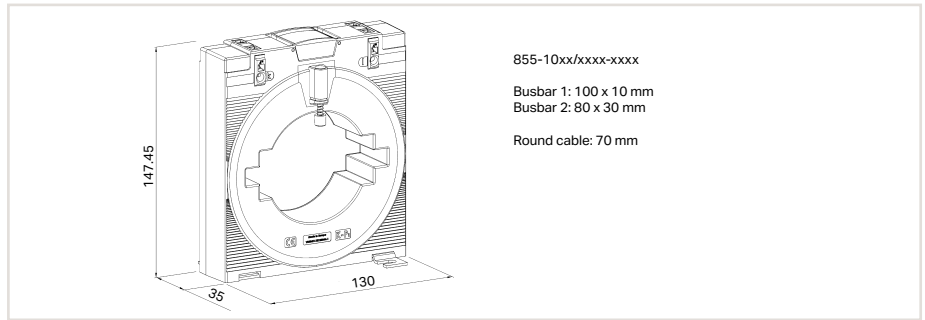
Plug-In Current Transformers	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Item No.	Pack. Unit
	400 A	5 A	10 VA	1	855-505/400-1001	1
	600 A	5 A	10 VA	1	855-505/600-1001	1
	800 A	5 A	10 VA	1	855-505/800-1001	1
	1000 A	1 A	10 VA	1	855-501/1000-1001	1
	1000 A	5 A	10 VA	1	855-505/1000-1001	1



Plug-In Current Transformers	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Item No.	Pack. Unit
	1500 A	5 A	5 VA	1	855-605/1500-501	1
	1500 A	1 A	5 VA	1	855-601/1500-501	1



Plug-In Current Transformers	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Item No.	Pack. Unit
	2000 A	5 A	10 VA	1	855-805/2000-1001	1
	2000 A	1 A	10 VA	1	855-801/2000-1001	1



Plug-In Current Transformers	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Item No.	Pack. Unit
	2500 A	5 A	10 VA	1	855-1005/2500-1001	1
	2500 A	1 A	10 VA	1	855-1001/2500-1001	1

# Plug-In Current Transformers with a *picoMAX*® Pluggable Connector

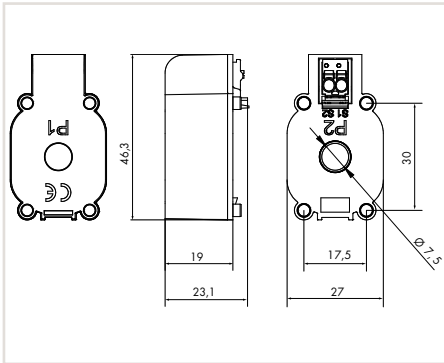
## 855 Series



Plug-in current transformer, primary rated current: 35/64 A, secondary rated current: 1 A, rated power: 0.2 VA, accuracy class: 1

$I_{pr}$	$S_r$	G	Item No.	Pack. Unit
35 A	0.2 VA	1	855-2701/035-001	15 (1)
64 A	0.2 VA	1	855-2701/064-001	15 (1)

$I_{pr}$  = Primary rated current  
 $S_r$  = Rated power  
 G = Accuracy class



### Short description:

The 855 Series Plug-In Current Transformers are inductive, single-conductor current transformers, that function according to the transformer principle. Due to the measurement principle used, these current transformers are exclusively designed for AC network applications.

### Features:

- First current transformer featuring *picoMAX*® connection technology
- Also suitable for space-restricted applications
- Simple assembly permits 17.5 mm phase spacing, allowing perfect adjustment to any circuit breaker
- Easy mounting on DIN-rail or panels via carrier rail adapter
- Convert current from 64 A or 35 A to 1 A
- Accuracy class: 1

### Technical Data

Input	
Rated continuous thermal current $I_{cth}$	100 %
Rated short-time thermal current $I_{th}$	$60 \times I_{pr} / 1 \text{ s}$
Rated surge current $I_{dyn}$	$2.5 \times I_{th}$
Rated insulation level $U_m$	0.72/3/- kV
Rated frequency $f_r$	50 ... 60 Hz
Secondary rated current $I_{gr}$	1 A
General Specifications	
Conformity marking	CE
Standards/Approvals	EN 61869-1; EN 61869-2;  (recognized components) E356480
Environmental Requirements	
Ambient operating temperature	-10 ... +55 °C
Storage temperature	-20 ... +70 °C
Relative humidity	5 ... 85 % (non condensing)
Max. operating altitude	2000 m
Safety and Protection	
Dimensions and Weight	
Dimensions (mm) W x H x D	27 x 46.3 x 23.1
Weight	40 g
Protection type	IP20
Insulation class	E (120 °C)
Connection	
Feedthrough for measurement conductor	7.5 mm Ø
Connection technology	Push-in CAGE CLAMP® ( <i>picoMAX</i> ® 3.5, 2091-1122)
Conductor range	0.2 ... 1.5 mm² / 24 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch

### Accessories (Selection)

Carrier Rail Adapter for Plug-In Current Transformers	855-9927	1
Terminal Block Assembly for Current Transformers see page 280		
Operating Tool, type 1, (2.5 x 0.4) mm blade, with partially insulated shaft	210-719	1

Item No.	Pack. Unit
855-9927	1
210-719	1

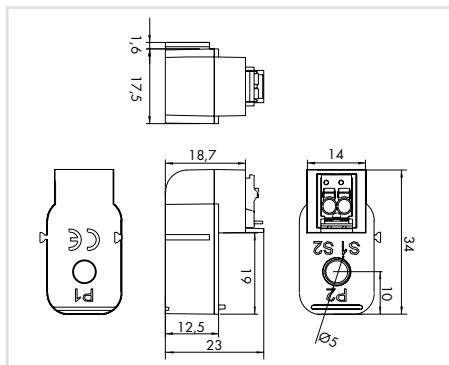




Plug-in current transformer, primary rated current: 32 A, secondary rated current: 320 mA, rated power: 0.01 VA, accuracy class: 0.5

$I_{pr}$	$S_r$	G	Item No.	Pack. Unit
32 A	0.01 VA	0,5	855-1700/032-000	15 (1)

$I_{pr}$  = Primary rated current \*  
 $S_r$  = Rated power  
 G = Accuracy class \*\*



#### Short description:

The *picoMAX*® Plug-In Current Transformer with low-power output is specifically tailored to WAGO's 750 Series 3-Phase Power Measurement Modules.

#### Features:

- First *picoMAX*® Plug-In Current Transformer with low power output
- Assembly via side latches
- Can be mounted directly on an ECB

#### Notes:

- The 855-1700/032-000 Plug-In Current Transformer is specifically tailored to the WAGO-I/O-SYSTEM and must only be used with WAGO's 750 Series 3-Phase Power Measurement Modules.
- Recommended conductor cross-section and length: 1.5 mm<sup>2</sup> (14 AWG) and maximum 3.0 m at the output

\* Measurement range: 0.8 ... 32 A in combination with WAGO's 750-493/-494/-495 3-Phase Power Measurement Modules

\*\* Testing adheres to EN 61869-2 with a conversion ratio of 16 A/0.16 A (accuracy class: 0.5) and an extended primary current of 200 %.

#### Technical Data

Input	
Rated short-time thermal current $I_{th}$	2 kA / 0.1 s
Rated surge current $I_{dyn}$	2.5 x $I_{th}$
Rated insulation level $U_m$	0.72/3/- kV
Rated frequency $f_r$	50 ... 60 Hz
Secondary rated current $I_{sr}$	0.32 A
General Specifications	
Conformity marking	CE
Standards/Approvals	EN 61869-2
Environmental Requirements	
Ambient operating temperature	-10 ... +55 °C
Storage temperature	-20 ... +70 °C
Relative humidity	5 ... 85 % (non condensing)
Max. operating altitude	2000 m
Dimensions and Weight	
Dimensions (mm) W x H x D	17 x 34 x 23
Weight	11 g
Safety and Protection	
Protection type	IP20
Insulation class	E (120 °C)
Connection	
Feedthrough for measurement conductor	5.0 mm Ø
Connection technology	Push-in CAGE CLAMP® ( <i>picoMAX</i> ® 3.5, 2091-1122)
Conductor range	0.2 ... 1.5 mm <sup>2</sup> / 24 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch

#### Accessories (Selection)

	Item No.	Pack. Unit
Operating tool, type 1, (2.5 x 0.4) mm blade, with partially insulated shaft	210-719	50 (1)
3-Phase Power Measurement Module (1 A)	750-493	1
3-Phase Power Measurement Module (480 V / 1 A)	750-494	1
3-Phase Power Measurement Module (690 V / 1 A)	750-495	1

## Split-Core Current Transformers

### 855 Series



4

#### Short description:

WAGO's compact 855 Series Split-Core Current Transformers are ideal for retrofitting existing systems. They are perfect for applications in which the current path must not be disrupted. The transformer's accuracy permits extremely precise current measurements.

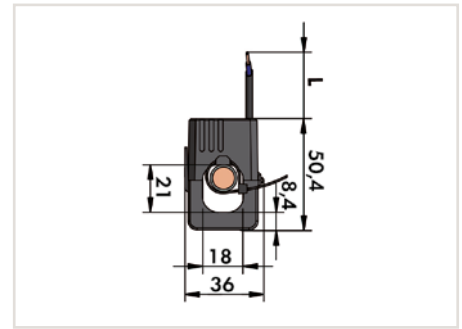
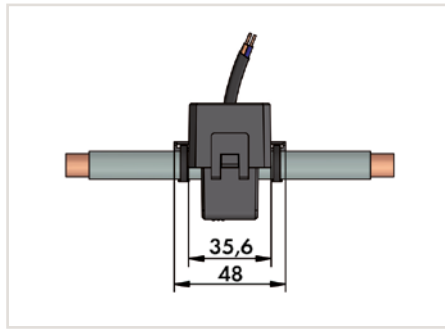
The split-core current transformers are capable of supplying the specified rated power at the end of the secondary cable. All transformers are supplied with color-coded cables. Two UV-resistant cable ties are also included for secure and easy mounting.

#### Features:

- Current ratios from 60 A up to 1000 A (primary side) and 1 A or 5 A (secondary side)
- No interruption of the measuring cable
- Ideal for use in very confined spaces
- Superfast mounting
- For use around insulated cables up to 42 mm diameter
- Compact and hinged
- Color-coded connection cables up to 5 m

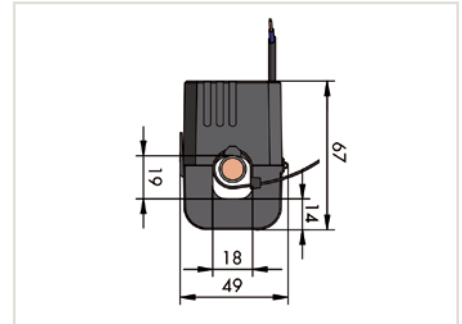
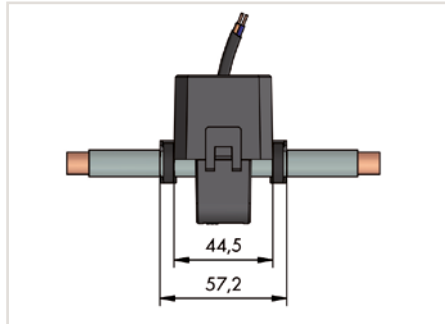
#### Technical Data

<b>Input</b>	
Rated continuous thermal current $I_{cth}$	100 %
Rated short-time thermal current $I_{th}$	$60 \times I_{pr} / 1 \text{ s}$
Rated surge current $I_{dyn}$	$2.5 \times I_{th}$
Rated frequency $f_r$	50 ... 60 Hz
Rated insulation level $U_m$	0.72/3/- kV
<b>Connection</b>	
Conductor cross-sections	0.5 mm <sup>2</sup> , fine-stranded (855-xxx1/...) 1.5 mm <sup>2</sup> , fine-stranded (855-xxx5/...)
Conductor identification	Brown = S1, blue = S2 (855-xxx1/...) Black = S1, red = S2 (855-xxx5/...)
<b>General Specifications</b>	
Conformity marking	CE
Standards/Approvals	EN 61869-1; EN 61869-2
<b>Environmental Requirements</b>	
Ambient operating temperature	-10 ... +55 °C -10 ... +40 °C (855-5xxx/1000-000)
Storage temperature	-20 ... +70 °C
Relative humidity	5 ... 85 % (non condensing)
Max. operating altitude	2000 m
<b>Safety and Protection</b>	
Protection type	IP20
Insulation class	E (120 °C)

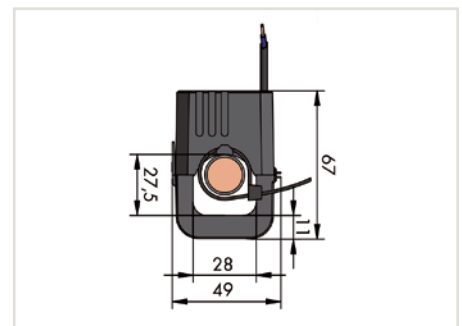
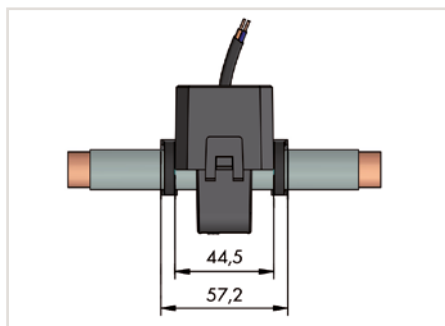


Feedthrough for measurement conductor	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable length	Item No.	Pack. Unit
18 mm Ø	60 A	1 A	0.2 VA	3	3 m	855-3001/060-003	1
	100 A	1 A	0.2 VA	3	3 m	855-3001/100-003	1
	200 A	1 A	0.2 VA	1	3 m	855-3001/200-001	1
	250 A	1 A	0.2 VA	1	3 m	855-3001/250-001	1

4



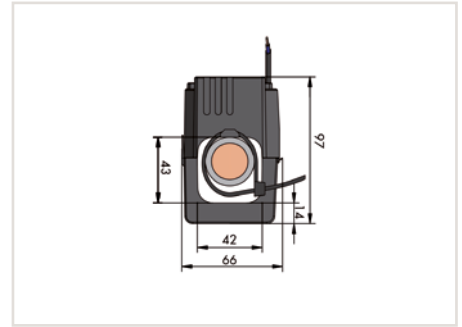
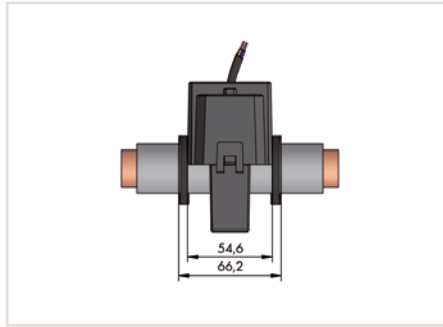
Feedthrough for measurement conductor	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable length	Item No.	Pack. Unit
18 mm Ø	100 A	1 A	0.2 VA	1	3 m	855-4001/100-001	1
	150 A	1 A	0.2 VA	1	3 m	855-4001/150-001	1
	150 A	5 A	1 VA	1	0.5 m	855-4005/150-101	1
	200 A	1 A	0.2 VA	0,5	3 m	855-4001/200-001	1



Feedthrough for measurement conductor	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable length	Item No.	Pack. Unit
28 mm Ø	200 A	1 A	0.2 VA	1	3 m	855-4101/200-001	1
	250 A	1 A	0.2 VA	1	3 m	855-4101/250-001	1
	250 A	5 A	1 VA	1	0.5 m	855-4105/250-101	1
	400 A	1 A	0.2 VA	1	3 m	855-4101/400-001	1
	400 A	5 A	1 VA	1	0.5 m	855-4105/400-101	1

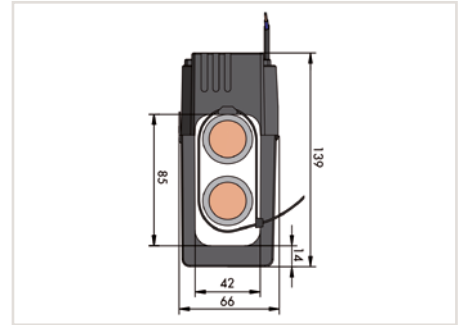
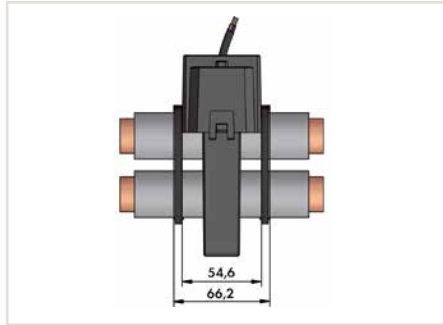
## Split-Core Current Transformers

### 855 Series



Feedthrough for measurement conductor	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable length	Item No.	Pack. Unit
42 mm Ø	250 A	1 A	0.5 VA	1	5 m	855-5001/250-001	1
	400 A	1 A	0.5 VA	0,5	5 m	855-5001/400-000	1
	400 A	5 A	0.5 VA	1	3 m	855-5005/400-001	1
	600 A	1 A	0.5 VA	0,5	5 m	855-5001/600-000	1
	600 A	5 A	0.5 VA	0,5	3 m	855-5005/600-000	1
	1000 A	1 A	0.5 VA	0,5	5 m	855-5001/1000-000	1
	1000 A	5 A	0.5 VA	0,5	3 m	855-5005/1000-000	1

4



Feedthrough for measurement conductor	Primary Rated Current	Secondary Rated Current	Rated Power	Accuracy Class	Cable length	Item No.	Pack. Unit
2 x 42 mm Ø	1000 A	1 A	0.5 VA	0,5	5 m	855-5101/1000-000	1
	1000 A	5 A	0.5 VA	0,5	3 m	855-5105/1000-000	1



## Rogowski Coils

### RT 500 and RT 2000

#### 855 Series



#### Short description:

The Rogowski coil is a closed-air coil with a non-magnetic split core, placed around a cable or current bar. The magnetic field produced by the AC current flowing through the conductor induces an output voltage in the coil.

This measurement procedure electrically isolates the primary circuit (power) and secondary circuit (measurement).

Easy installation of the Rogowski coils allows existing systems to be retrofitted without time-consuming installation or process interruption.

The Rogowski coil can be used together with the 789-652 Signal Conditioner or the 857-552 Rogowski Signal Conditioner.

#### Features:

- Split-core style coil for easy installation
- 55 mm Ø coil aperture for non-contact measurement
- 1.5 m or 3 m connection cable
- Insulated plastic housing (reper UL 94-V0)

#### Technical Data

##### Electrical Data

Positioning error	±0.7 %
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##### Output

Rated frequency $f_r$	50 Hz
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##### Environmental Requirements

Ambient operating temperature	-40 ... +80 °C
Storage temperature	-40 ... +80 °C
Relative humidity	90 %
Max. operating altitude	2000 m

##### Technical Data

Conformity marking	CE
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##### (recognized components)

##### Environmental Requirements

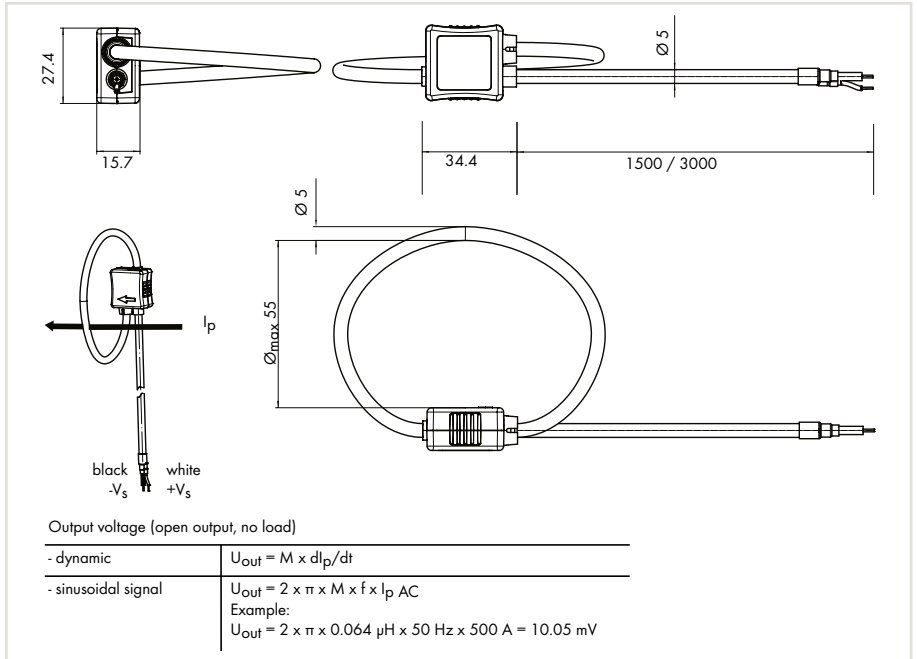
Rated insulation voltage	300 V <sub>rms</sub> AC (Cat. III)
Impulse withstand voltage (1.2/50 µs)	6.5 kV
Voltage for isolation test	3.5 kV <sub>rms</sub> AC / 50 Hz / 1 min
Protection type	IP2X

Rogowski Coil RT 500



Rogowski coil, primary rated current: 500 A, output signal: 10.05 mV

Cable length	Item No.	Pack. Unit
1.5 m	855-9100/500-000	1
3 m	855-9300/500-000	1



Technical Data

Electrical Data

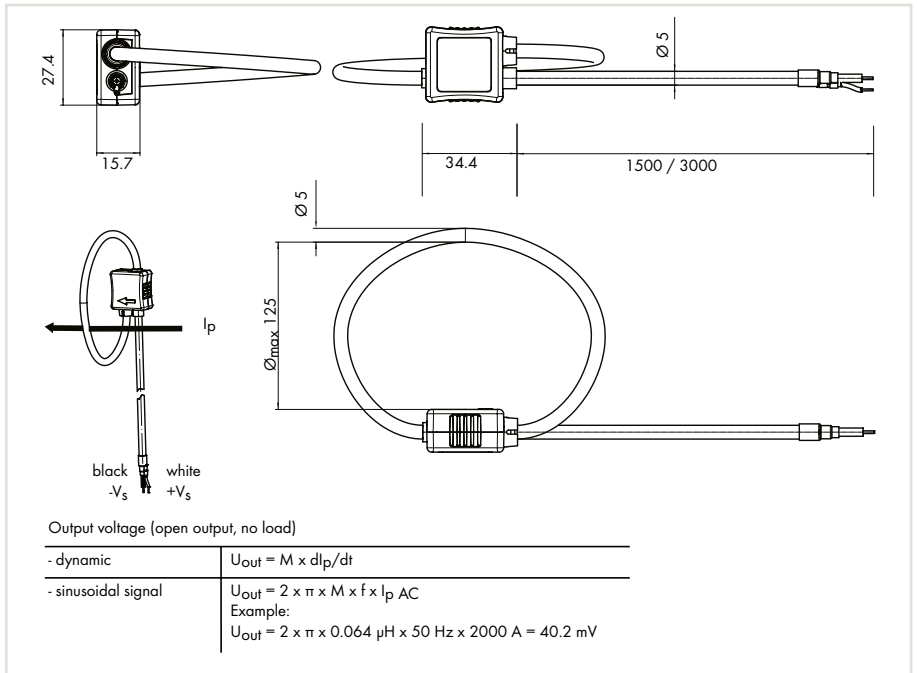
Primary rated current $I_{pN}$	500 A AC
Output	
Output signal	10.05 mV at 500 A / 50 Hz, sinusoidal

Rogowski Coil RT 2000



Rogowski Coil, primary rated current: 2,000 A, output signal: 40.2 mV

Cable length	Item No.	Pack. Unit
1.5 m	855-9100/2000-000	1
3 m	855-9300/2000-000	1



Technical Data

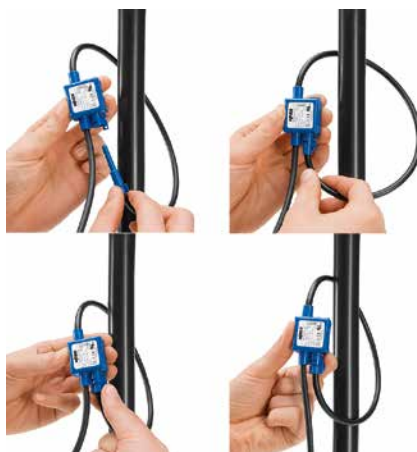
Electrical Data

Primary rated current $I_{pN}$	2000 A AC
Output	
Output signal	40.2 mV at 2000 A / 50 Hz sinusoidal

## Rogowski Coils

### RC 70, RC 125, RC 175

#### 855 Series



#### Short description:

WAGO's Rogowski coils are closed-air coils featuring a non-magnetic split core that can be connected to a 3-Phase Power Measurement Module (750-495/000-002) or a Rogowski Signal Conditioner (857-552).

Easy installation of the Rogowski coils allows existing systems to be retrofitted without time-consuming installation or process interruption.

#### Features:

- Rated insulation voltage: 1000 V Cat. III / 600 V Cat. IV
- Accuracy class: 1 (per EN 61869-2)
- Degree of protection: IP67
- Measurement coil diameter: 70, 125 or 175 mm
- Length of signal lines: 1.5 m or 4.5 m
- Ambient temperature: -40 ... +80 °C
- Sealable bayonet connector
- Fixing lugs for cable ties

\*The specifications for the primary rated current refer to a combination with the WAGO Modules (857-552 and 750-495/000-002).

Rogowski technology allows the coils to measure a wide primary current range of up to 10,000 A without loss of accuracy, because there are no saturation effects.

#### Technical Data

Electrical Data	
Primary rated current $I_{pr}$	4000 A AC*
Rated short-time thermal current $I_{th}$	300 kA at 50 Hz
Accuracy class	1 (per EN 61869-2)
Positioning error	±0.32 %
Output	
Output signal	22.5 mV/kA at 50 Hz
Max. output signal	30 V
Rated frequency $f_r$	50 ... 60 Hz
General Specifications	
Conformity marking	CE
Environmental Requirements	
Ambient operating temperature	-40 ... +80 °C
Storage temperature	-40 ... +80 °C
Relative humidity	90 %
Max. operating altitude	2000 m
Safety and Protection	
Rated insulation voltage	1000 V <sub>rms</sub> AC (Cat. III); 600 V <sub>rms</sub> AC (Cat. II)
Impulse withstand voltage (1.2/50 μs)	12.8 kV
Voltage for isolation test	7.4 kV <sub>rms</sub> AC / 50 Hz / 1 min
Protection type	IP67

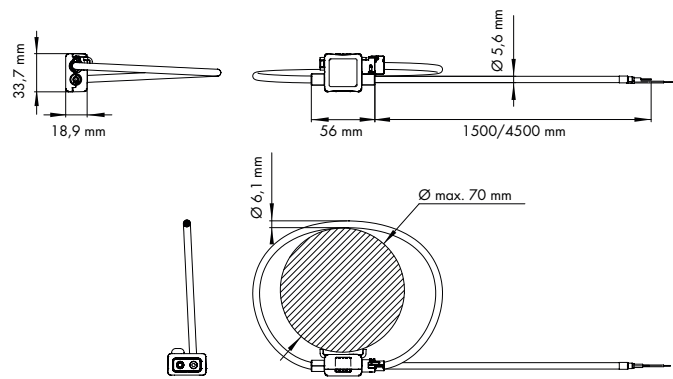


Rogowski Coil RC 70



Rogowski coil, primary rated current: 4,000 A, output signal: 22.5 mV/1 kA, measurement coil diameter: 70 mm

Cable length	Item No.	Pack. Unit
1.5 m	855-9150/2000-701	1
4.5 m	855-9450/2000-701	1



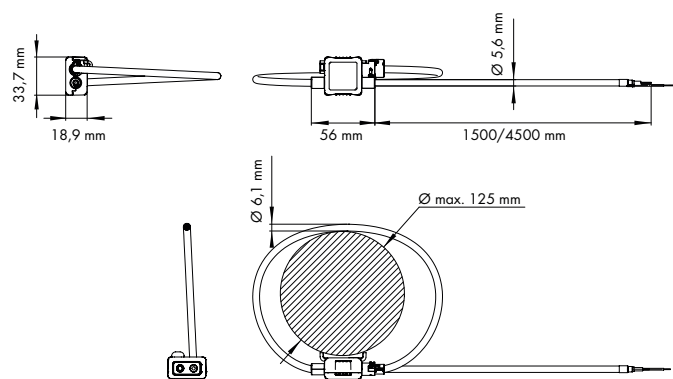
Technical Data	855-9150/2000-701	855-9450/2000-701
Mutual inductance M	71.98 nH	71.98 nH
Feedthrough for measurement conductor	70 mm Ø	70 mm Ø
Weight	124 g	259 g

Rogowski Coil RC 125



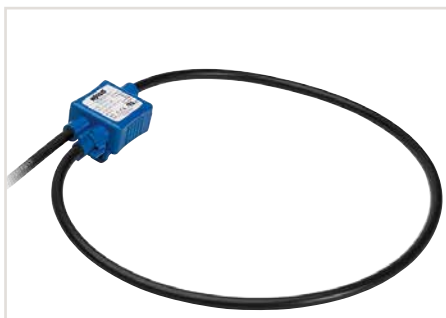
Rogowski coil, primary rated current: 4,000 A, output signal: 22.5 mV/1 kA, measurement coil diameter: 125 mm

Cable length	Item No.	Pack. Unit
1.5 m	855-9150/2000-1251	1
4.5 m	855-9450/2000-1251	1



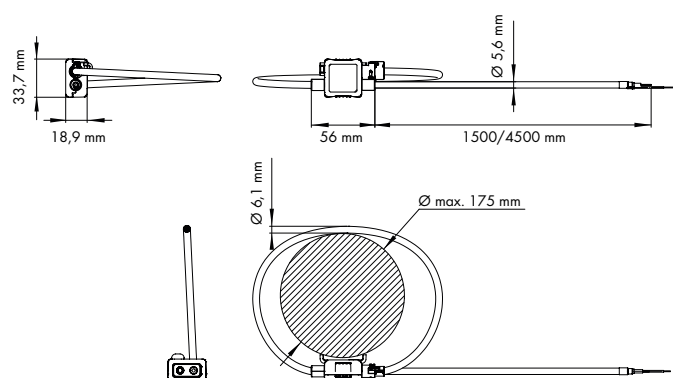
Technical Data	855-9150/2000-1251	855-9450/2000-1251
Mutual inductance M	72.14 nH	72.14 nH
Feedthrough for measurement conductor	Ø 125 mm	Ø 125 mm
Weight	130 g	265 g

Rogowski Coil RC 175



Rogowski coil, primary rated current: 4000 A, output signal: 22.5 mV/1 kA, measurement coil diameter: 175 mm

Cable length	Item No.	Pack. Unit
1.5 m	855-9150/2000-1751	1
4.5 m	855-9450/2000-1751	1

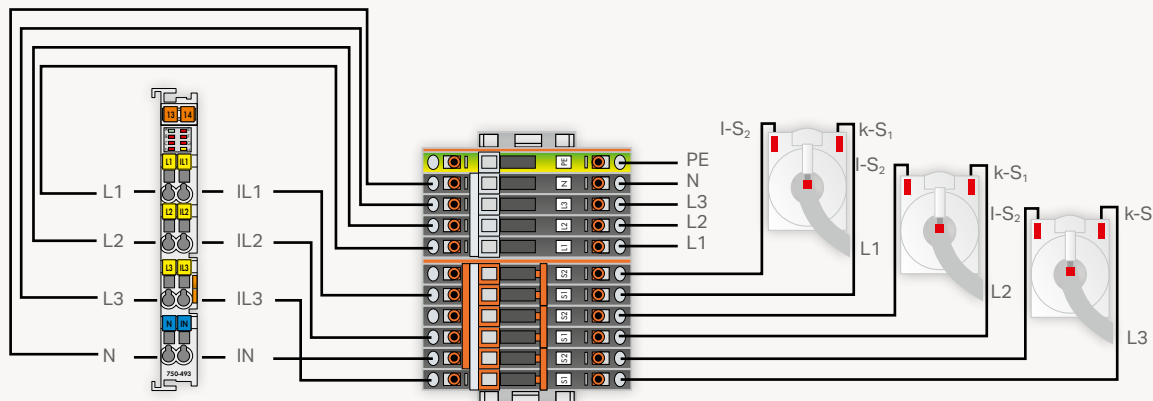


Technical Data	855-9150/2000-1751	855-9450/2000-1751
Mutual inductance M	72.31 nH	72.31 nH
Feedthrough for measurement conductor	175 mm Ø	175 mm Ø
Weight	138 g	273 g

# Terminal Block Assemblies for Current and Voltage Transformers

## Fast and Easy Connection Options

4

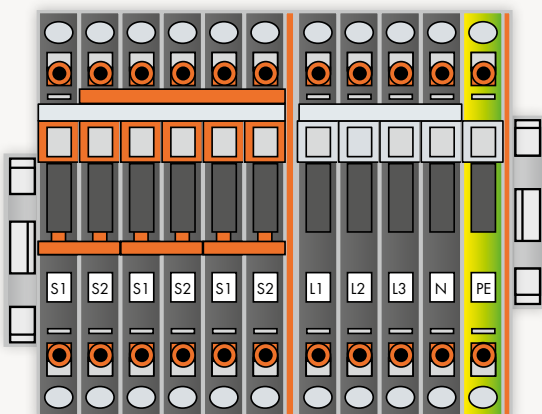


3-Phase Power Measurement Module, 750 Series

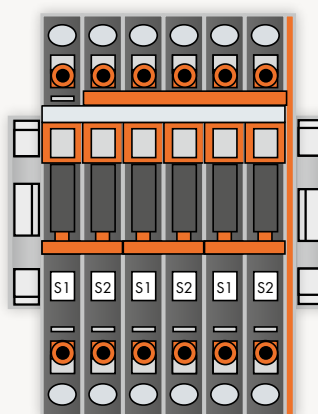
Terminal Block Assemblies for Current and Voltage Transformers, 2007 Series

Current Transformers, 855 Series

Pre-assembled terminal block assembly for easy connection and short-circuiting of current transformers, suitable for **750-493** and **750-494** 3-Phase Power Measurement Modules

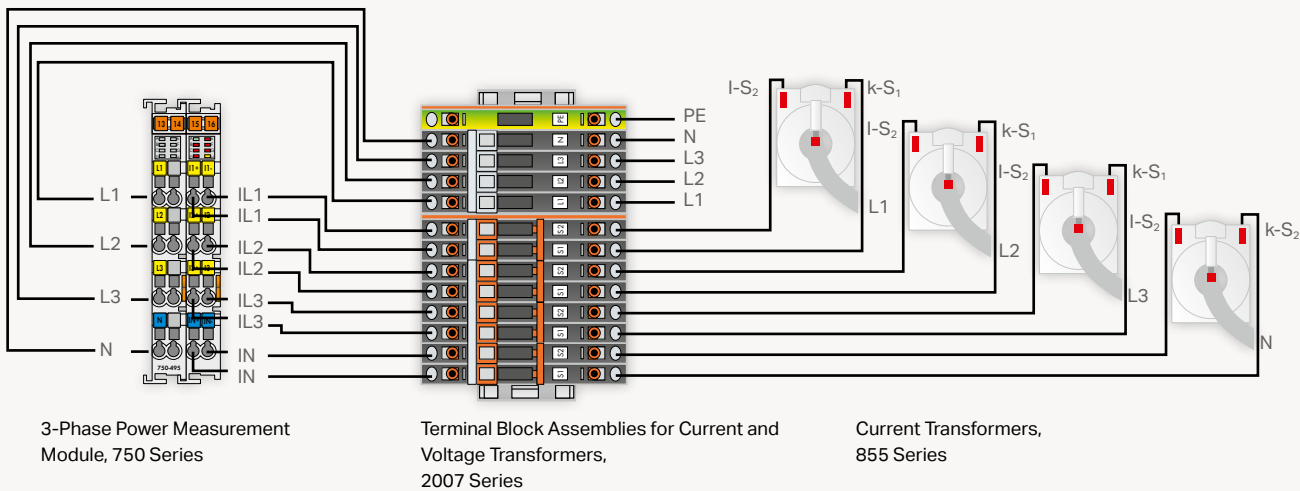


2007-8873  
Connection option for current and voltage, including 'Y' point jumper



2007-8875  
Connection option for current, including 'Y' point jumper

- 'Y' point jumper
- Easy and clear wiring
- Short-circuiting of current transformers
- Control measuring of energy measurement devices

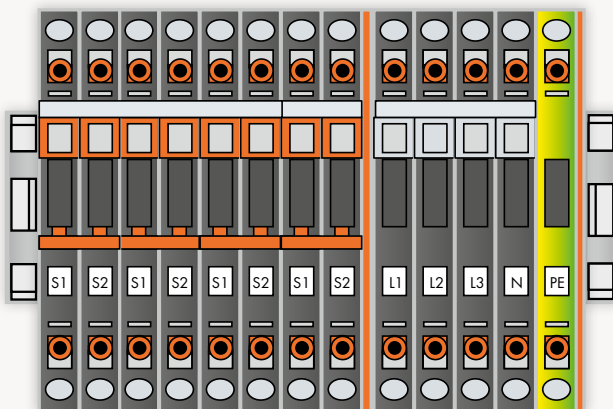


3-Phase Power Measurement Module, 750 Series

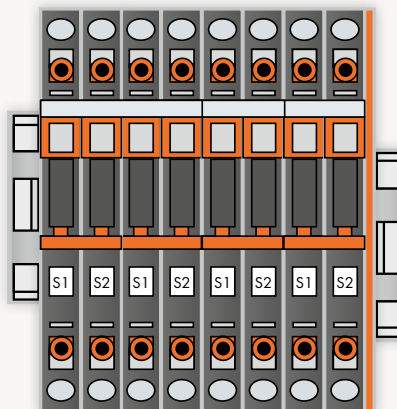
Terminal Block Assemblies for Current and Voltage Transformers, 2007 Series

Current Transformers, 855 Series

Pre-assembled terminal block assembly for easy connection and short-circuiting of current transformers, suitable for **750-495** 3-Phase Power Measurement Modules



2007-8874  
Connection option for current and voltage



2007-8877  
Connection option for current

## Current Sensor with Bus Connection in DIN-Rail-Mount Enclosure

### Measurement Range: 0 ... 80 ADC

#### 789 Series



Current sensor with bus connection, input: 80 ADC, output: RS-485 Modbus

Item No.	Pack. Unit
789-620	1

#### Short description:

WAGO's intelligent 789-620 Current Sensor monitors solar plants or inverters for DC measurements within a large current measurement range.

#### Technical Data

##### Electrical Data

Measurement range	0 ... 80 ADC
Resolution	15 bits
Power supply	12 ... 34 V
Current consumption (max.)	≤ 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
Protection type	IP20

##### Communication

Interface	RS-485
Transmission channels	Half duplex, 8-bit data, 1 stop bit
Protocols	MODBUS
Pluggable connectors	RJ-45
Addressing	1 ... 32
Max. length of bus line	≤ 1200 m
Baud rate	19200 baud
Parity	Even

##### General Specifications

Dimensions (mm) W x H x D	35 x 55 x 90, height from upper-edge of DIN-rail
Permissible ambient operating temperature	-20 ... +70 °C
Storage temperature	-40 ... +85 °C
Conformity marking	CE
Standards/Approvals	DIN EN 50178

#### Accessories for Data and Auxiliary Power Supply

	Item No.	Pack. Unit
Interface Module with RJ-45 Connector	289-965	1
Interface Module with RJ-45 Connector and Shield Clamping Saddle	289-966	1
ETHERNET RJ-45 Connector	750-975	1

**789-620****RJ-45-Connector Pin Assignment:**

Pin	Function
1	Ub
2	
3	n.c.
4	A (Data+)
5	B (Data-)
6	n.c.
7	GND
8	

**Communication Description:**

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

Error Numbers:	
id	Description
01	Illegal Function
03	Illegal Data
101	Overflow (Current > +83 A)
102	Underflow (Current < -3 A)

**DIP Switch Adjustability**

● = ON

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-Mount Enclosure

## Measurement Range: 0 ... 140 ADC

### 789 Series



Current sensor with bus connection, input: 140 ADC, output: RS-485 Modbus

Item No.	Pack. Unit
789-621	1

#### Short description:

WAGO's intelligent 789-620 Current Sensor monitors solar plants or inverters for DC measurements within a large current measurement range. It can be mounted on DIN-35 rails.

#### Technical Data

##### Electrical Data

Measurement range	0 ... 140 ADC
Resolution	15 bits
Power supply	12 ... 34 V
Current consumption (max.)	≤ 8 mA at 24 V
Transmission error	0 ... 80 A: ≤ 0.5 % of upper-range value (at room temperature) 80 ... 140 A: ≤ 1 % of upper-range value (at room temperature)
Temperature coefficient	≤ 0.05 % / K (at ambient operating temperature: -20 ... +60 °C); ≤ 0.1 % / K (at ambient operating temperature: +60 ... +70 °C)
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 > 143 A

##### Mechanical Data

Power cable feed-through	15 mm
Protection type	IP20

##### Communication

Interface	RS-485
Transmission channels	Half duplex, 8-bit data, 1 stop bit
Protocols	MODBUS
Pluggable connectors	RJ-45
Addressing	1 ... 32
Max. length of bus line	≤ 1200 m
Baud rate	19200 baud
Parity	Even

##### General Specifications

Dimensions (mm) W x H x D	35 x 55 x 90, height from upper-edge of DIN-rail
Permissible ambient operating temperature	-20 ... +70 °C
Storage temperature	-40 ... +85 °C
Conformity marking	CE
Standards/Approvals	DIN EN 50178

#### Accessories for Data and Auxiliary Power Supply

	Item No.	Pack. Unit
Interface Module with RJ-45 Connector	289-965	1
Interface Module with RJ-45 Connector and Shield Clamping Saddle	289-966	1
ETHERNET RJ-45 Connector	750-975	1

**789-621****RJ-45-Connector Pin Assignment:**

Pin	Function
1	Ub
2	
3	n.c.
4	A (Data+)
5	B (Data-)
6	n.c.
7	GND
8	

**Communication Description:**

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

Error Numbers:	
id	Description
01	Illegal Function
03	Illegal Data
101	Overflow (Current > +83 A)
102	Underflow (Current < -3 A)

**DIP Switch Adjustability**

● = ON

Adress	DIP Switch					Terminating resistor	DIP Switch 1
	2	3	4	5	6		
1						-	
2						150 Ohm	●
3				●			
4				●	●		
5			●				
6			●				●
7			●	●			
8			●	●	●		
9		●					
10		●					●
11		●		●			
12		●		●	●		
13		●	●				
14		●	●				●
15		●	●	●			
16		●	●	●	●		
17	●						
18	●						●
19	●			●			
20	●			●	●		●
21	●		●				
22	●		●				●
23	●		●	●			
24	●		●	●	●		
25	●	●					
26	●	●					●
27	●	●		●			
28	●	●		●	●		
29	●	●	●				
30	●	●	●				●
31	●	●	●	●			
32	●	●	●	●	●		

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

## Current Sensor with Bus Connection in DIN-Rail-Mount Enclosure

### Measurement Range: 0 ... 50 A<sub>rms</sub> AC

#### 789 Series



Current sensor with bus connection, input: 50 ADC, output: RS-485 Modbus

Item No.	Pack. Unit
789-622	1

#### Short description:

WAGO's intelligent 789-622 Current Sensor monitors AC currents. It can be mounted on DIN-35 rails.

#### Technical Data

##### Electrical Data

Measurement range	0 ... 50 A <sub>rms</sub> AC
Resolution	14 bits
Power supply	12 ... 34 V
Current consumption (max.)	≤ 8 mA at 24 V
Transmission error	typ. < 1 %, max. 3 % of upper-range value (at room temperature)
Temperature coefficient	≤ 0.01% /K
Time frame for polling by master	< 30 ms
Hot plugging	possible
Terminating resistor	150 Ω (can be activated via DIP switch 1)
Status indication	Green: power Red: measured current > 55 A <sub>rms</sub>

##### Mechanical Data

Power cable feed-through	15 mm
Protection type	IP20

##### Communication

Interface	RS-485
Transmission channels	Half duplex, 8-bit data, 1 stop bit
Protocols	MODBUS
Pluggable connectors	RJ-45
Addressing	1 ... 32
Max. length of bus line	≤ 1200 m
Baud rate	19200 baud
Parity	Even

##### General Specifications

Dimensions (mm) W x H x D	35 x 55 x 90, height from upper-edge of DIN-rail
Permissible ambient operating temperature	-20 ... +70 °C
Storage temperature	-40 ... +85 °C
Conformity marking	CE
Standards/Approvals	DIN EN 50178

#### Accessories for Data and Auxiliary Power Supply

	Item No.	Pack. Unit
Interface Module with RJ-45 Connector	289-965	1
Interface Module with RJ-45 Connector and Shield Clamping Saddle	289-966	1
ETHERNET RJ-45 Connector	750-975	1



**789-622****RJ-45-Connector Pin Assignment:**

Pin	Function
1	Ub
2	
3	n.c.
4	A (Data+)
5	B (Data-)
6	n.c.
7	GND
8	

**Communication Description:**

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

Error Numbers:	
id	Description
01	Illegal Function
03	Illegal Data
101	Overflow (Current > +83 A)
102	Underflow (Current < -3 A)

**DIP Switch Adjustability**

● = ON

Address	DIP Switch					Terminating resistor	DIP Switch 1
	2	3	4	5	6		
1						-	
2						150 Ohm	●
3				●			
4				●	●		
5			●				
6			●				●
7			●	●			
8			●	●	●		
9		●					
10		●					●
11		●		●			
12		●		●	●		
13		●	●				
14		●	●				●
15		●	●	●			
16		●	●	●	●		
17	●						
18	●						●
19	●			●			
20	●			●	●		
21	●		●				
22	●		●				●
23	●		●	●			
24	●		●	●	●		
25	●	●					
26	●	●					●
27	●	●		●			
28	●	●		●	●		
29	●	●	●				
30	●	●	●		●		
31	●	●	●	●			
32	●	●	●	●	●		

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

# Accessories for Current Sensors

## 789 Series

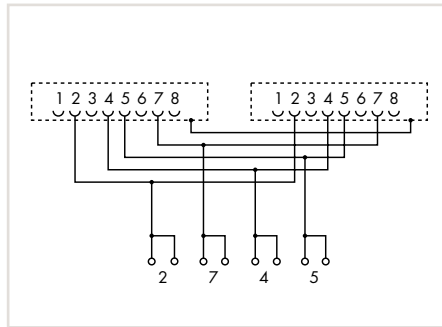


Compatible on the field side with the 789-620, 789-621 and 789-622 Current Sensors.

Required terminal assignment:

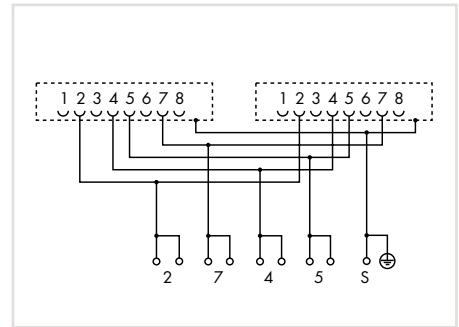
- 2: + Supply
- 7: - Supply
- 4: D+
- 5: D-

For 289-966, direct shield connection to the carrier rail via shield grounding foot.



2 x RJ-45 interface module, double-row PCB terminal blocks, in mounting carrier

Item No.	Pack. Unit
289-965	1



2 x RJ-45 interface module, double-row PCB terminal blocks, in mounting carrier, with shield connection

Item No.	Pack. Unit
289-966	1

### Technical Data

Connection cable	RJ-45 cable assembly (WAGO recommends: UTP)	Shielded RJ-45 cable assembly (WAGO recommends: UTP, STP)
Pluggable connectors	RJ-45, shielded	RJ-45, shielded
Mating cycles (min.)	500	500
Current load	≤ 1.5 A	≤ 1.5 A
Insulation resistance	> 500 MΩ	> 500 MΩ
Dielectric strength, contact/contact	0.5 kV <sub>rms</sub>	0.5 kV <sub>rms</sub>
Contact resistance (typ.)	< 20 mΩ	< 20 mΩ
WAGO shield clamping saddle		790-124 (included)
Permissible ambient operating temperature	-20 ... +85 °C	-20 ... +85 °C
Dimensions (mm) W x H x D incl. mounting carriers/feet	40 x 58 x 85 (height from upper-edge of DIN-rail)	40 x 69 x 85 (height from upper-edge of DIN-rail)
Connection technology	Clamping units 4, 5: CAGE CLAMP® (WAGO 236 Series) Clamping units 2, 7: CAGE CLAMP® (WAGO 745 Series)	Clamping units 4, 5: CAGE CLAMP® (WAGO 236 Series) Clamping units 2, 7: CAGE CLAMP® (WAGO 745 Series)
Conductor range	Clamping units 4, 5: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN) Clamping units 2, 7: 0.2 ... 6 mm <sup>2</sup> / 24 ... 10 AWG	Clamping units 4, 5: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN) Clamping units 2, 7: 0.2 ... 6 mm <sup>2</sup> / 24 ... 10 AWG
Strip length	Clamping units 4, 5: 5 ... 6 mm / 0.2 ... 0.24 inch Clamping units 2, 7: 11 ... 12 mm / 0.43 ... 0.47 inch	Clamping units 4, 5: 5 ... 6 mm / 0.2 ... 0.24 inch Clamping units 2, 7: 11 ... 12 mm / 0.43 ... 0.47 inch

4

# ETHERNET RJ-45 Connector

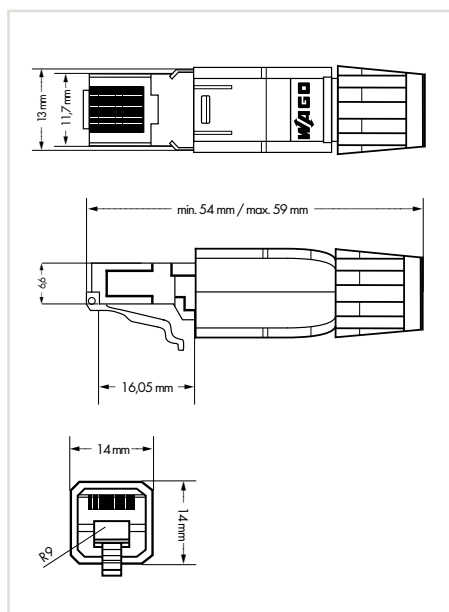
## ETHERNET 10/100 Mbit/s; for Field Assembly

### 975 Series

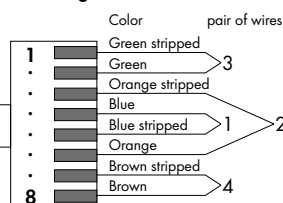


#### ETHERNET RJ-45 Connector

Item No.	Pack. Unit
750-975	1



#### Pin assignment TIA-568A



Versatile RJ-45 connector for industrial, office and building wiring applications.

WAGO's compact 750-975 RJ-45 ETHERNET Connector uses IDC technology for easy field assembly – connection is made without tools. The connector is compliant with all required standards. Large conductor cross-sections can also be connected and the connector satisfies Category 5e.

#### Technical Data

General Specifications	
Number of poles	8
Contact material	Bronze (CuSn6)
Contact plating	> 1.2 µm gold over 1.2 µm nickel
Insulation material	PC (UL-94-V0)
Housing material	Plastic, gray, (UL-94-V0)
Mating cycles	≥ 1000
Connection technology	IDC (Insulation Displacement Contact), per 60352-4
IDC surface treatment	Tin-plated, approx. 5 µm
Conductor range	Solid: 0.13 ... 0.24 mm <sup>2</sup> / 26/1 ... 23/1 AWG Stranded: 0.14 ... 0.36 mm <sup>2</sup> / 26/7 ... 22/7 AWG
Admissible insulation Ø	≤ 1.6 mm
Cable jacket Ø	4.5 ... 8.0 mm
Wire strain relief	Via plastic ribs
Cable strain relief	> 50 N
Shield contacting	Large surface > 180° (on cable shield)
Shield material	Brass (CuZn), hot-dip tinned 3 µm
Permissible ambient operating temperature	-20 ... +70 °C
Storage temperature	-40 ... +70 °C
Protection type	IP20
Standards/Approvals	Basic standard: IEC 60603-7 RJ-45 Category 5 CD ISO/IEC 11801: 2002; EN 50173: 2002; EIA/TIA 568A: 2002; Ⓢ UL 508; Marine applications, visit <a href="http://www.wago.com">www.wago.com</a>
Electrical Data	
Contact resistance	(wire – IDC) < 1 mΩ; (strand – IDC) < 5 mΩ
Connector shield	< 20 mΩ
Insulation resistance	(100 V) > 1 GΩ
Dielectric strength	(contact – contact) > 1000 V, 1 min; (shield – contact) > 1500 V, 1 min
Nominal current	1.75 A / 20 °C

## Voltage Taps

### 855 Series



#### Short description:

WAGO's 855 Series Voltage Taps easily and safely tap the measurement voltage. This allows a fuse-protected measurement voltage to be tapped from an insulated conductor with just one turn – no tools required.

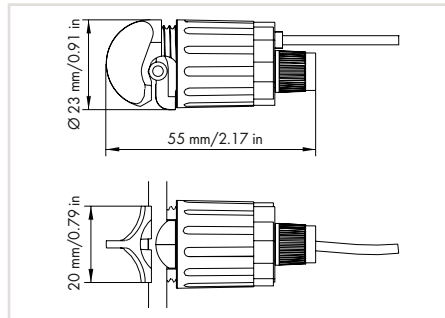
#### Features:

- Safely tap the measurement voltage with just one turn
- Tool-free assembly
- Secure mounting
- 855-8001 and 855-8003 Voltage Taps include a (5 x 25) mm 2 A fuse
- For insulated conductors up to 16 mm<sup>2</sup> (6 AWG)
- Cable length 3 m

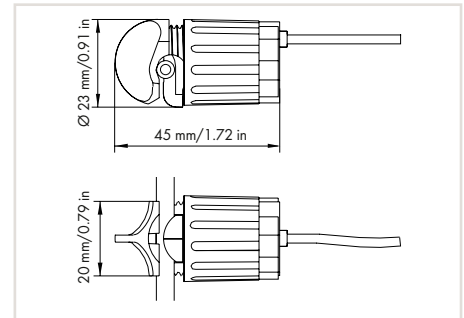
#### Technical Data

##### General Specifications

Nominal voltage	400 VAC
Max. permissible continuous current	2 A
Max. voltage drop (output)	< 500 mV AC
Test voltage	3 kV, 50 Hz, 1 min
Degree of pollution	2
Rated surge voltage	6 kV
Oversoltage category	III
Output short circuit protection	6 kA at 400 V/50 Hz
Conformity marking	CE
Standards/Approvals	EN 60998-1:2004; EN 60998-2-3:2004; EN 60947-7-3:2009; EN 60721-3-3:1996; EN 50581:2012
<b>Environmental Requirements</b>	
Ambient operating temperature	-5 ... +55 °C
Storage temperature	-20 ... +70 °C
Relative humidity	5 ... 85 % (non condensing)
Max. operating altitude	2000 m
<b>Safety and Protection</b>	
Protection type	IP20
<b>Connection and Mounting Type</b>	
Mounting	On insulated round conductor, IDC connection
Type of cable, cable length	Secondary side: flexible, 3 m long, 1.0 mm <sup>2</sup> (17 AWG) cross-section, with ferrule

Voltage tap, with fuse, 2.5 ... 6 mm<sup>2</sup>, phase

Color	Item No.	Pack. Unit
black	855-8001	1

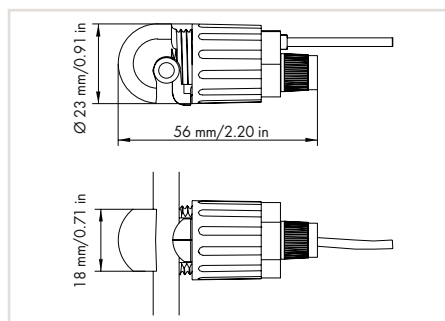
Voltage tap, without fuse, 2.5 ... 6 mm<sup>2</sup>, neutral conductor

Color	Item No.	Pack. Unit
Blue	855-8002	1

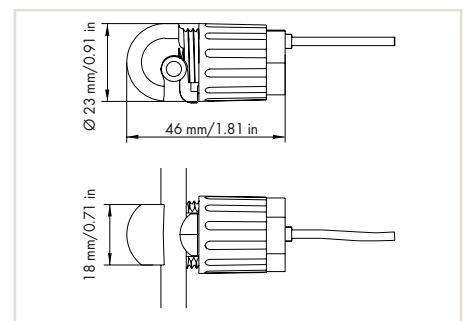
**Technical Data**

Conductor cross-sections	Solid/fine-stranded: 2.5 ... 6 mm <sup>2</sup> (14 ... 10 AWG)
Feedthrough for measurement conductor	3 ... 5 mm Ø
Fuse	2 A, 450 V, F, 70 kA, (5 x 25) mm
Dimensions (W x H x D)	23 x 59 x 23 mm
Weight	28 g

Conductor cross-sections	Solid/fine-stranded: 2.5 ... 6 mm <sup>2</sup> (14 ... 10 AWG)
Feedthrough for measurement conductor	3 ... 5 mm Ø
Fuse	2 A, 450 V, F, 70 kA, (5 x 25) mm
Dimensions (W x H x D)	23 x 50 x 23 mm
Weight	20 g

Voltage tap, without fuse, 10 ... 16 mm<sup>2</sup>, neutral conductor

Color	Item No.	Pack. Unit
black	855-8003	1

Voltage tap, with fuse, 10 ... 16 mm<sup>2</sup>, phase

Color	Item No.	Pack. Unit
Blue	855-8004	1

**Technical Data**

Conductor cross-sections	Solid/fine-stranded: 10 ... 16 mm <sup>2</sup> (8 ... 6 AWG)
Feedthrough for measurement conductor	5 ... 7 mm Ø
Fuse	2 A, 450 V, F, 70 kA, (5 x 25) mm
Dimensions (W x H x D)	23 x 59 x 23 mm
Weight	29 g

Conductor cross-sections	Solid/fine-stranded: 10 ... 16 mm <sup>2</sup> (8 ... 6 AWG)
Feedthrough for measurement conductor	5 ... 7 mm Ø
Fuse	2 A, 450 V, F, 70 kA, (5 x 25) mm
Dimensions (W x H x D)	23 x 50 x 23 mm
Weight	21 g



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# POWER AND ENERGY MEASUREMENT

## Using 3-Phase Power Measurement Modules

### We Reduce Your Energy Costs!

The WAGO-I/O-SYSTEM 750 offers a comprehensive range of perfectly tuned solutions for your energy measurement applications. WAGO's 3-Phase Power Measurement Modules measure and process all relevant metrics from a three-phase supply network. They provide system operators with increased insight into energy consumption by specific machines and systems, as well as the ability to perform comprehensive network analysis.

### We Protect Your Machines!

Additionally, collected metrics allow the operator to optimize the supply to a drive or machine, protecting the system from damage and failure. To achieve this, WAGO's 3-Phase Power Measurement Modules can be easily integrated into existing systems for intelligent and economical machine protection.

- Measure machine and system energy consumption values
- Determine and process all relevant metrics
- Comprehensive network analysis
- Connect to the WAGO-I/O-SYSTEM: field-bus-independent, compact and flexible
- Compatible with the dark gray modules from the robust WAGO-I/O-SYSTEM 750 XTR Series – perfect for monitoring harsh applications in eXTReme environments:
  - eXTReme temperatures from  $-40$  to  $+70$  °C
  - eXTReme isolation up to 5 kV impulse voltage
  - eXTReme vibration resistance up to 5g acceleration



4

	750-493	750-494	750-495
Energy consumption	✓	✓	✓
Voltage	3~ 480 V	3~ 480 V	3~ 480 V/690 V
Current	1 A (750-493) 5 A (750-493/000-001)	1 A (750-494) 5 A (750-494/000-001)	1 A (750-495) 5 A (750-495/000-001) Rogowski Coil (750-495/000-002)
Active power/energy	✓	✓	✓
Phase position	✓	✓	✓
Reactive power/energy	via function block	✓	✓
Apparent power/energy	via function block	✓	✓
Rotary field detection		✓	✓
Power factor	(✓)	✓	✓
Frequency measurement	✓	✓	✓
Four-quadrant operation (inductive, capacitive, consumer, generator)		✓	✓
Harmonic analysis (up to the 41st harmonic)		✓	✓
N-conductor measurement			✓
Other models		Extended temperature range: -20 ... +60 °C: 750-494/025-000 (1 A), 750-494/025-001 (5 A)	750 XTR: 750-495/040-000 (1 A), 750-495/040-001 (5 A), 750-495/040-002 (Rogowski Coil)
Housing width	12 mm	12 mm	24 mm

# JUMPFLEX® Signal Conditioners

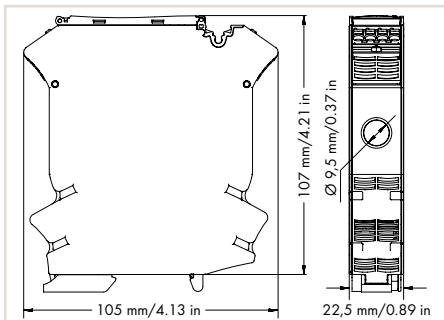
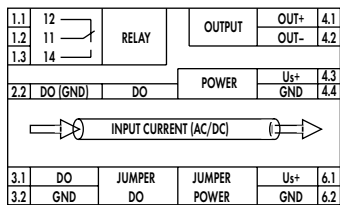
## Current Signal Conditioner 100 A AC/DC

### 2857 Series



**JUMPFLEX®** Current Signal Conditioner, current input signal: 100 A AC/DC, current and voltage output signal, digital and relay output, configuration via software, supply voltage: 24 VDC, 22.5 mm wide

Item No.	Pack. Unit
2857-550	1



#### Short description:

WAGO's 2857-550 Current Signal Conditioner measures AC/DC currents up to 100 A, while converting the measured current into an analog standard signal at the output.

#### Features:

- Both digital signal output and relay with changeover contact react to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Clipping capability provides analog signal limitation to output end values.
- Adjustable software filter
- Input/output response simulation via configuration display
- Safe 3-way isolation with 4 kV test voltage per EN 61140

#### Specialty functions:



#### Configuration via:



Accessories,  
page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app, configuration display

##### Input

Input signal  
Response threshold  
Resolution  
Frequency range

500 m... 100 A (AC) / -100 ... 100 A (DC) \*  
500 mA (AC) / 250 mA (DC)  
10 mA  
15 ... 1000 Hz

##### Output

Output signal

Current

±10 mA; 0 ... 10 mA; 2 ... 10 mA;  
±20 mA; 0 ... 20 mA; 4 ... 20 mA \*

Voltage

±5 V; 0 ... 5 V; 1 ... 5 V;  
±10 V; 0 ... 10 V; 2 ... 10 V \*

Overcurrent

0 % or +5 % (e.g., 10.5 V / 24 mA)

Measurement range overflow/underflow

0 % or +2.5 %

Load Impedance

Current

≤ 600 Ω

Voltage

≥ 1 kΩ

Measuring procedure

True RMS measurement (TRMS) or arithmetic mean value \*

##### Output – Digital:

Max. switching voltage  
Max. continuous current  $I_{DO}$

Supply voltage applied: -0.3 V  
100 mA (no internal restriction)

##### Output – Relay

Contact type  
Contact material  
Max. switching voltage

1 changeover contact (1 u)  
AgNi (gold-plated)  
250 VAC

Max. continuous current (terminal blocks in a row)

6 A

Dielectric strength, open contact (AC, 1 min)

1 kV<sub>rms</sub>

Pull-in/drop-out/bounce time (typ.)

8 ms / 4 ms / 8 ms

##### General Specifications

Nominal supply voltage  $U_S$   
Supply voltage range  
Current input (at 24 VDC)  
Max. operating frequency  
Response time  
Response time ( $T_{10-90}$ )  
Linearity error  
Measurement error  
Temperature coefficient  
Conformity marking

24 VDC  
 $U_S$  -30 ... +30 %  
≤ 50 mA (+  $I_{DO}$ )  
3.3 kHz  
Signal cycle duration + 1 ms  
Max. 60 ms  
≤ 1 %  
≤ 0.2 % (of the full scale value)  
≤ 0.01% / K  
CE

Standards/Approvals

DIN EN 60664-1;  
Safe isolation per DIN EN 61140

##### Environmental Requirements

Ambient operating temperature  
Storage temperature

-40 ... +70 °C  
-40 ... +85 °C

##### Safety and Protection

Test voltage  
(input/output/supply)  
Test voltage (measuring circuit – output)

2.5 kV (AC), 50 Hz, 1 min  
4 kV (AC), 50 Hz, 1 min

##### Connection and Mounting Type

Connection technology  
Conductor range

Push-in CAGE CLAMP® (picoMAX® 5.0)

Solid

0.2 ... 2.5 mm<sup>2</sup>

Fine-stranded

24 ... 12 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

Feedthrough for measurement conductor

9.5 mm Ø

##### Dimensions and Weight

Dimensions (mm) W x H x D

22.5 x 107 x 105, height from upper-edge of DIN-rail

Weight

106 g

(\* Other setting options via the interface configuration software or the interface configuration app)



## 2857-550

## DIP Switch Adjustability

● = ON

## DIP Switch S1

Measuring Method		Filter		Analog Output Inverted		Output Signal (Bipolar for Arithmetic Mean Value)			
1		2		3		4	5	6	Analog Output
	True RMS		inactive		not inverted				(±) 0 ... 20 mA
●	Arithmetic mean value (bipolar output)	●	active	●	inverted		●		4 ... 20 mA
						●			(±) 0 ... 10 V
						●	●		2 ... 10 V
								●	(±) 0 ... 10 mA
							●	●	2 ... 10 mA
						●		●	(±) 0 ... 5 V
						●	●	●	1 ... 5 V

## DIP Switch S1

Measuring Range Underflow		Measuring Range Overflow		Overcurrent (Input Signal - End Value +20%)		Digital Output (DO)/ Relay		
7	8					9	10	
	Lower measuring range -5% *		Upper measuring range +2.5% *		Upper measuring range +5%			Off
●	Lower measuring range		Upper measuring range +2.5%		Upper measuring range +5%	●		DO US+ switching – relay pulls in
	● Lower measuring range		Upper measuring range		Lower measuring range		●	DO GND switching – relay drops out
●	● Lower measuring range -5 %		Upper measuring range +5%		Upper measuring range	●	●	Off

\*acc. to NAMUR NE 43

## DIP Switch S2

Lower Value				Upper value						
1	2	3	4	5	6	7				
A / % (RMS)				A / %						
Software configuration (0)				Software configuration (100)						
●				0			●			100
	●			5			●			90
●	●			8			●	●		70
		●		10					●	50
●		●		12			●		●	30
	●	●		14				●	●	20
●	●	●		16			●	●	●	10
			●	18						
●			●	20						
	●		●	25						
●	●		●	30						
		●	●	35						
●		●	●	40						
	●	●	●	45						
●	●	●	●	50						

# JUMPFLEX® Signal Conditioners

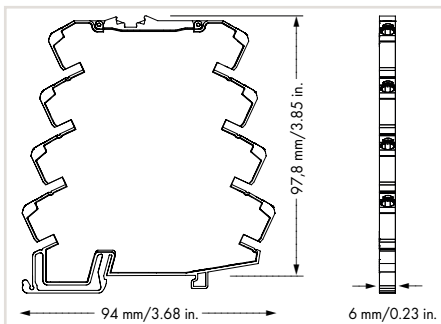
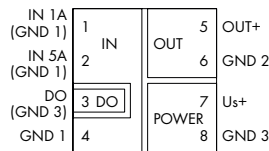
## Current Signal Conditioner 0 ... 1 A, 0 ... 5 A AC/DC

### 857 Series



**JUMPFLEX®** Current Signal Conditioner, current input signal: 5 A AC/DC, current and voltage output signal, digital output, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-550	1



#### Short description:

WAGO's 857-550 Current Signal Conditioner measures both 0 ... 1 A and 0 ... 5 A AC/DC currents, while converting the input signal to an analog standard 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 measurement ranges is calibrated
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140
- Extremely fast response times
- Measurement range overflow indication

#### Specialty functions:



#### Configuration via:



Accessories,  
page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal  
Input resistance  
Frequency range  
Response threshold  
Current carrying capacity

0 ... 1 A AC/DC; 0 ... 5 A AC/DC \*  
10 mΩ (5 A); 47 mΩ (1 A)  
16 ... 400 Hz  
< 0.5 % (of measurement range nominal value)  
2 x I<sub>N</sub> (continuous)

##### Output

Output signal  
Current  
Voltage

0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V \*

Load Impedance

0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA \*  
≤ 600 Ω (I output)\*\*  
≥ 2 kΩ (U output)  
\*\* Temperature range restrictions may occur.

Filter (T<sub>10-90</sub>)

260 ms (DC), 600 ms (AC 50 Hz)

##### Output – Digital:

Max. switching voltage  
Max. continuous current

Supply voltage applied  
500 mA (to 60 °C)  
100 mA (60 ... 70 °C)

##### General Specifications

Nominal supply voltage U<sub>s</sub>  
Supply voltage range  
Current input (at 24 VDC)

24 VDC  
U<sub>s</sub> -30 ... +30 %  
≤ 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 m ... 1 A; 4 m ... 5 A

Transmission error

≤ 0.1 % typ. (≤ 0.4 % max.)

Temperature coefficient

≤ 0.01% /K

Linearity error

< 0.5 % (of measurement range nominal value)

Conformity marking

CE

##### Environmental Requirements

Ambient operating temperature  
Storage temperature

-25 °C ... +70 °C (at nominal current)  
-40 ... +85 °C

##### Safety and Protection

Test voltage  
(input/output/supply)

2.5 kV (AC), 50 Hz, 1 min

##### Connection and Mounting Type

Connection technology  
Conductor range

Push-in CAGE CLAMP®

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

50 g

For additional approvals, see page <?>.

(\* Other setting options via the interface configuration software or the interface configuration app)

## 857-550

## DIP Switch Adjustability

● = ON

## 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 %			
●		Lower limit of measuring range		Upper limit of measuring range +2.5 %		Upper limit of measuring range +5 %			●
	●	Lower limit of measuring range		Upper limit of measuring range		Lower limit of measuring range		●	●
●	●	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.	
<b>Input</b>	
Input Signal	0 ... 5 A
Measuring Method	Mean square value
Filter	not active
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	not active

# JUMPFLEX® Signal Conditioners

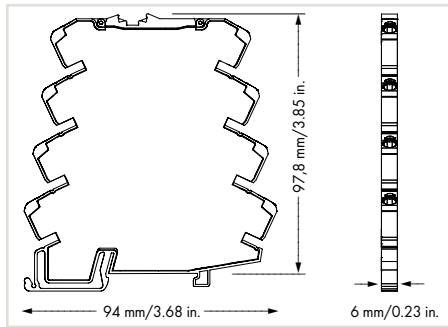
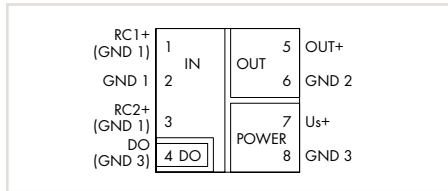
## Rogowski Signal Conditioner

### 857 Series



JUMPFLEX® Current Signal Conditioner, input for Rogowski coils, current and voltage output signal, digital output, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-552	1



**Short description:**  
WAGO's 857-552 Rogowski Signal Conditioner records RMS values from alternating currents via a Rogowski coil, converting the input signal into an analog standard signal on the output side.

- Features:**
- PC configuration interface
  - Supports different Rogowski coil types
  - 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 per EN 61140
  - No current bar interruption during installation
  - Measurement range overflow indication

**Specialty functions:**



**Configuration via:**



Accessories, page 258

**Technical Data**

Configuration	
Configuration	DIP switch, interface configuration software, interface configuration app
Input	
Input signal, current	50 Hz sinusoidal signals RC1 Sensitivity: 10.05 mV RC2A Sensitivity: 40.2 mV RC2B Sensitivity: 22.5 mV/kA
Measurement range	RC1 ≤ 500 A RC2A ≤ 2000 A RC2B ≤ 4000 A
Frequency range	16 ... 1000 Hz
Response threshold	< 1 % (of measuring range nominal value)
Output	
Output signal	Current Voltage
Current	0 ... 10 mA, 2 ... 10 mA, 0 ... 20 mA, 4 ... 20 mA *
Voltage	0 ... 5 V, 1 ... 5 V, 0 ... 10 V, 2 ... 10 V *
Load Impedance	I output ≤ 600 Ω, U output ≥ 1000 Ω
Overcurrent	0 % or +5 % (e.g. 10.5 V/21 mA) *
Measurement range overflow/underflow	0 % or +2.5 % *
Filter (T <sub>10-90</sub> )	600 ms (50 Hz)
Output – Digital:	
Max. switching voltage	Supply voltage applied
Max. continuous current	100 mA
General Specifications	
Nominal supply voltage U <sub>s</sub>	24 VDC
Supply voltage range	U <sub>s</sub> -30 ... +30 %
Current input (at 24 VDC)	≤ 40 mA
Resolution	RC1 250 mA RC2A 1000 mA RC2B 1500 mA
Measuring procedure	True RMS measurement (TRMS)
Response time	1.5 ms + signal cycle duration
Max. operating frequency	< 2 kHz
Response time (T <sub>10-90</sub> )	Max. 60 ms
Linearity error	≤ 0.1 %
Temperature coefficient	≤ 0.01% / K
Measurement error	< 1 %
Conformity marking	CE
Environmental Requirements	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Safety and Protection	
Test voltage (input/output/supply)	2.5 kV (AC), 50 Hz, 1 min
Connection and Mounting Type	
Connection technology	Push-in CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Solid	0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Fine-stranded	9 ... 10 mm / 0.35 ... 0.39 inch
Strip length	
Dimensions and Weight	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	36.2 g

For additional approvals, see page <?>.

(\* Other setting options via the interface configuration software or the interface configuration app)

## 857-552

## DIP Switch Adjustability

● = ON

## DIP Switch S1

Input Signal		RC Configuration Input		Filter		Output Signal			
1		2		3		4	5	6	
	RC1 = RT500 from LEM		RC2A = RT2000 from LEM		off				0 ... 20 mA
●	RC2	●	RC2B = 22.5 mV/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%)	Digital Output DO Signaling	
					9	10
		Lower limit of measuring range +5%*	Upper limit of measuring range +2.5%*	Upper limit of measuring range +5 %*		DO not active
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	Upper limit of measuring range +5 %	●	DO U <sub>S</sub> + switching
	●	Lower limit of measuring range	Upper limit of measuring range	Lower limit of measuring range	●	DO GND switching
●	●	Lower limit of measuring range	Upper limit of measuring range	Upper limit of measuring range		

\*acc. to NAMUR NE 43

## Digital Output DO/Signaling

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

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

## Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input Signal	RC1 500 A
Measuring Method	Mean square value
Filter	not active
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	not active

# JUMPFLEX® Signal Conditioners

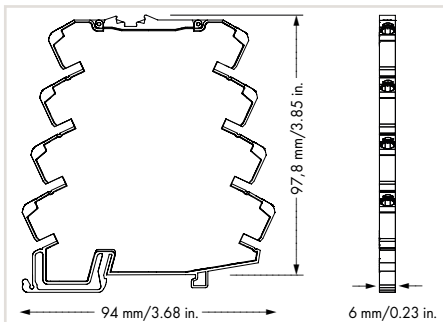
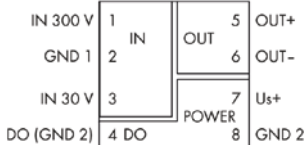
## Voltage Signal Conditioner

### 857 Series



JUMPFLEX® Voltage Signal Conditioner, current input signal for AC and DC voltages, current and voltage output signal, digital output, configuration via software/DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-560	1



#### Short description:

WAGO's 857-560 Voltage Signal Conditioner measures AC and DC voltages up to 300 V AC/DC and converts the input signal into an analog standard signal at the output.

#### Features:

- Two isolated measurement inputs for 30 V and 300 V AC/DC
- RMS measurement or arithmetic mean value
- A digital signal output reacts to configured measurement range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Switchable filter function
- Safe 3-way isolation with 3 kV test voltage per EN 61010-1

#### Specialty functions:



#### Configuration via:



Accessories,  
page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal

300 or 30 V AC/DC

Response threshold

IN 1: 300 mV, IN 2: 30 mV

Input resistance

> 300 kΩ

Frequency range

10 ... 100 Hz (AC)

Overload capacity

IN 1: 600 V; IN 2: 60 V (permanent)

Resolution

IN 1: 30 mV, IN 2: 3 mV

##### Output

Output signal

(+/-)0 ... 20 mA, 4 ... 20 mA,  
(+/-)0 ... 10 mA, 2 ... 10 mA  
(+/-)0 ... 10 V, 2 ... 10 V,  
(+/-)0 ... 5 V, 1 ... 5 V

Load Impedance

≤ 600 Ω (I output);  
≥ 1 kΩ (U output)

##### Output – Digital:

Max. switching voltage

Supply voltage applied

Max. continuous current

100 mA

##### General Specifications

Nominal supply voltage U<sub>s</sub>

24 VDC

Supply voltage range

U<sub>s</sub> -30 ... +30 %

Current input (at 24 VDC)

46 mA + I<sub>DO</sub>

Measuring procedure

Effective value (RMS) or arithmetic mean value

Max. operating frequency

2 kHz

Response time (typ.), signal cycle duration

+1 ms

Response time (T<sub>10-90</sub>)

60 ms

Temperature coefficient

≤ 0.01% / K

Linearity error

≤ 0.1 %

Measurement error

< 0.5 %

Conformity marking

CE

Standards/Approvals

EN 61010-1, EN 61326-1

##### Environmental Requirements

Ambient operating temperature

-40 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

3 kV (AC), 50 Hz, 1 min

input/output/supply

IP20

Protection type

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

55 g

## 857-560

## DIP Switch Adjustability

● = ON

## DIP Switch S1

1	2	Input	3	Measuring Method	4	Filter
		300 V		RMS		Off
	●	150 V	●	Arithmetic mean value	●	Active
●		30 V				
●	●	15 V				

## DIP Switch S1

5	6	7	Output Signal Range
			(+/-) 0 ... 20 mA
	●		4 ... 20 mA
●			(+/-) 0 ... 10 V
●	●		2 ... 10 V
		●	(+/-) 0 ... 10 mA
	●	●	2 ... 10 mA
●		●	(+/-) 0 ... 5 V
●	●	●	1 ... 5 V

## DIP Switch S1

8	9	Measuring Range Underflow	Measuring Range Overflow	10	Digit Output DO/Signaling
		Lower limit of measuring range -5 %*	Upper limit of measuring range +2.5 %*		DO V <sub>S</sub> + switching
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	●	DO GND switching
	●	Lower limit of measuring range	Upper limit of measuring range		
●	●	Lower limit of measuring range	Upper limit of measuring range		

\*per NAMUR NE 43

## 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).

## 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.

## Default Setting

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input	300 V
Measuring Method	RMS
Filter	Off
<b>Output</b>	
Output Signal	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	V <sub>S</sub> + switching

# JUMPFLEX® Signal Conditioners

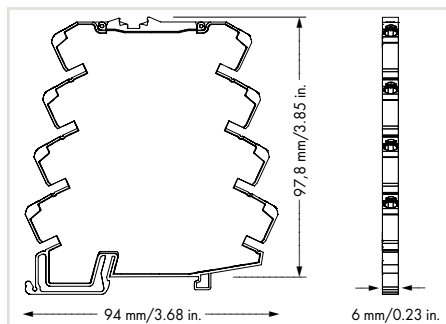
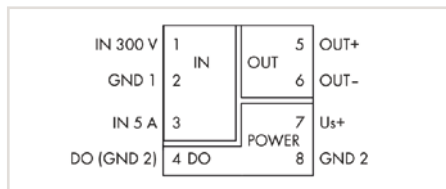
## Power Signal Conditioner

### 857 Series



JUMPFLEX® Power Signal Conditioner, current and voltage input signal, current and voltage output signal, digital output, configuration via software/DIP switch, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-569	1



#### Short description:

WAGO's 857-569 Power Signal Conditioner measures both AC/DC voltages and currents, converting the input signal into an analog standard signal at the output. Measured value processing can be switched between RMS value or arithmetic mean value and between effective, apparent or reactive power, and phase angle.

#### Features:

- Two isolated measurement inputs for AC and DC voltages and AC and DC currents
- RMS measurement or arithmetic mean value
- A digital signal output reacts to configured measuring range limits (switching ON/OFF delay and threshold value switch function configurable with up to two threshold values).
- Switchable filter function
- Safe 3-way isolation with 3 kV test voltage per EN 61010-1

#### Specialty functions:



#### Configuration via:



Accessories,  
page 258

#### Technical Data

##### Configuration

Configuration

DIP switch, interface configuration software, interface configuration app

##### Input

Input signal

IN 1: 300 V AC/DC; IN 2: 5 A AC/DC

Response threshold

IN 1: 300 mV  
IN 2: 10 mA

Resolution

IN 1: 30 mV  
IN 2: 1 mA

Input resistance

≤ 10 mΩ (I input);  
> 300 kΩ (U input)

Frequency range

15 ... 70 Hz (AC)

Overload capacity

10 A AC/DC (permanent)

##### 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  
(can be inverted, also bipolar)

Load Impedance

≤ 600 Ω (I output);  
≥ 1 kΩ (U output)

##### Output – Digital:

Max. switching voltage

Supply voltage applied

Max. continuous current

100 mA

##### General Specifications

Nominal supply voltage  $U_s$

24 VDC

Supply voltage range

$U_s$  -30 ... +30 %

Current input (at 24 VDC)

≤ 46 mA

Measuring procedure

Effective value (RMS)

Measured variables

Effective/apparent/reactive power, power factor

Max. operating frequency

2 kHz

Response time (typ.), signal cycle duration

+1 ms

Response time ( $T_{10-90}$ )

100 ms

Temperature coefficient

≤ 0.01% / K

Linearity error

≤ 0.1 %

Measurement error  
(of the full scale value)

Voltage: < 0.5%  
Current: < 0.5%  
Phase angle: < 0.5%

Conformity marking

CE

Standards/Approvals

EN 61010-1, EN 61326-1

##### Environmental Requirements

Ambient operating temperature

-40 ... +70 °C

Storage temperature

-40 ... +85 °C

##### Safety and Protection

Test voltage

input/output/supply

3 kV (AC), 50 Hz, 1 min

Protection type

IP20

##### Connection and Mounting Type

Connection technology

Push-in CAGE CLAMP®

Conductor range

Solid

0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG

Fine-stranded

0.34 ... 2.5 mm<sup>2</sup> / 22 ... 14 AWG

Strip length

9 ... 10 mm / 0.35 ... 0.39 inch

##### Dimensions and Weight

Dimensions (mm) W x H x D

6 x 97.8 x 94, height from upper-edge of DIN-rail

Weight

55 g



## 857-569 DIP Switch Adjustability

● = ON

### DIP Switch S1

1	2	Input	3	4	Filter
		Active Power			Off
	●	Apparent Power	●	●	Active
●		Reactive Power			
●	●	Power factor			

### DIP Switch S1

5	6	7	Output Signal Range
			0 ... 20 mA
	●		4 ... 20 mA
●			0 ... 10 V
●	●		2 ... 10 V
		●	0 ... 10 mA
	●	●	2 ... 10 mA
●		●	0 ... 5 V
●	●	●	1 ... 5 V

### DIP Switch S1

8	9	Measuring Range Underflow	Measuring Range Overflow	10	Digit Output DO/ Signaling
		Lower limit of measuring range -5 %	Upper limit of measuring range +2.5 %		DO V <sub>S</sub> + switching
●		Lower limit of measuring range	Upper limit of measuring range +2.5 %	●	DO GND switching
	●	Lower limit of measuring range	Upper limit of measuring range		
●	●	Lower limit of measuring range	Upper limit of measuring range		

#### 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).

#### 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.

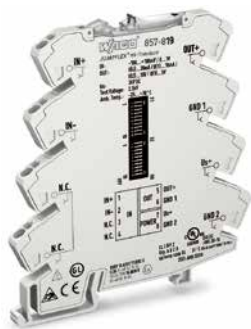
#### Default Setting <sup>1</sup> per NAMUR NE 43

All DIP switches are in "OFF" position for delivery.	
<b>Input</b>	
Input	Power
Measuring Method	Active power
Filter	Off
<b>Output</b>	
Output	Current
Output Signal Range	0 ... 20 mA
Measuring Range Underflow	0 mA
Measuring Range Overflow	20.5 mA
Overcurrent	21 mA
Digital Output DO	V <sub>S</sub> + switching

# JUMPFLEX® Signal Conditioners

## Millivolt Signal Conditioner with Ranges -100 ... +100 mV and 0 ... 1000 mV

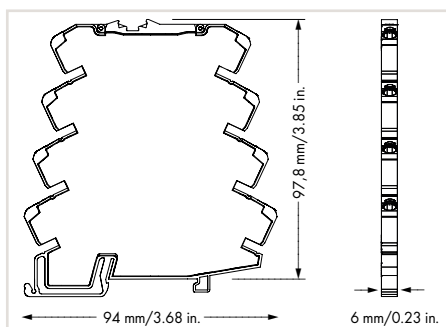
### 857 Series



JUMPFLEX® Voltage Signal Conditioner, bipolar voltage input signal, current and voltage output signal, configuration via software, supply voltage: 24 VDC, 6 mm wide

Item No.	Pack. Unit
857-819	1

IN+	1	IN	OUT	5	OUT+
IN-	2	mV	U <sub>I</sub>	6	GND 1
N.C.	3		POWER	7	U <sub>s</sub> +
N.C.	4			8	GND 2



#### Short description:

WAGO's 857-819 Millivolt Signal Conditioner converts input millivolt signals into an analog standard signal on the output side.

#### Features:

- PC configuration interface
- Switching between measurement ranges is calibrated
- Clipping capability allows analog signal limitation to output end values.
- Safe 3-way isolation with 2.5 kV test voltage per EN 61140

#### Specialty functions:



#### Configuration via:



Accessories,  
page 258

#### Technical Data

Configuration	
Configuration	DIP switch, interface configuration software, interface configuration app
Input	
Input signal	-100 ... +100 mV, 0 ... 200 mV to 0 ... 1000 mV * (in 100 mV increments)
Input resistance	> 1 MΩ
Max. input signal	31.2 V
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
General Specifications	
Nominal supply voltage U <sub>s</sub>	24 VDC
Supply voltage range	U <sub>s</sub> -30 ... +30 %
Current input (at 24 VDC)	≤ 40 mA
Min. measuring span	10 mV
Transmission error	≤ 0.1 % at full measuring span
Temperature coefficient	≤ 0.01% /K
Conformity marking	CE
Environmental Requirements	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Safety and Protection	
Test voltage (input/output/supply)	2.5 kV (AC), 50 Hz, 1 min
Connection and Mounting Type	
Connection technology	Push-in CAGE CLAMP®
Conductor range	Solid 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG Fine-stranded 0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Dimensions and Weight	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	50 g

For additional approvals, see page <?>.

(\* Other setting options via the interface configuration software or the interface configuration app)





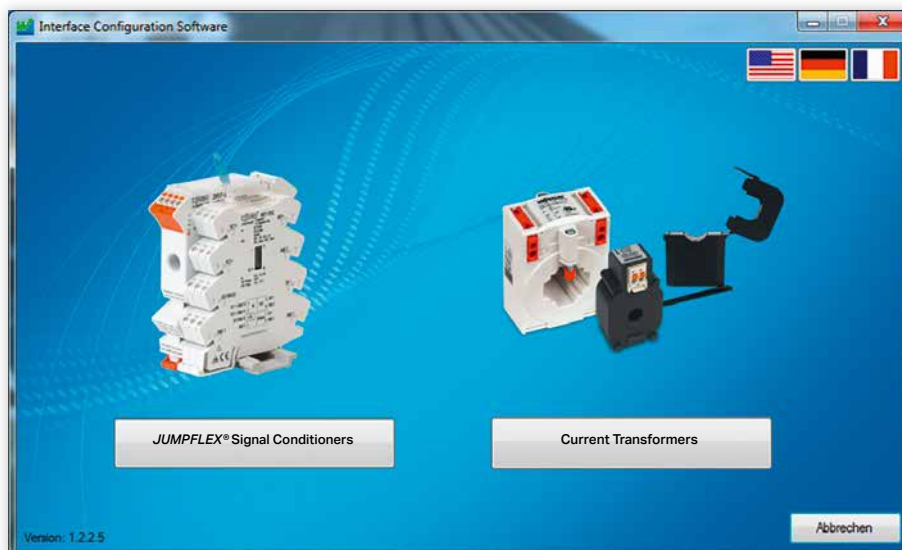
iStock.com/AvatarKnowmad

## LINE LENGTH CALCULATION FOR CURRENT TRANSFORMERS

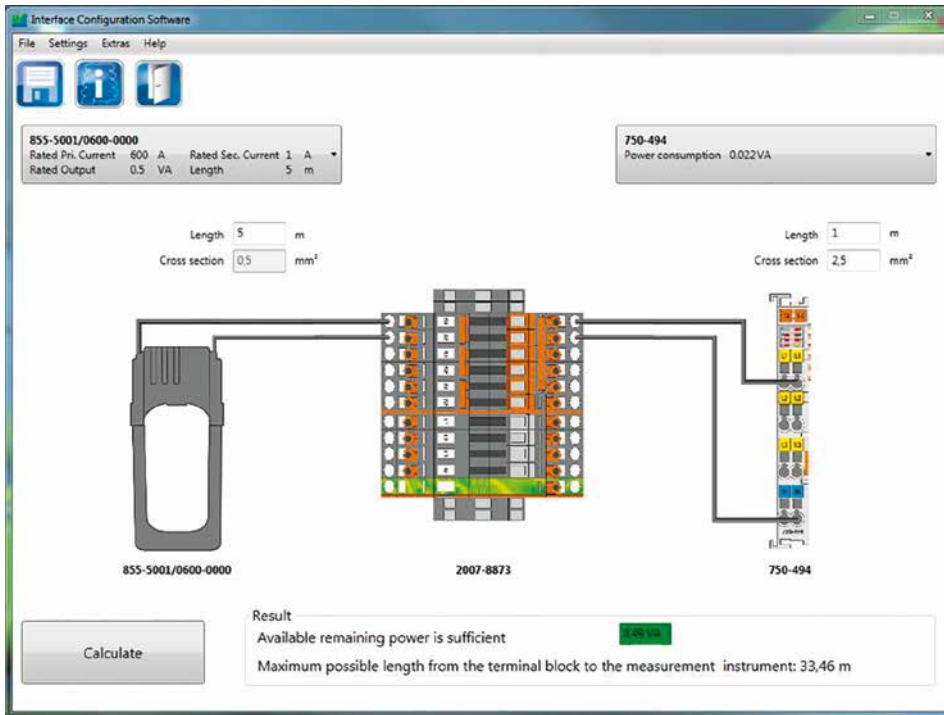
WAGO has expanded its configuration tool interface to include a line length calculator. Calculating line length is quick and easy, with the information being provided for system documentation. All current transformers and power measurement modules can be selected via convenient drop-down menu.

### Current Transformer Power Requirements

To determine actual power requirements, both the power requirements of the connected measurement devices and the power losses from the measurement lines connected to the transformer's secondary circuit must be taken into account.



WAGO Interface Configuration Software



Line length calculation using WAGO Interface Configuration Software

Configuration report	
Project	WAGO
Project number	1582.23.58877
Company	Wago Kontakttechnik GmbH & Co. KG
Author	Michael Meyer
Date	21.08.2015
Stamp	
Transducer:	
Item number	855-3001/0060-0003
Rated Pri. Current	60A
Rated Sec. Current	1A
Rated Output	0.221VA
Measurement instrument:	
Item number	750-494
Power consumption	0.022VA
Cable from transducer to terminal block:	
Length	3m
Cross section	0.5mm <sup>2</sup>
Power loss	0.021VA
Cable from terminal block to measurement instrument:	
Length	1m
Cross section	1mm <sup>2</sup>
Power loss	0.036VA
Result:	
Available power	0.221VA
Total power loss	0.057VA
Remaining power	0.164VA
Required power	0.022VA
Result	Available remaining power is sufficient

Easily documented!

4

Power calculation of copper cables between measurement device and current transformer:

$$P_V = \frac{I_s^2 \times 2 \times l}{A_{Cu} \times 56} \text{ VA}$$

- $I_s$  = Secondary rated measuring current strength [A]
- $l$  = Simple cable length in m
- $A_{Cu}$  = Cable cross-section in mm<sup>2</sup>
- $P_V$  = Power loss of connection cables

Note: When using a common three-phase return line, the values for  $P_V$  are halved.

Current transformer 1 A

$$P_V = \frac{1^2 \times 2 \times 10}{1.5 \times 56} \text{ VA} = 0.24 \text{ VA}$$

Current transformer 5 A

$$P_V = \frac{5^2 \times 2 \times 10}{1.5 \times 56} = 5.96 \text{ VA}$$

Example:











A 1 A or 5 A current transformer is used with an ammeter on the secondary side, with a distance of 10 m between current transformer and measuring device.

Free software download at:  
www.wago.com



# EPSITRON® Power Supply System

## EPSITRON® Power Supply System

	Page	
	<b>EPSITRON® PRO Power</b>	
	Switched-Mode Power Supplies, 1-Phase, 787 Series	314
	Switched-Mode Power Supplies, 3-Phase, 787 Series	320
	<b>EPSITRON® CLASSIC Power</b>	
	Switched-Mode Power Supplies, 1-Phase, 787 Series	326
	Switched-Mode Power Supplies, 1/2-Phase, 787 Series	340
	Switched-Mode Power Supplies, 3-Phase, 787 Series	342
	<b>EPSITRON® ECO Power</b>	
	Switched-Mode Power Supplies, 1-Phase, 787 Series	346
	Switched-Mode Power Supplies, 3-Phase, 787 Series	354
	<b>EPSITRON® COMPACT Power</b>	
	Switched-Mode Power Supplies, 1-Phase, 787 Series	358
	<b>EPSITRON® – UPS, Battery Modules and Buffer Modules</b>	
	Switched-Mode Power Supply with Integrated UPS Charger and Controller	372
	EPSITRON® Uninterruptible Power Supplies (UPS), 787 Series	374
	EPSITRON® Lead-Acid (AGM) Battery Modules, 787 Series	376
	EPSITRON® Capacitive Buffer Modules, 787 Series	380
	<b>EPSITRON® – Redundancy Modules</b>	
	787 Series	382
	<b>EPSITRON® Electronic Circuit Breakers</b>	
	787 Series	387
	<b>DC/DC converters</b>	
	EPSITRON® COMPACT Power – DC/DC Converters, 787 Series	418
	<b>Constant Voltage Sources and Power Supplies</b>	
	Rail-Mount Modules – Constant Voltage Sources, 288 and 289 Series	424
	Rail-Mount Modules – Power Supplies, 288 Series	426
	<b>Accessories, 787 Series</b>	
	EPSITRON® Communication Cables, Wall-Mount Adapter, Carrier Rail Adapters	430

# EPSITRON® Power Supplies Selection Guide

## Switched-Mode Power Supplies, 24 VDC Output

Nominal output current [ADC]	Input		Approvals						DC OK signal/contact	RS-232 serial interface	TopBoost*	PowerBoost	Efficiency typ. [%]	Ambient operating temperature [°C]***	Item Number	Page
	1-phase	2-/3-phase	EN 60335	cURus 60950	cULus 508	GL	ANSI/ISA 12.12.1	ATEX/IEC Ex								
1,0	■		■	■	■	■			■				86,0	-25 ... +70	787-1602**	331
1,25	■		■	■	■	■							80,0	-20 ... +60	787-1702	351
1,3	■		■	■	■	■							82,0	-25 ... +60	787-1002	369
1,3	■		■	■	■	□							82,0	-25 ... +60	787-1102	359
1,3	■		■	■	■	■							87,0	-25 ... +70	787-1202	363
2,0	■		■	■	■	■			■				89,0	-25 ... +70	787-1606**	331
2,5	■		■	■	■	■							86,0	-10 ... +70	787-712	347
2,5	■		■	■	■	■							81,0	-20 ... +60	787-1712	351
2,5	■		■	■	■	■							88,0	-25 ... +60	787-1012	370
2,5	■		■	■	■	□							88,0	-25 ... +60	787-1112	359
2,5	■		■	■	■	■							89,0	-25 ... +70	787-1212	363
3,0	■		■	■	■	■			■		■		87,8	-25 ... +70	787-818	316
3,8	■		■	■	■	■			■				87,0	-25 ... +70	787-1616/000-1000**	332
4,0	■		■	■	■	■			■				89,0	-25 ... +70	787-1616	332
4,0	■		■	■	■	■							88,0	-25 ... +60	787-1022	370
4,0	■		■	■	■	□							88,0	-25 ... +60	787-1122	360
4,2	■		■	■	■	□							90,0	-25 ... +70	787-1216	364
5,0	■		■	■	■	■			■		■		87,8	-25 ... +70	787-822	317
5,0	■		■	■	■	■			■				89,0	-25 ... +70	787-1622	333
5,0	■	■	■	■	■	■			■		■		89,0	-25 ... +70	787-1628	341
5,0	■		■	■	■	■			■	■			89,0	-25 ... +70	787-1675***	372
5,0	■		■	■	■	■			■				86,0	-10 ... +60	787-722	347
5,0	■		■	■	■	■							84,0	-20 ... +60	787-1722	352
6,0	■		■	■	■	□							90,0	-25 ... +70	787-1226	364
6,25	■	■	■	■	■	□			■				87,0	-25 ... +70	787-738	355
10,0	■		■	■	■	■			■		■		90,0	-25 ... +70	787-832	317
10,0	■		■	■	■	■			■		■		91,0	-25 ... +70	787-1632	333
10,0	■		■	■	■	■			■				86,0	-10 ... +70	787-732	348
10,0	■		■	■	■	■			■				84,0	-20 ... +60	787-1732	352
10,0	■	■	■	■	■	■			■	■	■		91,7	-25 ... +70	787-850	322
10,0	■	■	■	■	■	■			■		■		91,7	-25 ... +70	787-840	321
10,0	■	■	■	■	■	□			■				90,0	-25 ... +70	787-1640	343
10,0	■	■	■	■	■	□			■				89,0	-25 ... +70	787-740	355
20,0	■		■	■	■	■			■		■		91,0	-25 ... +70	787-834	318
20,0	■		■	■	■	■			■				92,0	-25 ... +70	787-1634	334
20,0	■		■	■	■	■			■				90,0	-25 ... +70	787-734	348
20,0	■	■	■	■	■	■			■	■	■		92,9	-25 ... +70	787-852	323
20,0	■	■	■	■	■	■			■		■		92,9	-25 ... +70	787-842	321
20,0	■	■	■	■	■	□			■				92,0	-25 ... +70	787-1642	343
20,0	■	■	■	■	■	□			■				90,0	-25 ... +70	787-742	356
40,0	■		■	■	■	■			■				90,0	-25 ... +70	787-736	349
40,0	■	■	■	■	■	■			■	■	■		93,6	-25 ... +55	787-854	323
40,0	■	■	■	■	■	■			■		■		93,6	-25 ... +55	787-844	322
40,0	■	■	■	■	■	□			■				92,0	-25 ... +70	787-1644	344

5



### Switched-Mode Power Supplies, 5, 12, 18, 48 VDC Output

Nominal output current [ADC]	Input, 1-phase	Input, 2-/3-phase	Approvals						DC OK signal/contact	RS-232 serial interface	TopBoost*	PowerBoost	Efficiency typ. [%]	Ambient operating temperature [°C] ****	Item Number	Page
			EN 60335	cURus 60950	cULus 508	GL	ANSI/ISA 12.12.1	ATEX/IEC Ex								
5,5	■			■	■	□						75,0	-25 ... +60	787-1020	367	
<b>Output: 12 VDC</b>																
2,0	■			■	■	■		■				82,0	-25 ... +70	787-1601**	327	
2,0	■			■	■	■		■				80,0	-25 ... +60	787-1001	367	
4,0	■			■	■	■		■				86,0	-25 ... +70	787-1611**	327	
4,0	■			■	■	■		■				85,0	-25 ... +60	787-1011	368	
6,0	■			■	■	■		■	■	■		83,0	-25 ... +70	787-819	315	
6,5	■			■	■	■		■				87,0	-25 ... +60	787-1021	368	
7,0	■			■	■	■		■				86,0	-25 ... +70	787-1621	328	
10,0	■			■	■	■		■	■	■		87,8	-25 ... +70	787-821	315	
15,0	■			■	■	■		■	■	■		87,0	-25 ... +70	787-831	316	
15,0	■			■	■	■		■	■	■		90,0	-25 ... +70	787-1631	328	
<b>Output: 18 VDC</b>																
2,5	■				■	■	□					83,0	-25 ... +60	787-1017	369	
<b>Output: 48 VDC</b>																
2,0	■			■	■	■		■				86,0	-25 ... +70	787-1623	337	
5,0	■			■	■	■		■	■	■		91,0	-25 ... +70	787-833	318	
5,0	■			■	■	■		■	■	■		92,0	-25 ... +70	787-1633	337	
10,0	■			■	■	■		■	■	■		91,0	-25 ... +70	787-835	319	
10,0	■			■	■	■		■	■	■		93,0	-25 ... +70	787-1635	338	
10,0		■		■	■	■		■	■	■		93,0	-25 ... +70	787-845	325	
20,0		■		■	■	■		■	■	■		94,4	-25 ... +70	787-847	325	

### DC/DC converters

Nominal input voltage [VDC]	Nominal voltage output [VDC]	Nominal output current [A]	Approvals						DC OK signal/contact	Efficiency typ. [%]	Ambient operating temperature [°C]	Item Number	Page
			cURus 60950	cULus 508	GL	ANSI/ISA 12.12.1	ATEX/IEC Ex	EN 50155					
24,0	5,0	0,5	□	□	□	□	□	■	82,5	-25 ... +70	787-2801	421	
24,0	10,0	0,5	□	□	□	□	□	■	89,0	-25 ... +70	787-2802	421	
48,0	24,0	0,5	□	□	□	□	□	■	91,0	-25 ... +70	787-2803	422	
24,0	12,0	0,5	□	□	□	□	□	■	90,0	-25 ... +70	787-2805	422	
24,0	5/10/12	0,5	□	□	□	□	□	■	82,5	-25 ... +70	787-2810	423	
110,0	24,0	2,0						■	85,0	-40 ... +70	787-1014	419	
72,0	24,0	2,0						■	86,0	-40 ... +70	787-1014/072-000	419	

■ yes □ pending  
 \* TopBoost enables magnetic tripping of circuit breakers in the output circuit.  
 \*\* Class 2 Power Unit acc. to cURus 1310 or cURus 60950  
 \*\*\* with uninterruptible power supply (UPS)  
 \*\*\*\* Device starts at -40 °C, type-tested for 787-8xx, -10xx, -16xx

# EPSITRON® SYSTEM MODULES

## Selection Guide

### Uninterruptible Power Supplies (UPS)

Input		Output		Approvals						Dimensions and Environmental Conditions				Item Number	Page
Nominal voltage [VAC]	Nominal voltage [VDC]	Nominal voltage [VDC]	Nominal current [ADC]	EN 60335	cURus 60950	cULus 508	GL	ANSI/ISA 12.12.1	ATEX/IEC Ex	Width [mm]	Height [mm]	Length [mm]	Ambient operating temperature [°C]		
-	24	24	10,0		■	■				40,0	163,0	163,0	-10 ... +60	787-870	375
-	24	24	20,0		■	■				57,0	163,0	171,0	-10 ... +60	787-875	375
100 ... 240	110 ... 370	24	5,0		■	■	■			60,0	135,5	127,0	-25 ... +70	787-1675	372

### Battery Modules

Input		Output		Approvals						Dimensions and Environmental Conditions				Item Number	Page	
Nominal voltage [VDC]	Nominal voltage [VDC]	Nominal capacity [Ah]	Nominal capacity [Ah]	EN 60335	cURus 60950	cULus 508	GL	ANSI/ISA 12.12.1	ATEX/IEC Ex	Battery tested to VdS	Width [mm]	Height [mm]	Length [mm]	Ambient operating temperature [°C]		
24	24	1,2	1,2			■				■	55,0	136,5	153,0	-15 ... +40	787-876	377
24	24	3,2	3,2			■				■	76,2	175,5	168,0	-15 ... +40	787-871	377
24	24	7,0	7,0			■				■	86,0	217,5	236,0	-15 ... +40	787-872	378
24	24	12,0	12,0			■				■	120,5	217,5	236,0	-15 ... +40	787-873	378

### Capacitive Buffer Modules

Input/Output, Buffer			Approvals						Dimensions and Environmental Conditions				Item Number	Page
Nominal input/output voltage [VDC]	Nominal output current [ADC]	Buffer time [s]	EN 60335	cURus 60950	cULus 508	GL	ANSI/ISA 12.12.1	ATEX/IEC Ex	Width [mm]	Height [mm]	Length [mm]	Ambient operating temperature [°C]		
24	10,0	0.06 ... 7.2		■	■				57,0	179,0	163,0	-10 ... +50	787-880	381
24	20,0	0.17 ... 16.5		■	■				57,0	179,0	181,0	-10 ... +50	787-881	381

■ yes   □ pending  
\* NEC Class 2

Redundancy Modules

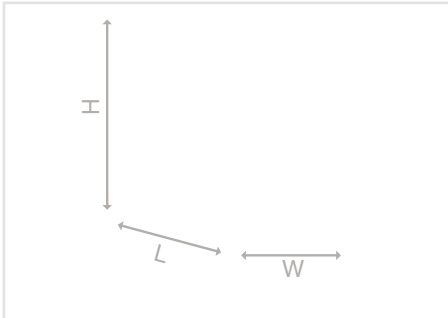
Input		Output		Approvals						Dimensions and Environmental Conditions				Item Number	Page
Nominal voltage [VDC]		Nominal voltage [VDC]	Nominal current [ADC]	EN 60335	cURus 60950	cULus 508	GL	ANSI/ISA 12.12.1	ATEX/IEC Ex	Width [mm]	Height [mm]	Length [mm]	Ambient operating temperature [°C]		
12 ... 48		12 ... 48	12,5							50,0	92,0	130,0	-25 ... +70	787-783	383
24		24	20,0		■	■	□	□	□	40,0	163,0	181,0	-10 ... +60	787-885	385
12 ... 48		12 ... 48	40,0			■	□	□	□	83,0	153,0	130,0	-25 ... +70	787-785	383
48		48	20,0				□	□	□	40,0	163,0	181,0	-10 ... +60	787-886	385

Electronic Circuit Breakers (ECBs)

Input/Output					Approvals						Dimensions and Environmental Conditions				Item Number	Page
Nominal input/output voltage [VDC]	Output Channels	Nominal output current [ADC]	Active current limitation	Isolated signal contact	EN 60335	UR 2367	cULus 508	GL	ANSI/ISA 12.12.1	ATEX/IEC Ex	Width [mm]	Height [mm]	Length [mm]	Ambient operating temperature [°C]		
24	2	2 ... 10					■	■	■		45	115,5	90	-25 ... +70	787-1662	393
24	2	2 ... 10					■	■	■		45	115,5	90	-25 ... +70	787-1662/000-004	394
24	2	2 ... 10		■			□	□	■		45	115,5	90	-25 ... +70	787-1662/000-054	394
24	2	3.8 LPS	■				■	■	□		45	115,5	90	-25 ... +70	787-1662/004-1000*	389
24	2	0.5 ... 6	■				■	■	■		45	115,5	90	-25 ... +70	787-1662/006-1000	389
24	2	1 ... 6					■	■	■		45	115,5	90	-25 ... +70	787-1662/106-000	393
24	2	2 ... 12	■				■	■	□		45	115,5	90	-25 ... +70	787-1662/212-1000	390
24	4	2 ... 10					■	■	■		45	115,5	90	-25 ... +70	787-1664	406
24	4	2 ... 10					■	■	■		45	115,5	90	-25 ... +70	787-1664/000-004	407
24	4	2 ... 10		■			□	□	■		45	115,5	90	-25 ... +70	787-1664/000-054	407
24	4	3.8 LPS	■				■	■	□		45	115,5	90	-25 ... +70	787-1664/004-1000*	402
24	4	0.5 ... 6	■				■	■	■		45	115,5	90	-25 ... +70	787-1664/006-1000	401
24	4	1 ... 6					■	■	■		45	115,5	90	-25 ... +70	787-1664/106-000	406
24	4	2 ... 12	■				■	■	□		45	115,5	90	-25 ... +70	787-1664/212-1000	402
24	4	0.5 ... 6	■	■			■	■	□		45	115,5	90	-25 ... +70	787-1664/006-1054	403
24	4	1 ... 6					■	■	■		40	163	171	-10 ... +60	787-860	405
24	4	1 ... 8	■				■	■	■		40	163	171	-10 ... +60	787-861	401
24	4	1 ... 10					■	■	■		40	163	171	-10 ... +60	787-862	405
24	8	2 ... 10					■	■	■		42	142,5	127	-25 ... +70	787-1668	413
24	8	2 ... 10					■	■	■		42	142,5	127	-25 ... +70	787-1668/000-004	414
24	8	2 ... 10		■			□	□	■		42	142,5	127	-25 ... +70	787-1668/000-054	414
24	8	0.5 ... 6	■				■	■	■		42	142,5	127	-25 ... +70	787-1668/006-1000	411
24	8	1 ... 6					■	■	■		42	142,5	127	-25 ... +70	787-1668/106-000	413
24	8	0.5 ... 6	■	■			■	■	□		42	142,5	127	-25 ... +70	787-1668/006-1054	411
12	2	2 ... 10					□	□	■		45	115,5	90	-25 ... +70	787-1662/000-100	387
12	4	2 ... 10					□	□	■		45	115,5	90	-25 ... +70	787-1664/000-100	398
48	2	2 ... 10					□	□	□		45	115,5	90	-25 ... +70	787-1662/000-200	397
48	2	2 ... 10		■			□	□	□		45	115,5	90	-25 ... +70	787-1662/000-250	397
48	4	2 ... 10					□	□	□		45	115,5	90	-25 ... +70	787-1664/000-200	409
48	4	2 ... 10		■			□	□	□		45	115,5	90	-25 ... +70	787-1664/000-250	409
48	8	2 ... 10					□	□	□		42	142,5	127	-25 ... +70	787-1668/000-200	417
48	8	2 ... 10		■			□	□	□		42	142,5	127	-25 ... +70	787-1668/000-250	417

## Switched-Mode Power Supplies, 1-Phase EPSITRON® PRO Power

### 787 Series

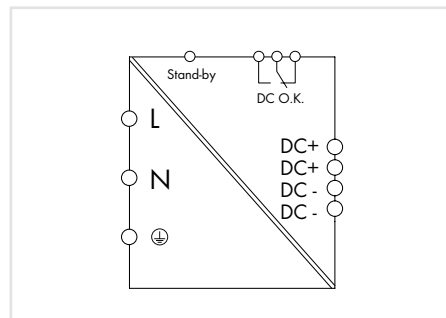
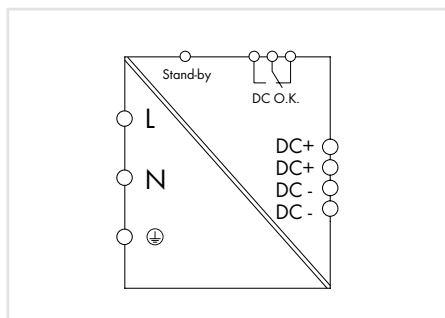


#### Features:

- Switched-mode power supply with PowerBoost and TopBoost
- Switch off the output and minimize power consumption via stand-by input
- DC OK contact for output monitoring
- Suitable for both parallel and series operation
- Natural convection cooling when horizontally mounted
- Enclosed for use in control cabinets
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204

#### Technical Data

<b>Input</b>	
Input voltage range	85 ... 264 VAC, 120 ... 373 VDC
Frequency	50 ... 60 Hz
Discharge current	1 mA (typ.)
<b>Output</b>	
Adjustment accuracy	1 %
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x I <sub>o</sub> typ.
Operation status indicator	Green LED (DC OK), red LED (error)
Signaling	Relay contact DC OK (changeover contact)
<b>General Specifications</b>	
Standards/Approvals	EN 60950, EN 61204-3, UL 60950, UL 508
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C Device starts at -40 °C type-tested
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	-3 % / K (> +50 °C)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Degree of protection	IP20 per EN 60529
Overvoltage category	II
Overvoltage protection	Via varistor at primary circuit
Short-circuit-protection	Yes
No-load proof	Yes
Parallel operation	Yes
Series connection	Yes
MTBF	> 500,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Mounting type	DIN-rail-mount (EN 60715) in two positions



EPSITRON® Switched-Mode Power Supply,  
PRO Power, 1-phase  
output: 12 VDC/6 A, TopBoost + PowerBoost,  
DC OK contact

	Item No.	Pack. Unit
	787-819	1

EPSITRON® Switched-Mode Power Supply,  
PRO Power, 1-phase  
output 12 VDC/10 A, TopBoost + PowerBoost,  
DC OK contact

	Item No.	Pack. Unit
	787-821	1

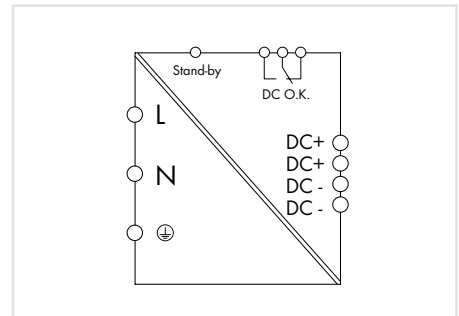
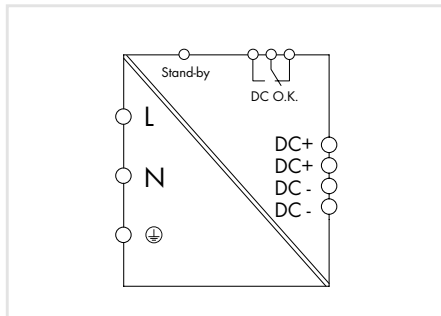
#### Electrical Data

Nominal input voltage $U_{I,nom}$	100 ... 240 VAC	100 ... 240 VAC
Input voltage derating	-5 % / VAC < 95 VAC	-5 % / VAC < 95 VAC
Input current $I_i$	0.51 A at 240 VAC and 6 ADC	0.97 A at 240 VAC and 10 ADC
Inrush current	< 30 A (peak)	< 30 A (peak)
Mains failure hold-up time	70 ms typ. at 230 VAC	35 ms typ. at 230 VAC
Nominal output voltage $U_{O,nom}$	12 VDC (SELV)	12 VDC (SELV)
Output voltage range	11 ... 18 VDC adjustable	11 ... 18 VDC adjustable
Factory preset	12 VDC	12 VDC
Output current $I_o$	6 A at 12 VDC	10 A at 12 VDC
Overload behavior	TopBoost / PowerBoost / Constant current	TopBoost / PowerBoost / Constant current
PowerBoost	12 ADC (for 4 s), 9 ADC (for 8 s)	20 ADC (for 4 s), 15 ADC (for 8 s)
TopBoost	21 ADC (for 25 ms)	60 ADC (for 25 s), 40 ADC $U_{IN} < 110$ VAC (for 25 ms)
Efficiency	83 % typ.	87.8 % typ.
Power loss $P_v$	0.5 W (no load) / 3.0 W (no load) / 9.4 W (nominal load)	0.5 W (no load) / 5.0 W (no load) / 14.6 W (nominal load)
Internal fuse	T 2 A / 250 V	T 4 A / 250 V
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage
Feedback voltage	Max. 25 VDC	Max. 25 VDC
<b>Mechanical Data</b>		
Connectors	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
Dimensions (mm) W x H x D	40 x 163 x 163 (incl. female connectors), length from upper-edge of DIN-rail	57 x 163 x 163 (incl. female connectors), length from upper-edge of DIN-rail
Weight	800 g	1295 g

## Switched-Mode Power Supplies, 1-Phase

## EPSITRON® PRO Power

## 787 Series



EPSITRON® Switched-Mode Power Supply,  
PRO Power, 1-phase  
output: 12 VDC/15 A, TopBoost + PowerBoost,  
DC OK contact

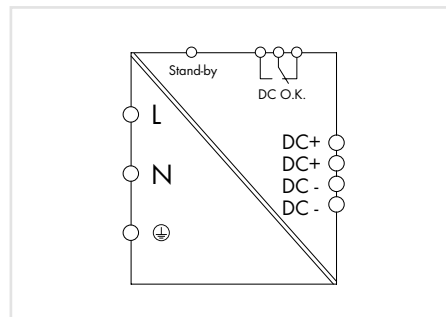
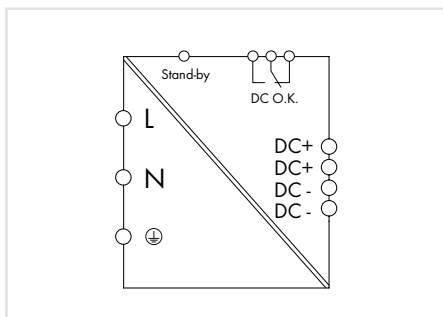
	Item No.	Pack. Unit
	787-831	1

EPSITRON® Switched-Mode Power Supply,  
PRO Power, 1-phase  
output: 24 VDC/3 A, TopBoost + PowerBoost,  
DC OK contact

	Item No.	Pack. Unit
	787-818	1

## Electrical Data

Nominal input voltage $U_{I,nom}$	110 ... 240 VAC	100 ... 240 VAC
Input voltage derating	-1.5 % / VAC < 110 VAC	-5 % / VAC < 95 VAC
Input current $I_i$	0.9 A at 240 VAC and 15 ADC	0.51 A at 240 VAC and 3 ADC
Inrush current	< 8 A (active inrush current limitation)	< 30 A (peak)
Mains failure hold-up time	30 ms typ. at 230 VAC	70 ms typ. at 230 VAC
Nominal output voltage $U_{O,nom}$	12 VDC (SELV)	24 VDC (SELV)
Output voltage range	11 ... 18 VDC adjustable	22 ... 29.5 VDC adjustable
Factory preset	12 VDC	24 VDC
Output current $I_o$	15 A at 12 VDC	3 A at 24 VDC
Overload behavior	TopBoost / PowerBoost / Constant current	TopBoost / PowerBoost / Constant current
PowerBoost	30 ADC (for 4 s), 22.5 ADC (for 8 s)	6 ADC (for 4 s), 4.5 ADC (for 8 s)
TopBoost	55 ADC (for 25 ms)	14 ADC (for 25 ms)
Efficiency	87 % typ.	87.8 % typ.
Power loss $P_v$	0.8 W (no load) / 4.6 W (no load) / 23.4 W (nominal load)	0.5 W (no load) / 3.0 W (no load) / 8.8 W (nominal load)
Internal fuse	T 6.3 A / 250 V	T 2 A / 250 V
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Feedback voltage	Max. 25 VDC	Max. 35 VDC
<b>Mechanical Data</b>		
Connectors	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch
Dimensions (mm) W x H x D	57 x 163 x 179 (incl. female connectors), length from upper-edge of DIN-rail	40 x 163 x 163 (incl. female connectors), length from upper-edge of DIN-rail
Weight	1480 g	960 g



EPSITRON® Switched-Mode Power Supply,  
PRO Power, 1-phase  
output: 24 VDC/5 A, TopBoost + PowerBoost, DC  
OK contact

Item No.	Pack. Unit
787-822	1

EPSITRON® Switched-Mode Power Supply,  
PRO Power, 1-phase  
output: 24 VDC/10 A, TopBoost + PowerBoost, DC  
OK contact

Item No.	Pack. Unit
787-832	1

#### Electrical Data

Nominal input voltage $U_{i, nom}$	100 ... 240 VAC
Input voltage derating	-5 % / VAC < 95 VAC
Input current $I_i$	0.97 A at 240 VAC and 5 VDC
Inrush current	< 30 A (peak)
Mains failure hold-up time	35 ms typ. at 230 VAC
Nominal output voltage $U_{o, nom}$	24 VDC (SELV)
Output voltage range	22 ... 29.5 VDC adjustable
Factory preset	24 VDC
Output current $I_o$	5 A at 24 VDC
Overload behavior	TopBoost / PowerBoost / Constant current
PowerBoost	10 ADC (for 4 s), 7.5 ADC (for another 4 s)
TopBoost	21 ADC (for 25 ms)
Efficiency	87.8 % typ.
Power loss $P_v$	0.5 W (no load) / 5.0 W (no load) / 14.6 W (nominal load)
Internal fuse	T 4 A / 250 V
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Feedback voltage	Max. 35 VDC

#### Mechanical Data

Connectors	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
Dimensions (mm) W x H x D	57 x 163 x 163 (incl. female connectors), length from upper-edge of DIN-rail
Weight	1268 g

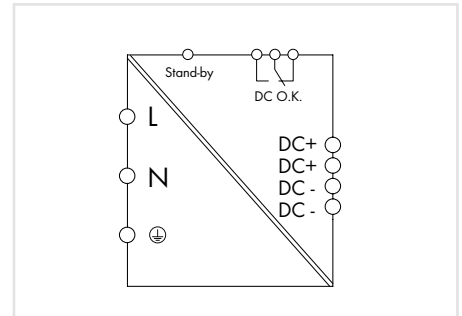
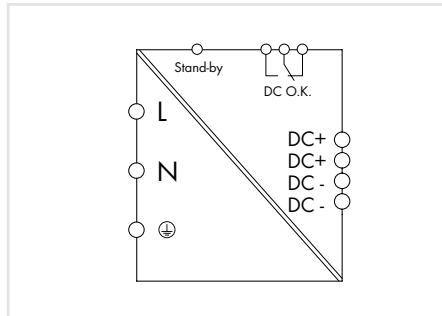
Nominal input voltage $U_{i, nom}$	110 ... 240 VAC
Input voltage derating	-1.5 % / VAC < 110 VAC
Input current $I_i$	1.2 A at 240 VAC and 10 VDC
Inrush current	< 8 A (active inrush current limitation)
Mains failure hold-up time	24 ms typ. at 230 VAC
Nominal output voltage $U_{o, nom}$	24 VDC (SELV)
Output voltage range	22 ... 29.5 VDC adjustable
Factory preset	24 VDC
Output current $I_o$	10 A at 24 VDC
Overload behavior	TopBoost / PowerBoost / Constant current
PowerBoost	20 ADC (for 4 s), 15 ADC (for another 4 s)
TopBoost	60 ADC (for 25 ms)
Efficiency	90 % (typ.)
Power loss $P_v$	0.8 W (no load) / 3.8 W (no load) / 24 W (nominal load)
Internal fuse	T 6.3 A / 250 V
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Feedback voltage	Max. 35 VDC

Connectors	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch
Dimensions (mm) W x H x D	57 x 163 x 179 (incl. female connectors), length from upper-edge of DIN-rail
Weight	1485 g

## Switched-Mode Power Supplies, 1-Phase

### EPSITRON® PRO Power

#### 787 Series



EPSITRON® Switched-Mode Power Supply,  
PRO Power, 1-phase  
output: 24 VDC/20 A, TopBoost + PowerBoost,  
DC OK contact

	Item No.	Pack. Unit
	787-834	1

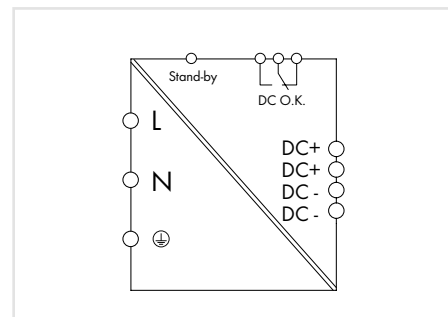
EPSITRON® Switched-Mode Power Supply,  
PRO Power, 1-phase  
output: 48 VDC/5 A, TopBoost + PowerBoost,  
DC OK contact

	Item No.	Pack. Unit
	787-833	1

#### Electrical Data

Nominal input voltage $U_{I,nom}$	110 ... 240 VAC	110 ... 240 VAC
Input voltage derating	-1.5 % / VAC < 110 VAC	-1.5 % / VAC < 110 VAC
Input current $I_i$	2.3 A at 230 VAC and 20 ADC	1.2 A at 230 VAC and 5 ADC
Inrush current	< 8 A (active inrush current limitation)	< 8 A (active inrush current limitation)
Mains failure hold-up time	25 ms typ. at 230 VAC	20 ms typ. at 230 VAC
Nominal output voltage $U_{O,nom}$	24 VDC (SELV)	48 VDC, (SELV)
Output voltage range	22 ... 29.5 VDC adjustable	33 ... 52 VDC adjustable
Factory preset	24 VDC	48 VDC
Output current $I_o$	20 A at 24 VDC	5 A at 48 VDC
Overload behavior	TopBoost / PowerBoost / Constant current	TopBoost / PowerBoost / Constant current
PowerBoost	30 ADC (for 4 s), 25 ADC (for 8 s)	10 ADC (for 4 s), 7.5 ADC (for 8 s)
TopBoost	80 ADC (for 25 ms)	30 ADC (for 25 ms)
Efficiency	91 % (typ.)	91 % (typ.)
Power loss $P_v$	0.8 W (no load) / 4.8 W (no load) / 43.2 W (nominal load)	0.8 W (no load) / 7.4 W (no load) / 21.6 W (nominal load)
Internal fuse	T 10 A / 250 V	T 6.3 A / 250 V
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Feedback voltage	Max. 35 VDC	Max. 63 VDC
<b>Mechanical Data</b>		
Connectors	Input: WAGO 231 Series Output: WAGO 831 Series Signaling: WAGO 733 Series	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
Dimensions (mm) W x H x D	97 x 171 x 187 (incl. female connectors), length from upper-edge of DIN-rail	57 x 163 x 179 (incl. female connectors), length from upper-edge of DIN-rail
Weight	2300 g	1475 g





EPSITRON® Switched-Mode Power Supply, PRO Power, 1-phase  
output: 48 VDC/10 A, TopBoost + PowerBoost, DC OK contact

Item No.	Pack. Unit
787-835	1

#### Electrical Data

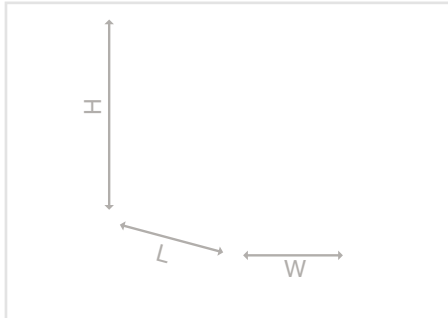
Nominal input voltage $U_{i, nom}$	110 ... 240 VAC
Input voltage derating	-1.5 % / VAC < 110 VAC
Input current $I_i$	2.3 A at 230 VAC and 10 ADC
Inrush current	< 8 A (active inrush current limitation)
Mains failure hold-up time	20 ms typ. at 230 VAC
Nominal output voltage $U_{o, nom}$	48 VDC, (SELV)
Output voltage range	33 ... 52 VDC adjustable
Factory preset	48 VDC
Output current $I_o$	10 A at 48 VDC
Overload behavior	TopBoost / PowerBoost / Constant current
PowerBoost	17.5 ADC (for 4 s), 15 ADC (for 8 s)
TopBoost	60 ADC (for 25 ms)
Efficiency	91 % (typ.)
Power loss $P_v$	0.8 W (no load) / 4.8 W (no load) / 43.2 W (nominal load)
Internal fuse	T 10 A / 250 V
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Feedback voltage	Max. 63 VDC

#### Mechanical Data

Connectors	Input: WAGO 231 Series Output: WAGO 831 Series Signaling: WAGO 733 Series
Conductor range	Input: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
Dimensions (mm) W x H x D	97 x 171 x 187 (incl. female connectors), length from upper-edge of DIN-rail
Weight	2460 g

## Switched-Mode Power Supplies, 3-Phase EPSITRON® PRO Power

### 787 Series

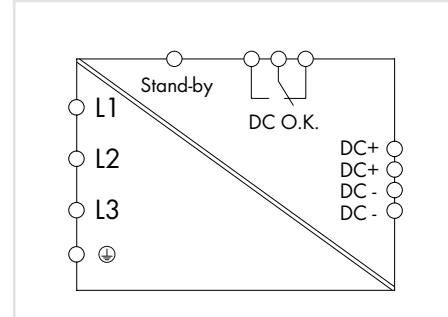
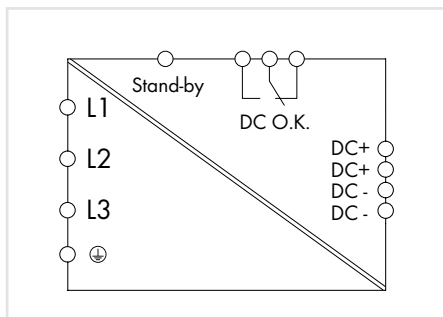


#### Features:

- Switched-mode power supply with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption (787-84x only)
- DC OK contact for output monitoring (787-84x only)
- Suitable for both parallel and series operation
- Natural convection cooling when horizontally mounted
- Enclosed for use in control cabinets
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204
- LineMonitor for parameter setting and monitoring (787-85x only)
- RS-232 serial interface (787-85x only)
- Four signal outputs (787-85x only)

#### Technical Data

Input	
Nominal input voltage $U_{i, \text{nom}}$	3 x (2 x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 ... 60 Hz
Discharge current	1 mA (typ.)
Inrush current	< 30 A
Output	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC (SELV)
Output voltage range	22.8 ... 28.8 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	1 %
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ , typ.
General Specifications	
Standards/Approvals	EN 60950, EN 61204-3, UL 60950, UL 508
Environmental Requirements	
Ambient operating temperature	-25 ... +70 °C Device starts at -40 °C type-tested
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
Safety and Protection	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Degree of protection	IP20 per EN 60529
Overvoltage category	II
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
MTBF	> 500,000 h (per IEC 61709)
Connection and Mounting Type	
Mounting type	DIN-rail-mount (EN 60715) in two positions



EPSITRON® Primary switch mode power supply, PRO Power, 3-phase  
output: 24 VDC/10 A, TopBoost + PowerBoost, DC OK contact

	Item No.	Pack. Unit
	787-840	1

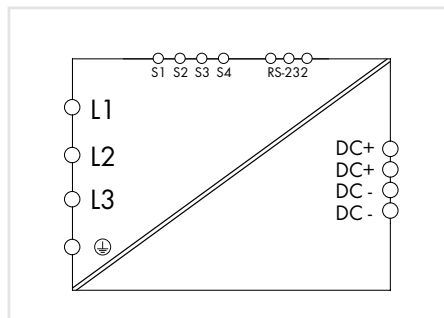
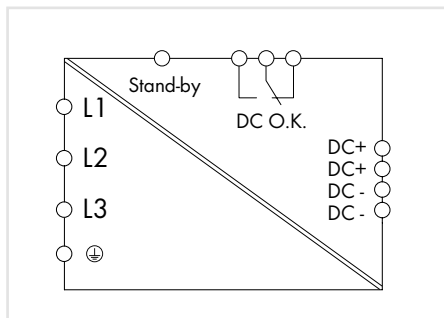
EPSITRON® Switched-Mode Power Supply, PRO Power, 3-phase  
output: 24 VDC/20 A, TopBoost + PowerBoost, DC OK contact

	Item No.	Pack. Unit
	787-842	1

#### Electrical Data

Input current $I_i$	3 x 0.6 A at 340 VAC and 10 ADC	3 x 1.1 A at 340 VAC and 20 ADC
Mains failure hold-up time	22 ms typ. at 3 x 400 VAC	13 ms typ. at 3 x 400 VAC
Output current $I_o$	10 A at 24 VDC	20 A at 24 VDC
PowerBoost	20 ADC (for 4 s), 15 ADC (for 16 s)	40 ADC (for 4 s), 30 ADC (for 16 s)
TopBoost	70 ADC (for 50 ms)	80 ADC (for 50 ms)
Overload behavior	TopBoost / PowerBoost / Constant current	TopBoost / PowerBoost / Constant current
Operation status indicator	Green LED (DC OK), red LED (error)	Green LED (DC OK), red LED (error)
Efficiency	91.7 % (typ.)	92.9 % (typ.)
Power loss $P_v$	7.8 W (no load) / 19.9 W (nominal load)	8.3 V (no load) / 34.1 W (nominal load)
Internal fuse	3 x T 2.5 A / 440 V	3 x T 2.5 A / 440 V
Recommended backup fuse	3 x circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, 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.	3 x circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; or motor circuit breaker, setpoint 2.5 A, setting range 2.5 ... 4.0 A; an external DC fuse is required for the DC input voltage.
Derating	-3 % / K (> +50 °C)	-3 % / K (> +50 °C)
<b>Mechanical Data</b>		
Connectors	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series	Input: WAGO 231 Series Output: WAGO 831 Series Signaling: WAGO 733 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG	Input: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch	Input: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
Dimensions (mm) W x H x D	57 x 163 x 179 (incl. female connectors), length from upper-edge of DIN-rail	77 x 171 x 179 (incl. female connectors), length from upper-edge of DIN-rail
Weight	1000 g	1300 g

# Switched-Mode Power Supplies, 3-Phase EPSITRON® PRO Power 787 Series



EPSITRON® Switched-Mode Power Supply, PRO Power, 3-phase  
output: 24 VDC/40 A, TopBoost + PowerBoost, DC OK contact

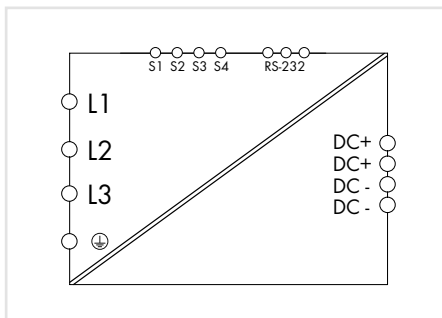
	Item No.	Pack. Unit
	787-844	1
with lateral DIN-rail support	787-844/000-002	1

EPSITRON® Switched-Mode Power Supply, PRO Power, 3-phase  
output: 24 VDC/10 A, TopBoost + PowerBoost, LineMonitor, RS-232, signal outputs

	Item No.	Pack. Unit
	787-850	1

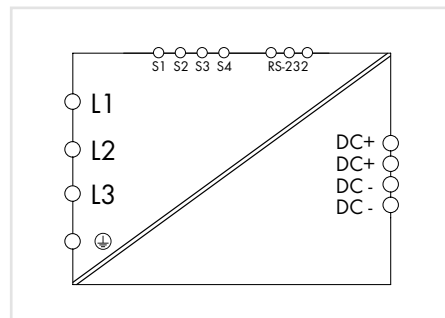
### Electrical Data

Input current I <sub>i</sub>	3 x 2.0 A at 340 VAC and 40 ADC	3 x 0.6 A at 340 VAC and 10 ADC
Mains failure hold-up time	15 ms typ. at 3 x 400 VAC	22 ms typ. at 3 x 400 VAC
Output current I <sub>o</sub>	40 A at 24 VDC	10 A at 24 VDC
PowerBoost	60 ADC (for 4 s), 50 ADC (for 16 s)	20 ADC (for 4 s), 15 ADC (for 16 s)
TopBoost	100 ADC (for 50 ms)	70 ADC (for 50 ms)
Overload behavior	TopBoost / PowerBoost / Constant current	Adjustable (constant current/fuse mode)
Operation status indicator	Green LED (DC OK), red LED (error)	Green LED (DC OK), yellow LED (warning), red LED (error)
Signaling	-	LED, LCD, 4 x signal output 24 VDC, 25 mA
LineMonitor, parameter setting	-	Via LCD and RS-232 serial interface
Efficiency	93.6 % (typ.)	91.7 % (typ.)
Power loss P <sub>v</sub>	7.0 W (no load) / 61.5 W (nominal load)	7.8 W (no load) / 19.9 W (nominal load)
Internal fuse	3 x T 3.2 A / 440 V	3 x T 2.5 A / 440 V
Recommended backup fuse	3 x circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, 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.	3 x circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, 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.
Derating	-5 % / K (> 45 °C)	-3 % / K (> +50 °C)
<b>Mechanical Data</b>		
Connectors	Input: WAGO 231 Series Output: WAGO 831 Series Signaling: WAGO 733 Series	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series
Conductor range	Input: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
Dimensions (mm) W x H x D	128 x 171 x 205 (incl. female connectors), length from upper-edge of DIN-rail	57 x 163 x 179 (incl. female connectors), length from upper-edge of DIN-rail
Weight	2500 g	1000 g



EPSITRON® Switched-Mode Power Supply, PRO Power, 3-phase  
output: 24 VDC/20 A, TopBoost + PowerBoost, LineMonitor, RS-232, signal outputs

	Item No.	Pack. Unit
	787-852	1



EPSITRON® Switched-Mode Power Supply, PRO Power, 3-phase  
output: 24 VDC/40 A, TopBoost + PowerBoost, LineMonitor, RS-232, signal outputs

	Item No.	Pack. Unit
	787-854	1

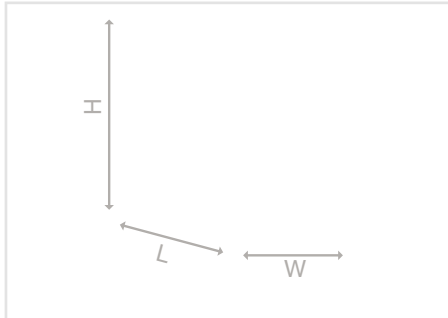
#### Electrical Data

Input current $I_i$	3 x 1.1 A at 340 VAC and 20 ADC	3 x 2.0 A at 340 VAC
Mains failure hold-up time	13 ms typ. at 3 x 400 VAC	15 ms typ. at 3 x 400 VAC
Output current $I_o$	20 A at 24 VDC	40 A at 24 VDC
PowerBoost	40 ADC (for 4 s), 30 ADC (for 16 s)	60 ADC (for 4 s), 50 ADC (for 16 s)
TopBoost	80 ADC (for 50 ms)	100 ADC (for 50 ms)
Overload behavior	Adjustable (constant current/fuse mode)	Adjustable (constant current/fuse mode)
Operation status indicator	Green LED (DC OK), yellow LED (warning), red LED (error)	Green LED (DC OK), yellow LED (warning), red LED (error)
Signaling	LED, LCD, 4 x signal output 24 VDC, 25 mA	LED, LCD, 4 x signal output 24 VDC, 25 mA
LineMonitor, parameter setting	Via LCD and RS-232 serial interface	Via LCD and RS-232 serial interface
Efficiency	92.9 % (typ.)	93.6 % (typ.)
Power loss $P_V$	8.3 W (no load) / 34.1 W (nominal load)	7.0 W (no load) / 61.5 W (nominal load)
Internal fuse	3 x T 2.5 A / 440 V	3 x T 3.2 A / 440 V
Recommended backup fuse	3 x circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, 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.	3 x circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, 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.
Derating	-3 % / K (>50 °C)	-5 % / K (>45 °C)
<b>Mechanical Data</b>		
Connectors	Input: WAGO 231 Series Output: WAGO 831 Series Signaling: WAGO 733 Series	Input: WAGO 231 Series Output: WAGO 831 Series Signaling: WAGO 733 Series
Conductor range	Input: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG	Input: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch	Input: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
Dimensions (mm) W x H x D	77 x 171 x 179 (incl. female connectors), length from upper-edge of DIN-rail	128 x 171 x 205 (incl. female connectors), length from upper-edge of DIN-rail
Weight	1300 g	2300 g

# Switched-Mode Power Supplies, 3-Phase

## EPSITRON® PRO Power

### 787 Series

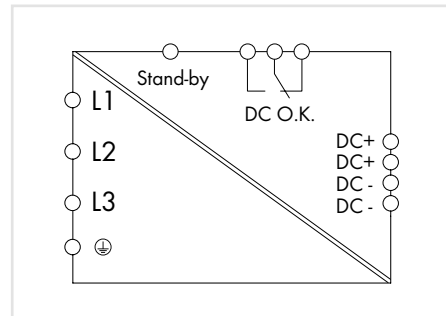
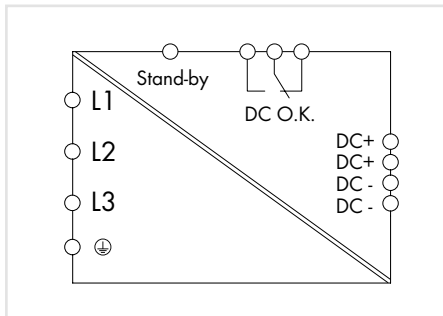


#### Features:

- Switched-mode power supply with PowerBoost and TopBoost
- Stand-by input for switching off the output and minimizing power consumption
- DC OK contact for output monitoring
- Suitable for both parallel and series operation
- Natural convection cooling when horizontally mounted
- Enclosed for use in control cabinets
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, nom}$	3 x (2 x) 400 ... 500 VAC
Input voltage range	340 ... 550 VAC; 480 ... 780 VDC
Frequency	50 ... 60 Hz
Discharge current	1 mA (typ.)
Inrush current	< 30 A (peak)
<b>Output</b>	
Nominal output voltage $U_{o, nom}$	48 VDC, (SELV)
Output voltage range	39 ... 53 VDC adjustable
Factory preset	48 VDC
Adjustment accuracy	1 %
Residual ripple	< 70 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	TopBoost/PowerBoost/Constant current mode
Operation status indicator	Green LED (DC OK), red LED (error)
<b>General Specifications</b>	
Standards/Approvals	EN 60950, EN 61204-3, UL 60950, UL 508
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C Device starts at -40 °C type-tested
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Degree of protection	IP20 per EN 60529
Overvoltage category	II
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
MTBF	> 500,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Connectors	Input: WAGO 231 Series Output: WAGO 831 Series Signaling: WAGO 733 Series
Conductor range	Input: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
Mounting type	DIN-rail-mount (EN 60715) in two positions



EPSITRON® Switched-Mode Power Supply, PRO Power, 3-phase output: 48 VDC/10 A, TopBoost + PowerBoost, DC OK contact

Item No.	Pack. Unit
787-845	1

EPSITRON® Switched-Mode Power Supply, PRO Power, 3-phase output: 48 VDC/20 A, TopBoost + PowerBoost, DC OK contact

Item No.	Pack. Unit
787-847	1

5

**Electrical Data**

Input current $I_i$	3 x 1.1 A at 340 VAC and 10 ADC
Mains failure hold-up time	12 ms typ. at 3 x 400 VAC
Output current $I_o$	10 A at 48 VDC
PowerBoost	15 ADC (for 4 s), 12.5 ADC (for 16 s)
TopBoost	55 ADC (for 50 ms)
Efficiency	93 % (typ.)
Power loss $P_v$	0.8 W (no load) / 8.2 W (no load) / 38 W (nominal load)
Internal fuse	3 x T 2.5 A / 440 V
Recommended backup fuse	3 x circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, 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.
Derating	-3 % / K (> +50 °C)

**Mechanical Data**

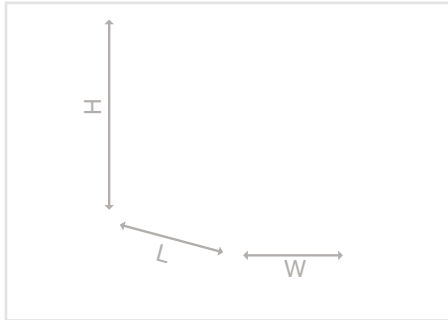
Dimensions (mm) W x H x D	77 x 171 x 179 (incl. female connectors), length from upper-edge of DIN-rail
Weight	1900 g

Input current $I_i$	3 x 2.0 A at 340 VAC and 20 ADC
Mains failure hold-up time	15 ms typ. at 3 x 400 VAC
Output current $I_o$	20 A at 48 VDC
PowerBoost	30 ADC (for 4 s), 25 ADC (for 16 s)
TopBoost	80 ADC (for 25 ms)
Efficiency	94.4 % (typ.)
Power loss $P_v$	0.8 W (no load) / 5.2 W (no load) / 59.2 W (nominal load)
Internal fuse	3 x T 3.2 A / 440 V
Recommended backup fuse	3 x circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, 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.
Derating	-5 % / K (> +45 °C)

Dimensions (mm) W x H x D	128 x 171 x 205 (incl. female connectors), length from upper-edge of DIN-rail
Weight	3270 g

## Switched-Mode Power Supplies, 1-Phase EPSITRON® CLASSIC Power

### 787 Series



#### Features:

- Switched-mode power supply
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC O K)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204
- GL approval, also suitable for EMC 1 (787-1601, -1611, -1621) in conjunction with 787-980 Filter Module

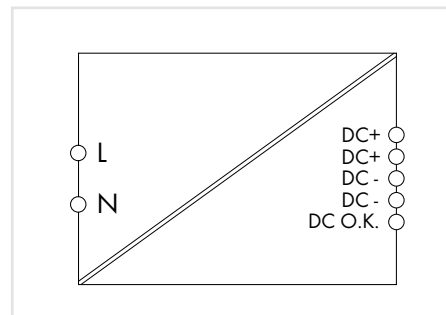
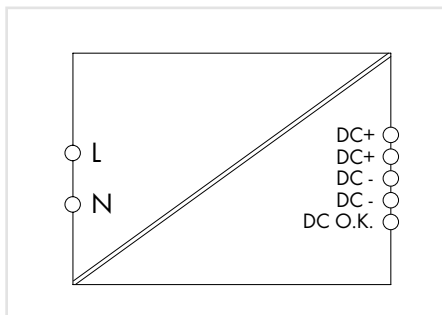
#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 372 VDC
Frequency	44 ... 66 Hz; 0 Hz
Inrush current	< 30 A
<b>Output</b>	
Nominal output voltage $U_{o, nom}$	12 VDC (SELV)
Factory preset	12 VDC
Adjustment accuracy	< 1 %
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current (787-1601 ... -1635), TopBoost (787-1622, 787-1631 ... -1635)
Operation status indicator	Green LED ( $U_o$ )
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	Device starts at -40 °C type-tested
Relative humidity	-25 ... +85 °C
Pollution degree	5 ... 96 % (no condensation permissible)
Climatic category	2 (per EN 50178)
	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Degree of protection	IP20 per EN 60529
Overvoltage category	II
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	Max. 25 VDC
Parallel operation	Yes
Series connection	Yes
MTBF	> 500,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Connectors	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)





Similar to pictured device



EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 1-phase  
output: 12 VDC/2 A, NEC Class 2,  
DC OK contact

	Item No.	Pack. Unit
	787-1601	1

NEC Class 2 per UL 60950

EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 1-phase  
output: 12 VDC/4 A, NEC Class 2,  
DC OK contact

	Item No.	Pack. Unit
	787-1611	1

NEC Class 2 per UL 60950

**Electrical Data**

Input current $I_i$	0.29 A (240 VAC); 0.5 A (100 VAC)	0.46 A (240 VAC); 0.86 A (100 VAC)
Input voltage derating	-2.5 % (< 95 VAC)	-2.5 % (< 95 VAC)
Discharge current		
Mains failure hold-up time	120 ms (230 VAC); 15 ms (100 VAC)	120 ms (230 VAC); 15 ms (100 VAC)
Output voltage range	11.5 ... 14.5 VDC adjustable	11.5 ... 14.5 VDC adjustable
Output current $I_o$	2 A at 12 VDC (2.1 A up to 40 °C)	4 A at 12 VDC (4.2 A up to 40 °C)
Residual ripple	20 mV (peak-to-peak) typ.	20 mV (peak-to-peak) typ.
Signaling	1 x active signal output 12 VDC, 40 mA	1 x active signal output 12 VDC, 40 mA
Efficiency	82 % (typ.)	86 % (typ.)
Power loss $P_v$	< 0.7 W (230 VAC, no load); 5.3 W (230 VAC, nominal load)	< 1 W (230 VAC, no load); 8 W (230 VAC, nominal load)
Power loss $P_v$ (max.)	5.7 W typ. (100 VAC / 12 VDC, 2 A)	9.1 W typ. (100 VAC / 12 VDC, 4 A)
Internal fuse	T 2 A / 250 V	T 4 A / 250 V
Recommended backup fuse	Circuit breakers 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.	Circuit breakers 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Derating	-3 % / K (> 50 °C)	-3 % / K (> 50 °C)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV (DC)	4.2 kV (DC)
Protection class	II	II
Oversvoltage protection	Varistor (input side); internal protective circuit, < 35 VDC (output side in case of an error)	Varistor (input side); internal protective circuit, < 35 VDC (output side in case of an error)
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	22.5 x 90 x 107.5 length from upper-edge of DIN-rail	45 x 90 x 107.5 (incl. female connectors), length from upper-edge of DIN-rail
Weight	128 g	210 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL

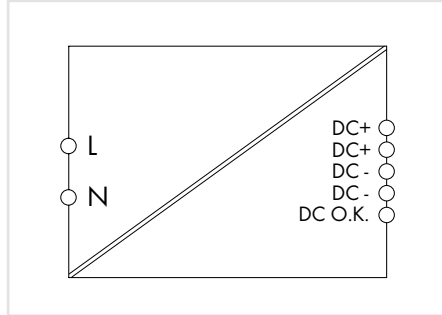
# Switched-Mode Power Supplies, 1-Phase

## EPSITRON® CLASSIC Power

### 787 Series



Similar to pictured device

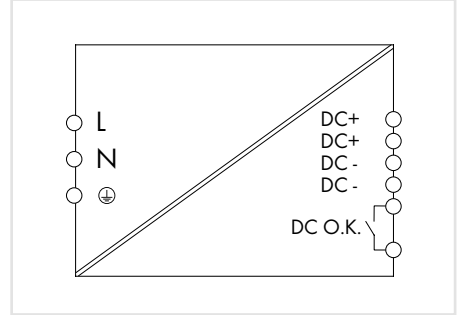


EPSITRON® Switched-Mode Power Supply, CLASSIC Power, 1-phase  
output: 12 VDC/7 A, DC OK contact

Item No.	Pack. Unit
787-1621	1



Similar to pictured device



EPSITRON® Switched-Mode Power Supply, CLASSIC Power, 1-phase  
output: 12 VDC/15 A, TopBoost, DC OK contact

Item No.	Pack. Unit
787-1631	1

Integrated TopBoost enables secondary-side protection via miniature circuit breakers.

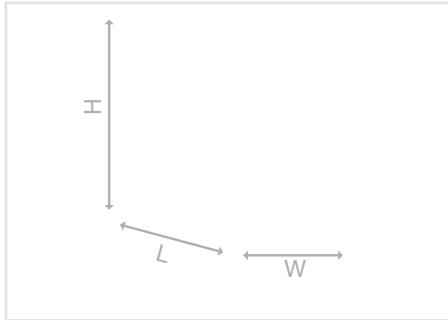
#### Electrical Data

Input current I <sub>i</sub>	0.9 A (240 VAC); 1.66 A (100 VAC)	0.93 A (240 VAC); 2.05 A (100 VAC)
Input voltage derating	-2.5 % (< 95 VAC)	-2.5 % (< 100 VAC)
Discharge current		< 1 mA
Mains failure hold-up time	80 ms (230 VAC); 15 ms (100 VAC)	28 ms (230 VAC); 28 ms (100 VAC)
Output voltage range	11.5 ... 14.5 VDC adjustable	11.5 ... 15 VDC adjustable
Output current I <sub>o</sub>	7 A at 12 VDC (7.5 A up to 40 °C)	15 A at 12 VDC
Residual ripple	20 mV (peak-to-peak) typ.	35 mV (peak-to-peak) typ.
Signaling	1 x active signal output 12 VDC, 40 mA	DC OK contact (make contact, max. 30 VAC/DC, 1 A)
Efficiency	86 % (typ.)	90 % (typ.)
Power loss P <sub>v</sub>	< 1 W (230 VAC, no load); 16.2 W (230 VAC, nominal load)	4.4 W (230 VAC, no load); 21.8 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	19.8 W typ. (100 VAC / 12 VDC, 7 A)	24.7 W typ. (100 VAC / 12 VDC, 15 A)
Internal fuse	T 4 A / 250 V	T 6.3 A / 250 V
Recommended backup fuse	Circuit breakers 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage	Circuit breakers 10 A, 16 A, Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage
Derating	-3 % / K (> 50 °C)	-5 % / K (>60 °C, 196 ... 264 VAC) -2.5 % / K (>50 °C, 85 ... 195 VAC)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV (DC)	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	II	I
Overvoltage protection	Varistor (input side), internal protective circuit, < 32 VDC (output side in case of an error)	Varistor (input side), internal protective circuit, < 20 VDC (output side in case of an error)
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	52 x 90 x 119 (incl. female connectors), length from upper-edge of DIN-rail	55 x 127 x 172 (incl. female connectors), length from upper-edge of DIN-rail
Weight	384 g	930 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL



## Switched-Mode Power Supplies, 1-Phase EPSITRON® CLASSIC Power

### 787 Series



#### Features:

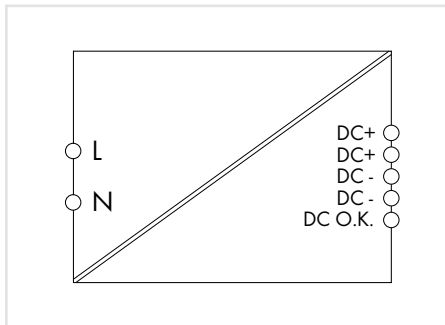
- Switched-mode power supply
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC O K)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204
- GL approval, also suitable for EMC 1 (787-1602, 787-1606, 787-1616/000-1000, 787-1622) in conjunction with 787-980 Filter Module

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 372 VDC
Frequency	44 ... 66 Hz; 0 Hz
Inrush current	< 30 A
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Overload behavior	Constant current
Operation status indicator	Green LED ( $U_o$ )
<b>Fuse Protection</b>	
Recommended backup fuse	Circuit breakers 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C; Device starts at -40 °C type-tested.
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Degree of protection	IP20 per EN 60529
Overvoltage category	II
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	Max. 35 VDC
Parallel operation	Yes
Series connection	Yes
MTBF	> 500,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Mounting type	DIN-rail mount (EN 60715)



Similar to pictured device



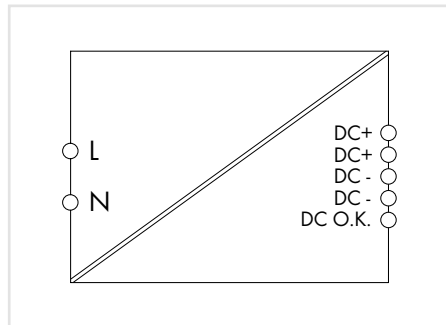
EPSITRON® Switched-Mode Power Supply, CLASSIC Power, 1-phase  
output: 24 VDC/1 A, NEC Class 2, DC OK contact

Item No.	Pack. Unit
787-1602	1

NEC Class 2 per UL 60950



Similar to pictured device



EPSITRON® Switched-Mode Power Supply, CLASSIC Power, 1-phase  
output: 24 VDC/2 A, NEC Class 2, DC OK contact

Item No.	Pack. Unit
787-1606	1

NEC Class 2 per UL 60950

5

**Electrical Data**

Input voltage derating	-2.5 % (< 95 VAC)
Input current I <sub>i</sub>	0.28 A (240 VAC); 0.49 A (100 VAC)
Mains failure hold-up time	120 ms (230 VAC); 20 ms (100 VAC)
Output current I <sub>o</sub>	1 A at 24 VDC (1.2 A up to 40 °C)
Residual ripple	20 mV (peak-to-peak) typ.
Current limitation	1.1 x I <sub>o</sub> typ.
Signaling	1 x active signal output 24 VDC, 20 mA
Efficiency	86 % (typ.)
Power loss P <sub>v</sub>	< 1 W (230 VAC, no load); 4 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	5 W typ. (100 VAC / 24 VDC, 1 A)
Internal fuse	T 2 A / 250 V
Derating	-3 % / K (> 50 °C)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV (DC)
Protection class	II
Overvoltage protection	Varistor (input side), internal protective circuit, < 39 VDC (output side in case of an error)
Connectors	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	22.5 x 90 x 107.5 (incl. female connectors), length from upper-edge of DIN-rail
Weight	128 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL

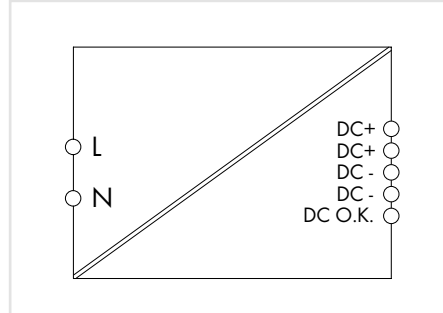
Input voltage derating	-2.5 % (< 95 VAC)
Input current I <sub>i</sub>	0.48 A (240 VAC); 0.82 A (100 VAC)
Mains failure hold-up time	120 ms (230 VAC); 20 ms (100 VAC)
Output current I <sub>o</sub>	2 A at 24 VDC (2.2 A up to 40 °C)
Residual ripple	20 mV (peak-to-peak) typ.
Current limitation	1.1 x I <sub>o</sub> typ.
Signaling	1 x active signal output 24 VDC, 20 mA
Efficiency	89 % (typ.)
Power loss P <sub>v</sub>	< 1 W (230 VAC, no load); 6 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	7 W typ. (100 VAC / 24 VDC, 2 A)
Internal fuse	T 4 A / 250 V
Derating	-3 % / K (> 50 °C)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV (DC)
Protection class	II
Overvoltage protection	Varistor (input side), internal protective circuit, < 37 VDC (output side in case of an error)
Connectors	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	45 x 90 x 107.5 (incl. female connectors), length from upper-edge of DIN-rail
Weight	210 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL

Input voltage derating	-2.5 % (< 95 VAC)
Input current I <sub>i</sub>	0.48 A (240 VAC); 0.82 A (100 VAC)
Mains failure hold-up time	120 ms (230 VAC); 20 ms (100 VAC)
Output current I <sub>o</sub>	2 A at 24 VDC (2.2 A up to 40 °C)
Residual ripple	20 mV (peak-to-peak) typ.
Current limitation	1.1 x I <sub>o</sub> typ.
Signaling	1 x active signal output 24 VDC, 20 mA
Efficiency	89 % (typ.)
Power loss P <sub>v</sub>	< 1 W (230 VAC, no load); 6 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	7 W typ. (100 VAC / 24 VDC, 2 A)
Internal fuse	T 4 A / 250 V
Derating	-3 % / K (> 50 °C)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV (DC)
Protection class	II
Overvoltage protection	Varistor (input side), internal protective circuit, < 37 VDC (output side in case of an error)
Connectors	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	45 x 90 x 107.5 (incl. female connectors), length from upper-edge of DIN-rail
Weight	210 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL

# Switched-Mode Power Supplies, 1-Phase EPSITRON® CLASSIC Power 787 Series



Similar to pictured device

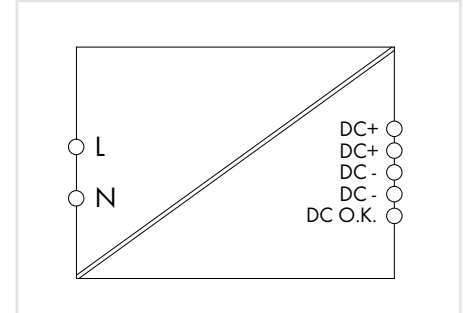


EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 1-phase  
output: 24 VDC/4 A, DC OK contact

Item No.	Pack. Unit
787-1616	1



Similar to pictured device



EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 1-phase  
output: 24 VDC/3.8 A, NEC Class 2,  
DC OK contact

Item No.	Pack. Unit
787-1616/000-1000	1

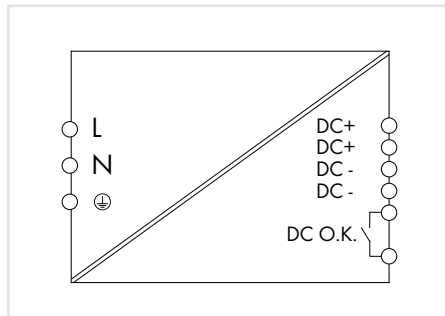
Limited Power Source (LPS) per NEC Class 2 (UL 1310 and UL 60950)

### Electrical Data

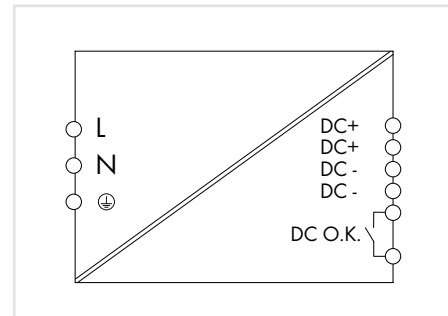
Input voltage derating	-2.5 % (< 95 VAC)	-2.5 % (< 95 VAC)
Input current I <sub>i</sub>	0.98 A (240 VAC); 1.82 A (100 VAC)	0.95 A (240 VAC); 1.73 A (100 VAC)
Mains failure hold-up time	80 ms (230 VAC); 15 ms (100 VAC)	80 ms (230 VAC); 15 ms (100 VAC)
Output current I <sub>o</sub>	4 A at 24 VDC (4.2 A up to 40 °C)	3.8 A at 24 VDC
Residual ripple	20 mV (peak-to-peak) typ.	20 mV (peak-to-peak) typ.
Current limitation	1.1 x I <sub>o</sub> typ.	3.8 A (3.2 A at U <sub>o</sub> > 25 VDC), LPS per NEC Class 2
Signaling	1 x active signal output 24 VDC, 20 mA	1 x active signal output 24 VDC, 20 mA
Efficiency	89 % (typ.)	87 % typ.
Power loss P <sub>v</sub>	< 1 W (230 VAC, no load); 12.4 W (230 VAC, nominal load)	< 2.8 W (230 VAC, no load); 14 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	15 W typ. (100 VAC / 24 VDC, 4 A)	< 20 W typ. (100 VAC / 91 W)
Internal fuse	T 4 A / 250 V	T 4 A / 250 V
Derating	-3 % / K (> 50 °C)	-3 % / K (> 50 °C)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV (DC)	4.2 kV (DC)
Protection class	II	II
Overvoltage protection	Varistor (input side), internal protective circuit, < 40 VDC (output side in case of an error)	Varistor (input side), internal protective circuit, < 40 VDC (output side in case of an error)
Connectors	Input/Output/Signaling: WAGO 721 Series	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	52 x 90 x 119 (incl. female connectors), length from upper-edge of DIN-rail	52 x 90 x 119 (incl. female connectors), length from upper-edge of DIN-rail
Weight	384 g	384 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, UL 1310, GL



Similar to pictured device



Similar to pictured device



EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 1-phase  
output: 24 VDC/5 A, TopBoost,  
DC OK contact

	Item No.	Pack. Unit
	787-1622	1

Integrated TopBoost enables secondary-side protection via miniature circuit breakers.

EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 1-phase  
output: 24 VDC/10 A, TopBoost,  
DC OK contact

	Item No.	Pack. Unit
	787-1632	1

Integrated TopBoost enables secondary-side protection via miniature circuit breakers.  
Input voltage 90 ... 372 VDC possible at operating temperatures of 0 ... +70 °C.

#### Electrical Data

Input voltage derating	-2.5 % (< 97 VAC)	-2.5 % (< 100 VAC)
Input current I <sub>i</sub>	1.24 A (230 VAC); 2.3 A (100 VAC)	1.25 A (230 VAC); 2.74 A (100 VAC)
Mains failure hold-up time	80 ms (230 VAC); 10 ms (100 VAC)	17 ms (230 VAC); 15 ms (100 VAC)
Output current I <sub>o</sub>	5 A at 24 VDC	10 A at 24 VDC
Residual ripple	30 mV (peak-to-peak) typ.	50 mV (peak-to-peak) typ.
Current limitation	1.1 x I <sub>o</sub> typ.	1.1 x I <sub>o</sub> typ.
Signaling	DC OK contact (make contact, max. 30 VAC/DC, 1 A)	DC OK contact (make contact, max. 30 VAC/DC, 1 A)
Efficiency	89 % (typ.)	91 % (typ.)
Power loss P <sub>v</sub>	1.2 W (230 VAC, no load); 14.6 W (230 VAC, nominal load)	6.6 W (230 VAC, no load); 24.4 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	19.4 W typ. (100 VAC / 24 VDC, 5 A)	31.3 W typ. (100 VAC / 24 VDC, 10 A)
Internal fuse	T 4 A / 250 V	T 6.3 A / 250 V
Derating	-5 % / K (> 60 °C, 196 ... 264 VAC); -2.5 % / K (> 50 °C, 85 ... 195 VAC)	-5 % / K (> 60 °C, 196 ... 264 VAC); -2.5 % / K (> 50 °C, 85 ... 195 VAC)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I	I
Overvoltage protection	Varistor (input side), internal protective circuit, < 41 VDC (output side in case of an error)	Varistor (input side), internal protective circuit, < 40 VDC (output side in case of an error)
Connectors	Input/Output/Signaling: WAGO 721 Series	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	42 x 127 x 137.5 (incl. female connectors), length from upper-edge of DIN-rail	55 x 127 x 172 (incl. female connectors), length from upper-edge of DIN-rail
Weight	590 g	930 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL

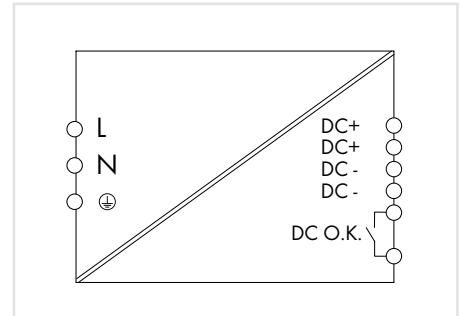
# Switched-Mode Power Supplies, 1-Phase

## EPSITRON® CLASSIC Power

### 787 Series



Similar to pictured device



EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 1-phase  
output: 24 VDC/20 A, TopBoost,  
DC OK contact

Item No.	Pack. Unit
787-1634	1

Integrated TopBoost enables secondary-side protection via miniature circuit breakers.

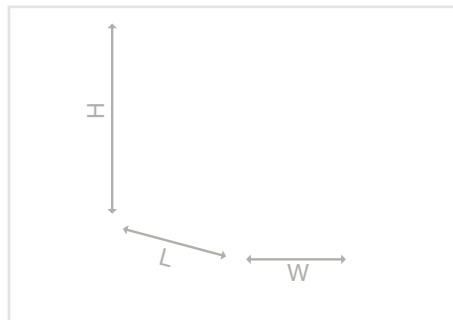
Electrical Data	
Input voltage derating	-1.8 % (< 105 VAC)
Input current $I_i$	2.23 A (230 VAC); 5.56 A (100 VAC)
Mains failure hold-up time	20 ms (230 VAC); 8 ms (100 VAC)
Output current $I_o$	20 A at 24 VDC
Residual ripple	70 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Signaling	DC OK contact (make contact, max. 30 VAC/DC, 1 A)
Efficiency	92 % (typ.)
Power loss $P_v$	7.2 W (230 VAC, no load); 42.4 W (230 VAC, nominal load)
Power loss $P_v$ (max.)	68.3 W typ. (100 VAC / 24 VDC, 20 A)
Internal fuse	T 10 A / 250 V
Derating	-5 % / K (> 60 °C, 196 ... 264 VAC); -2.5 % / K (> 50 °C, 85 ... 195 VAC)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Overvoltage protection	Varistor (input side); internal protective circuit, < 40 VDC (output side in case of an error)
Connectors	Input/Signaling: WAGO 721 Series Output: WAGO 831 Series
Conductor range	Input/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG
Strip length	Input/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch
Mechanical Data	
Dimensions (mm) W x H x D	95 x 127 x 170 (incl. female connectors), length from upper-edge of DIN-rail
Weight	1600 g
General Specifications	
Standards/Approvals	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL





## Switched-Mode Power Supplies, 1-Phase EPSITRON® CLASSIC Power

### 787 Series



#### Features:

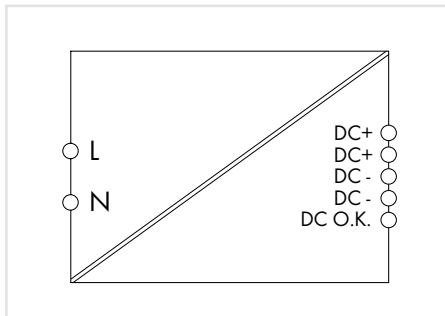
- Switched-mode power supply
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Bounce-free switching signal (DC O K)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204
- GL approval, also suitable for EMC 1 (787-1633) in conjunction with 787-980 Filter Module

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 372 VDC
Frequency	44 ... 66 Hz; 0 Hz
Inrush current	< 30 A
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	48 VDC, (SELV)
Output voltage range	40 ... 56 VDC adjustable
Factory preset	48 VDC
Adjustment accuracy	< 1 %
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operation status indicator	Green LED ( $U_o$ )
<b>Fuse Protection</b>	
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C; Device starts at -40 °C type-tested.
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Degree of protection	IP20 per EN 60529
Overvoltage category	II
Overvoltage protection	Varistor (input side), internal protective circuit, < 60 VDC (output side in case of an error)
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	Max. 63 VDC
Parallel operation	Yes
Series connection	Yes
MTBF	> 500,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Mounting type	DIN-rail mount (EN 60715)



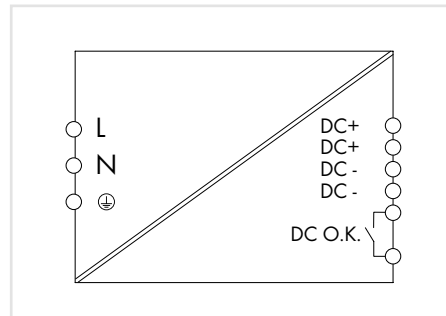
Similar to pictured device



<b>EPSITRON® Switched-Mode Power Supply, CLASSIC Power, 1-phase</b> output: 48 VDC/2 A, DC OK contact		
	<b>Item No.</b>	<b>Pack. Unit</b>
	787-1623	1



Similar to pictured device



<b>EPSITRON® Switched-Mode Power Supply, CLASSIC Power, 1-phase</b> output: 48 VDC/5 A, TopBoost, DC OK contact		
	<b>Item No.</b>	<b>Pack. Unit</b>
	787-1633	1

Integrated TopBoost enables secondary-side protection via miniature circuit breakers. Input voltage 100 ... 372 VDC is possible.

**Electrical Data**

Input voltage derating	< -2.5 % (< 95 VAC)
Input current I <sub>i</sub>	0.97 A (240 VAC); 1.84 A (100 VAC)
Discharge current	
Mains failure hold-up time	80 ms (230 VAC); 15 ms (100 VAC)
Output current I <sub>o</sub>	2 A at 48 VDC (2.1 A up to 40 °C)
Residual ripple	20 mV (peak-to-peak) typ.
Signaling	1 x active signal output 48 VDC, 10 mA
Efficiency	86 % (typ.)
Power loss P <sub>v</sub>	< 1 W (230 VAC, no load); 16.2 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	19.8 W typ. (100 VAC / 48 VDC, 2 A)
Internal fuse	T 4 A / 250 V
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Derating	-3 % / K (> 50 °C)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV (DC)
Protection class	II
Connectors	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	52 x 90 x 119, length from upper-edge of DIN-rail
Weight	385 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950-1, EN 61204-3, EN 60335-1, UL 60950-1, UL 508, GL

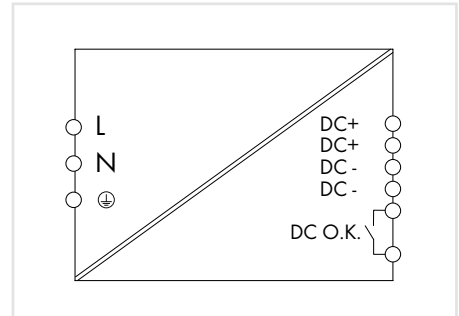
Input voltage derating	< -2.5 % (< 100 VAC)
Input current I <sub>i</sub>	1.25 A (230 VAC); 2.74 A (100 VAC)
Discharge current	< 1 mA
Mains failure hold-up time	21 ms (230 VAC); 21 ms (100 VAC)
Output current I <sub>o</sub>	5 A at 48 VDC
Residual ripple	30 mV (peak-to-peak) typ.
Signaling	DC OK contact (make contact, max. 30 VAC/DC, 1 A)
Efficiency	92 % (typ.)
Power loss P <sub>v</sub>	7 W (230 VAC, no load); 40.8 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	26.5 W typ. (100 VAC / 48 VDC, 5 A)
Internal fuse	T 6.3 A / 250 V
Recommended backup fuse	Circuit breakers 10 A, 16 A, Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Derating	-5 % / K (>60 °C, 196 ... 264 VAC) -2.5 % / K (>50 °C, 85 ... 195 VAC)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Connectors	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	55 x 127 x 172, length from upper-edge of DIN-rail
Weight	930 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL

# Switched-Mode Power Supplies, 1-Phase EPSITRON® CLASSIC Power

## 787 Series



Similar to pictured device



EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 1-phase  
output: 48 VDC/10 A, TopBoost,  
DC OK contact

Item No.	Pack. Unit
787-1635	1

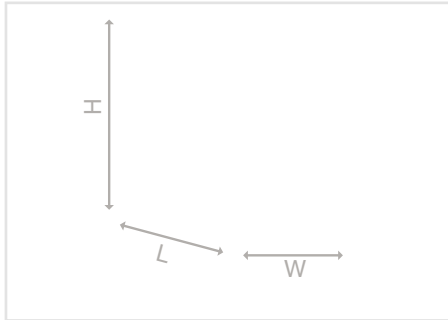
Integrated TopBoost enables secondary-side protection via miniature circuit breakers.

Electrical Data	
Input voltage derating	-2.5 % (< 100 VAC)
Input current $I_i$	2.23 A (230 VAC); 5.56 A (100 VAC)
Discharge current	< 1 mA
Mains failure hold-up time	20 ms (230 VAC); 20 ms (100 VAC)
Output current $I_o$	10 A at 48 VDC
Residual ripple	80 mV (peak-to-peak) typ.
Signaling	DC OK contact (make contact, max. 30 VAC/DC, 1 A)
Efficiency	93 % (typ.)
Power loss $P_v$	11.7 W (230 VAC, no load); 36.3 W (230 VAC, nominal load)
Power loss $P_v$ (max.)	64.9 W typ. (100 VAC / 48 VDC, 10 A)
Internal fuse	T 10 A / 250 V
Recommended backup fuse	Circuit breakers 10 A, 16 A, Tripping characteristic: B, C; an external DC fuse is required for the DC input voltage.
Derating	-5 % / K (>60 °C, 196 ... 264 VAC) -2.5 % / K (>50 °C, 85 ... 195 VAC)
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Connectors	Input/Signaling: WAGO 721 Series Output: WAGO 831 Series
Conductor range	Input/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG
Strip length	Input/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch
Mechanical Data	
Dimensions (mm) W x H x D	95 x 127 x 170, length from upper-edge of DIN-rail
Weight	1600 g
General Specifications	
Standards/Approvals	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL



## Switched-Mode Power Supplies, 1-/2-Phase EPSITRON® CLASSIC Power

### 787 Series

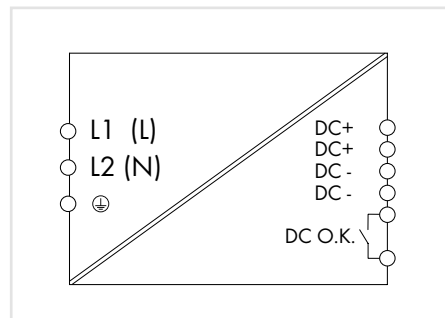
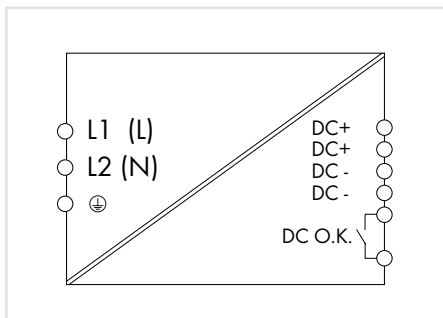


#### Features:

- Switched-mode power supply with TopBoost, enabling secondary-side protection via circuit breakers
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Contact (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	1 x (2 x) 200 ... 500 VAC
Input voltage range	180 ... 550 VAC; 254 ... 780 VDC
Frequency	44 ... 66 Hz; 0 Hz
Inrush current	< 30 A, NTC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	30 mV (peak-to-peak) typ.
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operation status indicator	Green LED ( $U_o$ )
Signaling	DC OK contact, Make contact (max. 30 V / 1 A)
<b>Fuse Protection</b>	
Recommended backup fuse	Circuit breakers 6 A, 10 A, 16 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C Device starts at -40 °C type-tested
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	-2.5 % / K (> 55 °C)
<b>Safety and Protection</b>	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Degree of protection	IP20 per EN 60529
Overvoltage protection	Varistor (input side), internal protective circuit, < 40 VDC (output side in case of an error)
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	Max. 35 VDC
Parallel operation	Yes
Series connection	Yes
MTBF	> 500,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Connectors	Input/Output/Signaling: WAGO 721 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)



EPSITRON® Switched-Mode Power Supply, CLASSIC Power, 2-phase output: 24 VDC/5 A, TopBoost, DC OK contact

Item No.	Pack. Unit
787-1628	1

EPSITRON® Switched-Mode Power Supply, CLASSIC Power, 2-phase output: 24 VDC/10 A, TopBoost, DC OK contact

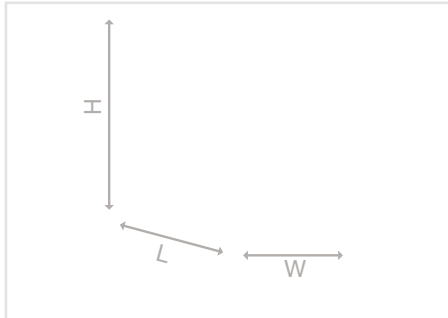
Item No.	Pack. Unit
787-1638	1

**Electrical Data**

Input voltage derating	-0.5 % (< 200 VAC); -0.4 % (< 280 VDC)	-0.5 % (< 200 VAC), -0.4 % (< 280 VDC)
Input current I <sub>i</sub>	1.25 A (200 VAC); 0.67 A (500 VAC)	1.975 A (230 VAC); 1.36 A (400 VAC)
Mains failure hold-up time	126 ms (500 VAC); 15 ms (200 VAC)	78 ms (400 VAC); 20 ms (200 VAC)
Output current I <sub>o</sub>	5 A at 24 VDC	10 A at 24 VDC
Efficiency	89 % (typ.)	89 % typ. (230 VAC); 92.5 % typ. (400 VAC)
Power loss P <sub>v</sub>	0.94 W (no load); 16.36 W (230 VAC, nominal load) 14.55 W (400 VAC, nominal load)	1.3 W (no load) 27.8 W (230 VAC, nominal load) 20.3 W (400 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	18.2 W (200 VAC / 24 VDC, 5 A)	27.8 W (230 VAC / 24 VDC, 10 A)
Internal fuse	T 3.15 A / 500 V	T 6.3 A / 500 V
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	42 x 127 x 137, length from upper-edge of DIN-rail	55 x 127 x 146.5, length from upper-edge of DIN-rail
Weight	600 g	830 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL * (* pending)	EN 60950-1, EN 61204-3, UL 60950-1*, UL 508*, GL * (* pending)

## Switched-Mode Power Supplies, 3-Phase EPSITRON® CLASSIC Power

### 787 Series



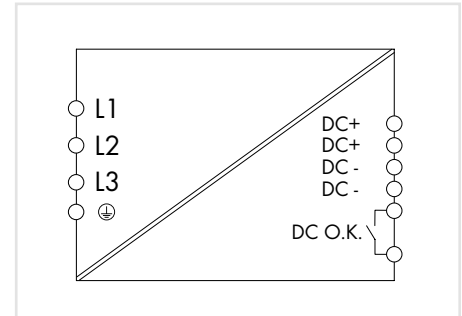
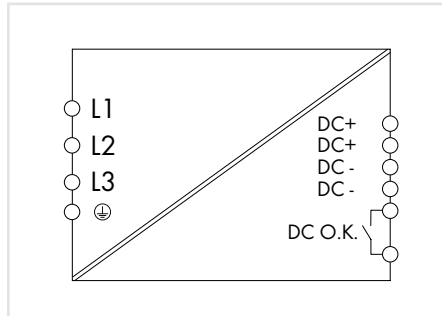
#### Features:

- Switched-mode power supply with TopBoost, enabling secondary-side protection via circuit breakers
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Contact (DC OK)
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, nom}$	3 x (2 x) 400 ... 500 VAC
Input voltage range	320 ... 575 VAC; 450 ... 800 VDC
Frequency	47 ... 63 Hz, 0 Hz
Inrush current	< 30 A, NTC
<b>Output</b>	
Nominal output voltage $U_{o, nom}$	24 VDC (SELV)
Output voltage range	23 ... 28.5 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operation status indicator	Green LED ( $U_o$ )
Signaling	DC OK contact, Make contact (max. 30 V / 1 A)
<b>Fuse Protection</b>	
Internal fuse	None
Recommended backup fuse	3 x circuit breakers 10 A, 16 A, Tripping characteristic: B, C; or motor circuit breakers; An external DC fuse is required for the DC input voltage.
<b>General Specifications</b>	
Standards/Approvals	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL * (* pending)
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C Device starts at -40 °C type-tested
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	-2.5 % / K (> 55 °C)
<b>Safety and Protection</b>	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Degree of protection	IP20 per EN 60529
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	Max. 35 VDC
Parallel operation	Yes
Series connection	Yes
MTBF	> 500,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Mounting type	DIN-rail mount (EN 60715)





EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 3-phase  
output: 24 VDC/10 A, TopBoost,  
DC OK contact

	Item No.	Pack. Unit
	787-1640	1

EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 3-phase  
output: 24 VDC/20 A, TopBoost,  
DC OK contact

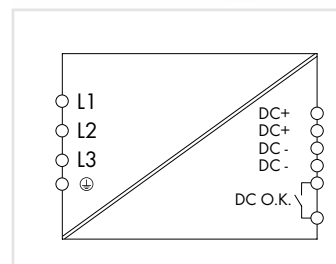
	Item No.	Pack. Unit
	787-1642	1

#### Electrical Data

Input current $I_i$	3 x 0.73 A (400 VAC); 3 x 0.66 A (500 VAC)	3 x 1.21 A (400 VAC); 3 x 1.03 A (500 VAC)
Mains failure hold-up time	50 ms (500 VAC); 21 ms (400 VAC)	25 ms (500 VAC); 15 ms (400 VAC)
Output current $I_o$	10 A at 24 VDC	20 A at 24 VDC
Residual ripple	50 mV (peak-to-peak) typ.	15 mV (peak-to-peak) typ.
Efficiency	90 % (typ.)	92 % (typ.)
Power loss $P_v$	2.1 W (no load); 27.9 W (400 VAC, nominal load)	5.8 W (no load); 42.8 W (400 VAC, nominal load)
Power loss $P_v$ (max.)	28.3 W (500 VAC / 24 VDC, 10 A)	47.6 W (500 VAC / 24 VDC, 20 A)
Overvoltage protection	Varistor (input side), internal protective circuit, < 41 VDC (output side in case of an error)	Varistor (input side), internal protective circuit, < 40 VDC (output side in case of an error)
Connectors	Input/Output/Signaling: WAGO 721 Series	Input/Signaling: WAGO 721 Series Output: WAGO 831 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG	Input/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch	Input/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch Output: 13 ... 15 mm / 0.51 ... 0.59 inch
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	55 x 127 x 171, length from upper-edge of DIN-rail	80 x 127 x 180, length from upper-edge of DIN-rail
Weight	1000 g	1500 g

## Switched-Mode Power Supplies, 3-Phase EPSITRON® CLASSIC Power

### 787 Series



EPSITRON® Switched-Mode Power Supply,  
CLASSIC Power, 3-phase  
output: 24 VDC/40 A, TopBoost,  
DC OK contact

Item No.	Pack. Unit
787-1644	1

#### Electrical Data

Input current $I_i$	3 x 2.15 A (400 VAC); 3 x 1.82 A (500 VAC)
Mains failure hold-up time	25 ms (500 VAC); 15 ms (400 VAC)
Output current $I_o$	40 A at 24 VDC
Residual ripple	30 mV (peak-to-peak) typ.
Efficiency	92 % (typ.)
Power loss $P_V$	4.2 W (no load); 83.9 W (400 VAC, nominal load)
Power loss $P_V$ (max.)	83.9 W (500 VAC / 24 VDC, 40 A)
Overvoltage protection	Varistor (input side), internal protective circuit, < 40 VDC (output side in case of an error)

#### Connectors

Input/Signaling:  
WAGO 721 Series  
Output: WAGO 831 Series

#### Conductor range

Input/Signaling: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 12 AWG  
Output: 0.5 ... 10 mm<sup>2</sup> / 20 ... 8 AWG

#### Strip length

Input/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch  
Output: 13 ... 15 mm / 0.51 ... 0.59 inch

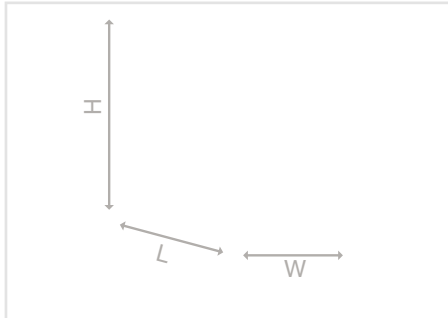
#### Mechanical Data

Dimensions (mm) W x H x D	126 x 127 x 198, length from upper-edge of DIN-rail
Weight	2800 g



## Switched-Mode Power Supplies, 1-Phase EPSITRON® ECO Power

### 787 Series

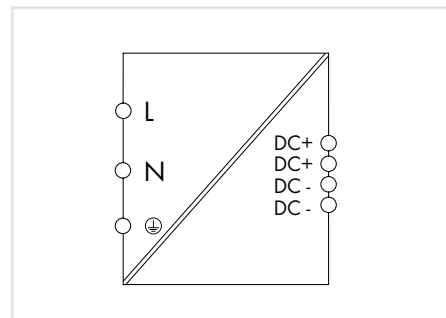
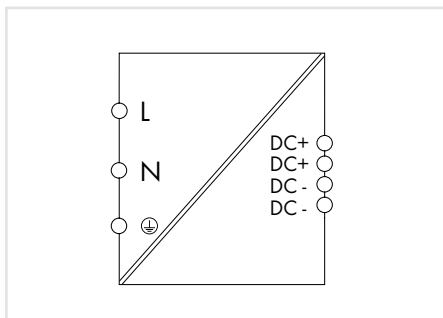


#### Features:

- Switched-mode power supply
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	110 ... 240 VAC
Frequency	47 ... 63 Hz
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	1 %
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ), shutdown and automatic restart in the event of a short circuit
Operation status indicator	Green LED (24 VDC OK) Red LED (overload)
<b>Environmental Requirements</b>	
Relative humidity	95 % (no condensation permissible)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	3 kV AC / 1.5 kV AC / 0.5 kV AC
Protection class	I
Degree of protection	IP20 per EN 60529
Overvoltage category	II
Overvoltage protection	Via varistor at primary circuit
Short-circuit-protection	Yes
No-load proof	Yes
Parallel operation	Yes
Series connection	Yes



EPSITRON® Switched-Mode Power Supply, ECO Power, 1-phase, output: 24 VDC/2.5 A

Item No.	Pack. Unit
787-712	1

EPSITRON® Switched-Mode Power Supply, ECO Power, 1-phase, output: 24 VDC/5 A, active power factor correction

Item No.	Pack. Unit
787-722	1

#### Electrical Data

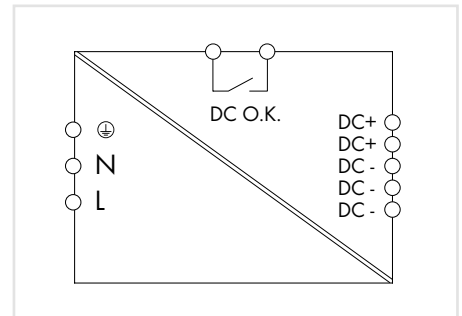
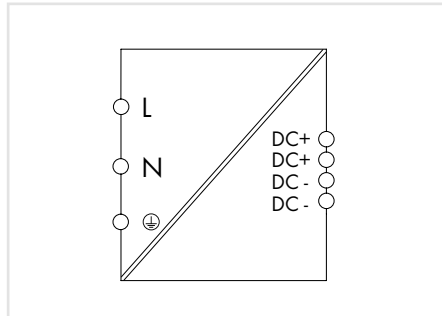
Input voltage range	85 ... 264 VAC; 130 ... 373 VDC
Input current $I_i$	0.7 A at 230 VAC; 1.2 A at 115 A AC
Discharge current	< 1 mA
Inrush current	< 30 A at 230 VAC; < 15 A at 115 VAC
Mains failure hold-up time	> 20 ms at 230 VAC
Power factor	> 0.5 at 230 VAC
Output current $I_o$	2.5 A at 24 VDC
Residual ripple	< 100 mV (peak-to-peak)
Efficiency	86 % typ. at 230 VAC
Power loss $P_V$	8.3 W (at 230 VAC and 2.5 ADC)
Power loss $P_V$ (max.)	11.5 W (at 110 VAC and 2.75 ADC)
Internal fuse	F 2.5 A / 250 V
Recommended backup fuse	Circuit breakers 10 A, 16 A; Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
Ambient operating temperature	-10 ... +70 °C
Storage temperature	-25 ... +85 °C
Derating	-3.3 % / K (>50 °C at 230 VAC)
Feedback voltage	28 VDC
MTBF	480,000 h (per IEC 61709)
Connectors	CAGE CLAMP® (WAGO 745 Series)
Conductor range	0.08 ... 4 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	50 x 92 x 136, length from upper-edge of DIN-rail
Weight	596 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950, EN 61204-3, cURus 60950, cULus 508, ANSI/ISA 12.12.01 (Class I Div. 2), ATEX, IEC Ex

Input voltage range	85 ... 264 VAC; 130 ... 373 VDC
Input current $I_i$	1.0 A at 230 VAC. 2.0 A at 115 VAC
Discharge current	< 3.5 mA
Inrush current	< 30 A at 230 VAC; < 25 A at 115 VAC
Mains failure hold-up time	> 20 ms at 230 VAC
Power factor	> 0.94 at 230 VAC; > 0.98 at 115 VAC
Output current $I_o$	5 A at 24 VDC
Residual ripple	< 100 mV (peak-to-peak)
Efficiency	86 % typ. at 230 VAC
Power loss $P_V$	19.5 W (at 230 VAC and 5 ADC)
Power loss $P_V$ (max.)	23.5 W (at 110 VAC and 5.5 ADC)
Internal fuse	F 3.15 A / 250 V
Recommended backup fuse	Circuit breakers 10 A, 16 A; Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
Ambient operating temperature	-10 ... +60 °C
Storage temperature	-25 ... +85 °C
Derating	-5.33 % / K (>45 °C at 230 VAC)
Feedback voltage	28 VDC
MTBF	480,000 h (per IEC 61709)
Connectors	CAGE CLAMP® (WAGO 745 Series)
Conductor range	0.08 ... 4 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	75 x 92 x 136, length from upper-edge of DIN-rail
Weight	850 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950, EN 61204-3, cURus 60950, cULus 508, ANSI/ISA 12.12.01 (Class I Div. 2), ATEX, IEC Ex

## Switched-Mode Power Supplies, 1-Phase

## EPSITRON® ECO Power

## 787 Series



EPSITRON® Switched-Mode Power Supply, ECO Power, 1-phase, output: 24 VDC/10 A, active power factor correction

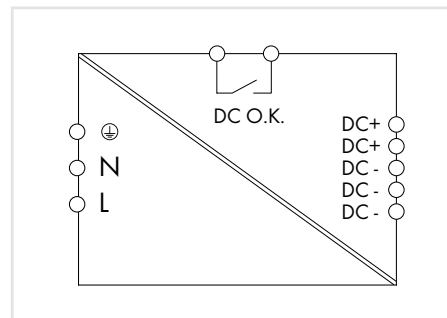
Item No.	Pack. Unit
787-732	1

EPSITRON® Switched-Mode Power Supply, ECO Power, 1-phase, output: 24 VDC/20 A, active power factor correction

Item No.	Pack. Unit
787-734	1

## Electrical Data

Input voltage range	85 ... 264 VAC; 130 ... 373 VDC	85 ... 264 VAC; 130 ... 373 VDC
Input current I <sub>i</sub>	1.5 A typ. at 230 VAC; 3.0 A at 115 VAC	3 A typ. at 230 VAC; 6.3 A at 115 VAC
Discharge current	< 3.5 mA	< 2 mA
Inrush current	< 30 A at 230 VAC; < 25 A at 115 VAC	< 30 A at 230 VAC; < 25 A at 115 VAC
Mains failure hold-up time	> 20 ms at 230 VAC	> 20 ms at 230 VAC
Power factor	> 0.94 at 230 VAC > 0.98 at 115 VAC	> 0.94 at 230 VAC > 0.98 at 115 VAC
Output current I <sub>o</sub>	10 A at 24 VDC	20 A at 24 VDC
Residual ripple	< 100 mV (peak-to-peak)	< 100 mV (peak-to-peak)
Signaling	–	DC OK contact; Make contact (max. 31.2 V / 20 mA)
Efficiency	86 % typ. at 230 VAC	90 % (typ.)
Power loss P <sub>v</sub>	37.5 W (at 230 VAC and 10 ADC)	65 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	53 W (at 110 VAC and 11 ADC)	107 W typ. (110 VAC / 24 VDC, 23 A)
Internal fuse	F 5 A / 250 V	T 10 A / 250 V
Recommended backup fuse	Circuit breakers 10 A, 16 A; Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.	Circuit breakers 10 A, 16 A; Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
Ambient operating temperature	–10 ... +70 °C	–25 ... +70 °C
Storage temperature	–25 ... +85 °C	–25 ... +85 °C
Derating	–2.33 % / K (>55 °C at 230 VAC)	See instruction manual
Feedback voltage	28 VDC	29 VDC
MTBF	480,000 h (per IEC 61709)	> 250,000 h (per IEC 61709)
Connectors	CAGE CLAMP® (WAGO 745 Series)	Input/Signaling: WAGO 2706 Series Output: WAGO 2716 Series
Conductor range	0.08 ... 4 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)	Input/Signaling: 0.5 ... 6 mm <sup>2</sup> / 20 ... 10 AWG Output: 1.5 ... 16 mm <sup>2</sup> / 16 ... 6 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch	Input/Signaling: 11 ... 12 mm / 0.43 ... 0.47 inch Output: 12 ... 13 mm / 0.47 ... 0.51 inch
Mounting type	DIN-rail mount (EN 60715)	DIN-rail-mount (DIN EN 50022)
Mechanical Data		
Dimensions (mm) W x H x D	110 x 92 x 136 (incl. female connectors), length from upper-edge of DIN-rail	115 x 136 x 144, length from upper-edge of DIN-rail
Weight	1200 g	2400 g
General Specifications		
Standards/Approvals	EN 60950, EN 61204-3, cURus 60950, cULus 508, ANSI/ISA 12.12.01 (Class I Div. 2), ATEX, IEC Ex	EN 60950, EN 61000-6-2, EN 61000-6-3, UL 60950, UL 508



EPSITRON® Switched-Mode Power Supply, ECO Power, 1-phase, output: 24 VDC/40 A, active power factor correction

	Item No.	Pack. Unit
	787-736	1

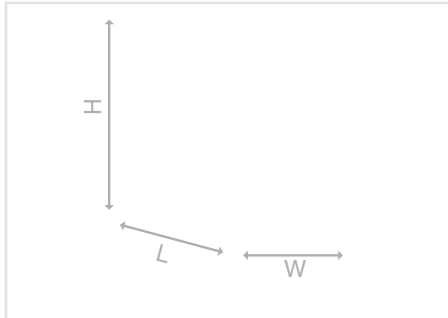
#### Electrical Data

Input voltage range	90 ... 264 VAC; 130 ... 373 VDC
Input current $I_i$	< 6 A at 230 VAC; < 12 A at 115 VAC
Discharge current	< 2 mA
Inrush current	< 30 A at 230 VAC; < 25 A at 115 VAC
Mains failure hold-up time	> 17 ms at 230 VAC
Power factor	> 0.94 at 230 VAC > 0.98 at 115 VAC
Output current $I_o$	40 A at 24 VDC
Residual ripple	< 100 mV (peak-to-peak)
Signaling	DC OK contact; Make contact (max. 31.2 V / 20 mA)
Efficiency	90 % (typ.)
Power loss $P_v$	107 W at 230 VAC / nominal load
Internal fuse	T 20 A / 250 V
Recommended backup fuse	Circuit breakers 13 A, 16 A, 20 A; Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Derating	-2.66 % / K (> 55 °C); -2 % / V ( $U_i < 100$ VAC)
Feedback voltage	29 VDC
MTBF	> 250,000 h (per IEC 61709)
Connectors	Input/Signaling: WAGO 2706 Series Output: WAGO 2716 Series
Conductor range	Input/Signaling: 0.5 ... 6 mm <sup>2</sup> / 20 ... 10 AWG Output: 1.5 ... 16 mm <sup>2</sup> / 16 ... 6 AWG
Strip length	Input/Signaling: 11 ... 12 mm / 0.43 ... 0.47 inch Output: 12 ... 13 mm / 0.47 ... 0.51 inch
Mounting type	DIN-rail-mount (DIN EN 50022)
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	170 x 136 x 150, length from upper-edge of DIN-rail
Weight	3500 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950, EN 61000-6-2, EN 61000-6-4, UL 60950, UL 508

## Switched-Mode Power Supplies, 1-Phase

## EPSITRON® ECO Power

## 787 Series



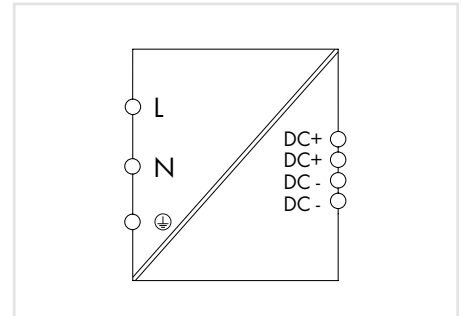
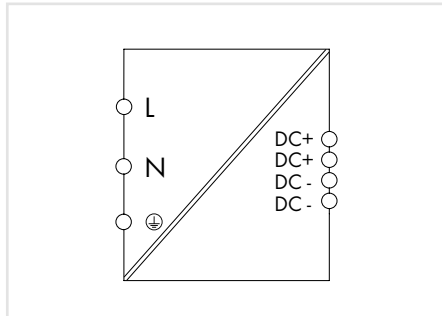
## Features:

- Switched-mode power supply
- Natural convection cooling when horizontally mounted
- Enclosed for use in switchgear cabinets
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1 and EN 60335-1; PELV per EN 60204
- DIN-35 rail mountable in different positions
- Direct installation on mounting plate via cable grip

## Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	(100) 110 ... 240 VAC
Input voltage range	90 ... 264 VAC; 125 ... 375 VDC
Frequency	47 ... 63 Hz
Discharge current	< 3.5 mA
Inrush current	< 18 A
Mains failure hold-up time	> 10 ms at 230 VAC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC (SELV)
Output voltage range	22 ... 26 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Residual ripple	< 200 mV (peak-to-peak)
Overload behavior	Constant power (in overload range: 1.05 ... 1.4 $\times I_o$ ), shutdown and automatic restart in the event of a short circuit
Operation status indicator	Green LED (24 VDC OK)
<b>Fuse Protection</b>	
Recommended backup fuse	Circuit breakers B6, B10; An external DC fuse is required for the DC input voltage.
<b>General Specifications</b>	
Standards/Approvals	EN 60950, EN 61204-3, EN 60335, UL 60950, UL 508,
<b>Environmental Requirements</b>	
Ambient operating temperature	-20 ... +60 °C
Storage temperature	-25 ... +70 °C
Relative humidity	10 ... 95 % (no condensation permissible)
Overvoltage category	II
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	3 kV AC / 1.5 kV AC / 0.5 kV AC
Protection class	I
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via varistor at primary circuit
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	30 VDC
Parallel operation	Yes
Series connection	Yes
MTBF	> 300,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Connectors	CAGE CLAMP® (WAGO 236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	6 ... 7 mm / 0.24 ... 0.28 inch
Mounting type	DIN-rail mount (EN 60715)





EPSITRON® Switched-Mode Power Supply,  
ECO Power, 1-phase, output: 24 VDC/1.25 A

Item No.	Pack. Unit
787-1702	1

EPSITRON® Switched-Mode Power Supply,  
ECO Power, 1-phase, output: 24 VDC/2.5 A

Item No.	Pack. Unit
787-1712	1

#### Electrical Data

Input current $I_i$	0.3 ms typ. at 230 VAC; 0.6 A typ. at 115 VAC
Output current $I_o$	1.25 A at 24 VDC and 110 ... 240 VAC 1 A at 24 VDC and 100 ... 240 VAC
Efficiency	> 87 % (at 230 VAC and 1.25 ADC)
Derating	-4 % / K (> 45 °C)
Internal fuse	F 1 A / 250 V

#### Mechanical Data

Dimensions (mm) W x H x D	30 x 90 x 99, length from upper-edge of DIN-rail
Weight	250 g
Installation width (as delivered)	30 mm

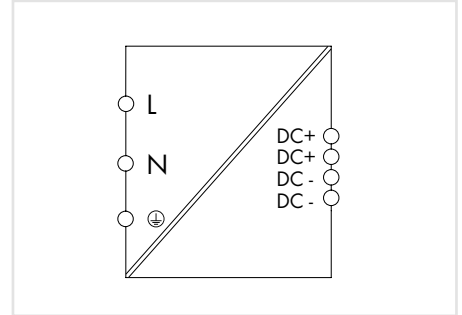
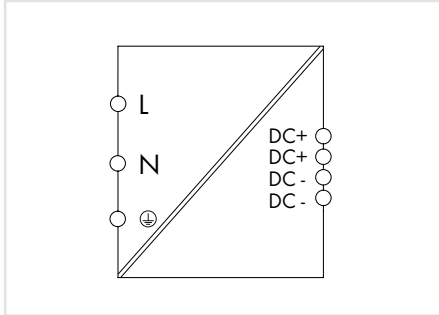
Input current $I_i$	0.6 ms typ. at 230 VAC; 1.2 A typ. at 115 VAC
Output current $I_o$	2.5 A at 24 VDC and 110 ... 240 VAC 2 A at 24 VDC and 100 ... 240 VAC
Efficiency	> 88 % (at 230 VAC and 2.5 ADC)
Derating	-4 % / K (> 45 °C)
Internal fuse	F 2 A / 250 V

Dimensions (mm) W x H x D	40 x 90 x 99, length from upper-edge of DIN-rail
Weight	300 g
Installation width (as delivered)	40 mm

# Switched-Mode Power Supplies, 1-Phase

## EPSITRON® ECO Power

### 787 Series



EPSITRON® Switched-Mode Power Supply, ECO Power, 1-phase, output: 24 VDC/5 A

	Item No.	Pack. Unit
	787-1722	1

EPSITRON® Switched-Mode Power Supply, ECO Power, 1-phase, output: 24 VDC/10 A

	Item No.	Pack. Unit
	787-1732	1

#### Electrical Data

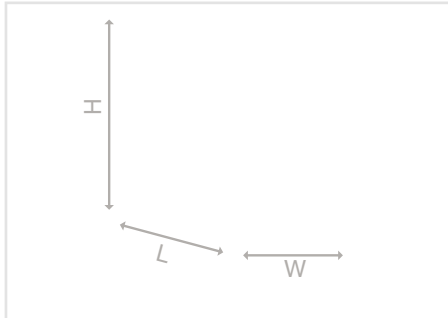
Input current $I_i$	1.0 ms typ. at 230 VAC; 2.0 A typ. at 115 VAC	2.0 ms typ. at 230 VAC; 4.0 A typ. at 115 VAC
Output current $I_o$	5 A at 24 VDC and 110 ... 240 VAC 4 A at 24 VDC and 100 ... 240 VAC	10 A at 24 VDC and 110 ... 240 VAC 8 A at 24 VDC and 100 ... 240 VAC
Efficiency	> 88 % (at 230 VAC and 5 ADC)	> 91 % (at 230 VAC and 10 ADC)
Derating	-3 % / K (> 45 °C)	-4 % / K (> 45 °C)
Internal fuse	F 3.15 A / 250 V	F 5 A / 250 V
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	60 x 130 x 90, length from upper-edge of DIN-rail	70 x 165 x 99, length from upper-edge of DIN-rail
Weight	550 g	840 g
Installation width (as delivered)	60 mm	70 mm



## Switched-Mode Power Supplies, 3-Phase

## EPSITRON® ECO Power

## 787 Series

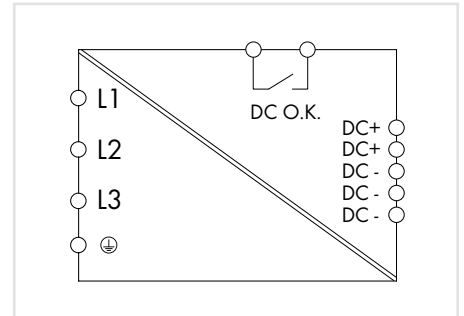
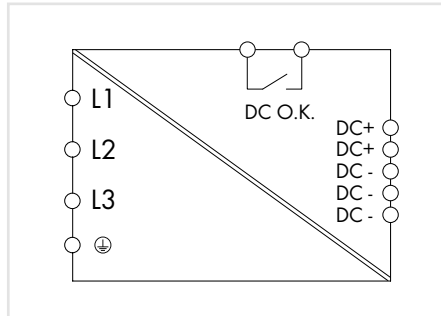


## Features:

- Natural convection cooling when horizontally mounted
- Enclosed for use in control cabinets
- Fast and tool-free termination via lever-actuated terminal blocks
- DC OK contact
- Parallel operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204

## Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	3 x (2 x) 400 VAC
Input voltage range	360 ... 460 VAC; 500 ... 650 VDC (no damage up to 575 VAC/800 VDC under normal conditions)
Frequency	47 ... 63 Hz
Power factor	$\geq 0.5$
Discharge current	$< 3.5 \text{ mA}$
Mains failure hold-up time	$> 17 \text{ ms}$ at 3 x 400 VAC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC (SELV)
Output voltage range	22 ... 28 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	$< 1 \%$
Residual ripple	$< 100 \text{ mV}$ (peak-to-peak)
Overload behavior	Constant power (in overload range: 1.15 ... 1.4 x $I_o$ ); shutdown and automatic restart in the event of a short circuit
Operation status indicator	Green LED ( $U_o$ ); Red LED (overload)
Signaling	DC OK contact; Make contact (max. 31.2 V / 20 mA)
<b>Efficiency/Power Losses</b>	
<b>Fuse Protection</b>	
Recommended backup fuse	3 x circuit breakers $\geq 6 \text{ A}$ , Tripping characteristic: B, C, or motor circuit breakers; An external DC fuse is required for the DC input voltage.
<b>General Specifications</b>	
Standards/Approvals	EN 60950, EN 61204-3 (Class A), UL 60950, UL 508
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Relative humidity	10 ... 95 % (no condensation permissible)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND/Sec.-DC OK	3 kV AC / 1.5 kV AC / 0.5 kV AC / 0.5 kV AC
Protection class	I
Degree of protection	IP20 per EN 60529
Overvoltage category	II
Overvoltage protection	Yes
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	30 V
Parallel operation	Yes
Series connection	Yes
MTBF	$> 250,000 \text{ h}$ (per IEC 61709)
<b>Connection and Mounting Type</b>	
Connectors	Input/Output: WAGO 2706 Series Signaling: WAGO 2091 Series
Conductor range	Input/Output: 0.5 ... 6 mm <sup>2</sup> / 20 ... 10 AWG Signaling: 0.2 ... 1.5 mm <sup>2</sup> / 24 ... 14 AWG
Strip length	Input/Output: 11 ... 12 mm / 0.43 ... 0.47 inch Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)



EPSITRON® Switched-Mode Power Supply,  
ECO Power, 3-phase, output: 24 VDC/6.25 A,  
DC OK contact

	Item No.	Pack. Unit
	787-738	1

EPSITRON® Switched-Mode Power Supply,  
ECO Power, 3-phase, output: 24 VDC/10 A,  
DC OK contact

	Item No.	Pack. Unit
	787-740	1

#### Electrical Data

Input current $I_i$	3 x 0.6 A at 400 VAC and 6.25 ADC
Inrush current	< 25 A
Output current $I_o$	6.25 A at 24 VDC
Efficiency	87 % typ.
Power loss $P_v$	18.5 W
Power loss $P_v$ (max.)	20 W
Internal fuse	3 x T 2 A / 250 V
Derating	-2.5 % / K (> +50 °C; 400 VAC)

#### Mechanical Data

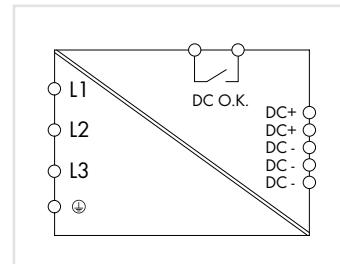
Dimensions (mm) W x H x D	50 x 130 x 92, length from upper-edge of DIN-rail
Weight	730 g

Input current $I_i$	3 x 1.2 A at 400 VAC and 10 ADC
Inrush current	< 25 A
Output current $I_o$	10 A at 24 VDC
Efficiency	89 % (typ.)
Power loss $P_v$	32.5 W
Power loss $P_v$ (max.)	36 W
Internal fuse	3 x T 2 A / 250 V
Derating	-1.25 % / K (> +50 °C; 400 VAC)

Dimensions (mm) W x H x D	65 x 130 x 130, length from upper-edge of DIN-rail
Weight	1130 g

## Switched-Mode Power Supplies, 3-Phase EPSITRON® ECO Power

### 787 Series



EPSITRON® Switched-Mode Power Supply,  
ECO Power, 3-phase, output: 24 VDC/20 A,  
DC OK contact

Item No.	Pack. Unit
787-742	1

#### Electrical Data

Input current $I_i$	3 x 2.0 A at 400 VAC and 20 ADC
Inrush current	< 30 A
Output current $I_o$	20 A at 24 VDC
Efficiency	90 % (typ.)
Power loss $P_v$	50 W
Power loss $P_v$ (max.)	55 W
Internal fuse	3 x T 5 A / 250 V
Derating	-2 % / K (> +50 °C; 400 VAC)

#### Mechanical Data

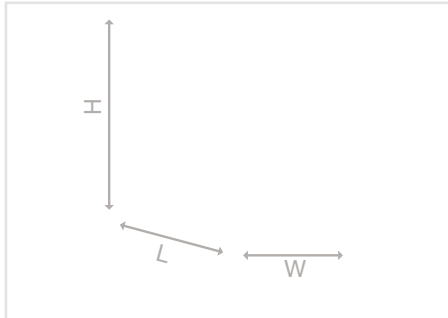
Dimensions (mm) W x H x D	110 x 130 x 151, length from upper-edge of DIN-rail
Weight	1930 g



# Switched-Mode Power Supplies, 1-Phase

## EPSITRON® COMPACT Power

### 787 Series



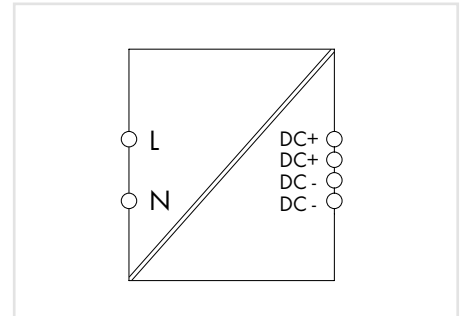
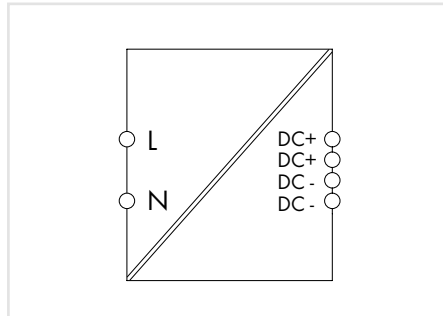
#### Features:

- Switched-mode power supply
- Stepped profile for installation in standard distribution boards
- Pluggable *picoMAX*® connection technology (tool-free)
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204
- Suitable for both parallel and series operation

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC, 120 ... 373 VDC
Frequency	44 ... 66 Hz; 0 Hz
Inrush current	< 30 A, NTC
<b>Output</b>	
Nominal output voltage $U_{o, nom}$	24 VDC (SELV)
Output voltage range	22.8 ... 26.4 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	< 2 %
Residual ripple	< 100 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operation status indicator	Green LED ( $U_o$ )
<b>Fuse Protection</b>	
Internal fuse	T 2 A / 250 V
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
<b>General Specifications</b>	
Standards/Approvals	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +60 °C (UL: -25 ... +55 °C); Device starts at -40 °C type-tested
Storage temperature	-25 ... +80 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	-3 % / K (> 45 °C)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Housing	Plastic, light gray, flammability class V0 per UL94
Test voltage (pri.-sec.)	4.2 kV (DC)
Protection class	II
Degree of protection	IP20 per EN 60529
Overvoltage category	II
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	> 500,000 h
<b>Connection and Mounting Type</b>	
Connectors	Input/Output: <i>picoMAX</i> ® (WAGO 2092 Series)
Conductor range	Input/Output: 0.2 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 9 ... 10 mm / 0.35 ... 0.39 inch
Mounting type	DIN-rail mount (EN 60715)





EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 24 VDC/1.3 A

Item No.	Pack. Unit
787-1102	1

EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 24 VDC/2.5 A

Item No.	Pack. Unit
787-1112	1

#### Electrical Data

Input voltage derating	$I_o$ max. 1 A (< 100 VAC)
Input current $I_i$	0.7 A at 110 VAC / 0.5 A at 230 VAC
Mains failure hold-up time	> 10 ms at 110 VAC; > 80 ms at 230 VAC
Output current $I_o$	1.3 A at 24 VDC; Max. 0.9 A in any mounting position
Efficiency	82 % (typ.)
Power loss $P_v$	2.6 W (230 VAC, no load); 7.0 W (230 VAC, nominal load)
Power loss $P_v$ (max.)	7.3 W typ. (100 VAC / 24 VDC, 1.3 A)

#### Mechanical Data

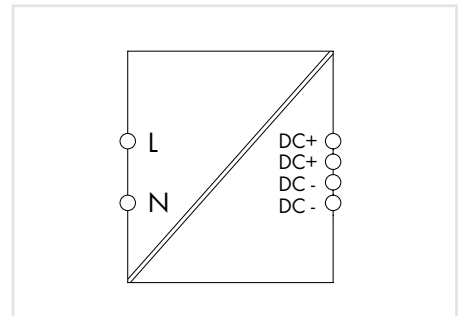
Dimensions (mm) W x H x D	54 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail
Weight	170 g

$I_o$ max. 2 A (< 100 VAC); $I_o$ max. 1.8 A (< 90 VAC)
1.4 A at 110 VAC / 0.6 A at 230 VAC
> 10 ms at 110 VAC; > 80 ms at 230 VAC
2.5 A at 12 VDC Max. 1.6 A in any mounting position
88 % (typ.)
2.2 W (230 VAC, no load); 8.5 W (230 VAC, nominal load)
10.5 W typ. (100 VAC / 12 VDC, 2.5 A)

72 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail
240 g

## Switched-Mode Power Supplies, 1-Phase EPSITRON® COMPACT Power

### 787 Series



EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 24 VDC/4 A

Item No.	Pack. Unit
787-1122	1

#### Electrical Data

Input voltage derating	$I_o$ max. 3.5 A (< 100 VAC); $I_o$ max. 3 A (< 90 VAC)
Input current $I_i$	1.6 A at 110 VAC / 0.9 A at 230 VAC
Mains failure hold-up time	> 15 ms at 110 VAC / > 100 ms at 230 VAC
Output current $I_o$	4 A at 24 VDC; Max. 2.4 A in any mounting position
Efficiency	88 % (typ.)
Power loss $P_v$	0.8 W (230 VAC, no load); 13.1 W (230 VAC, nominal load)
Power loss $P_v$ (max.)	14.8 W typ. (100 VAC / 24 VDC, 4 A)

#### Mechanical Data

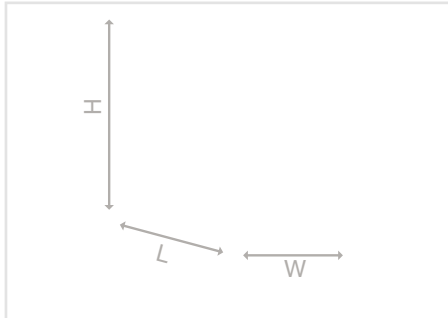
Dimensions (mm) W x H x D	90 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail
Weight	300 g



# Switched-Mode Power Supplies, 1-Phase

## EPSITRON® COMPACT Power

### 787 Series

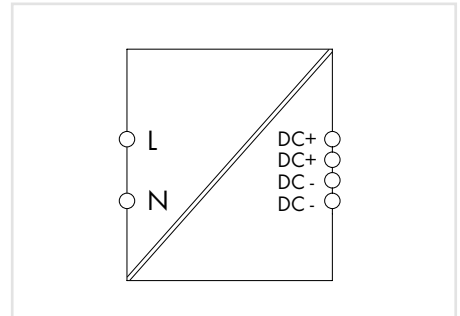
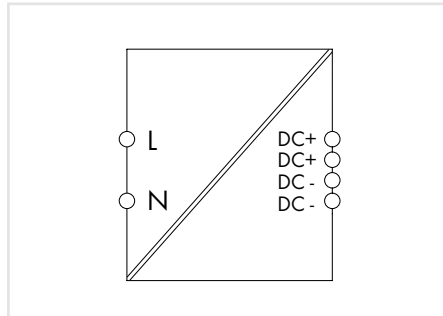


#### Features:

- Switched-mode power supply
- Stepped profile, ideal for distribution boards or distribution boxes
- Removable front panel and screw mounts provide an ideal installation alternative in distribution boxes or devices
- Pluggable *picoMAX*® connection technology (tool-free)
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1 and EN 60335-1; PELV per EN 60204
- Suitable for both parallel and series operation

#### Technical Data

<b>Input</b>	
Frequency	47 ... 63 Hz
Power factor	> 0.5
Discharge current	< 0.25 mA
Inrush current	< 20 A
<b>Output</b>	
Nominal output voltage $U_{o, nom}$	24 VDC (SELV)
Output voltage range	22 ... 26 VDC adjustable
Factory preset	24 VDC
Adjustment accuracy	< 1 %
Deviation, dynamic load change 10 ... 90 %	< 1 %
Residual ripple	< 100 mV (peak-to-peak)
Overload behavior	Constant power (in overload range: 1.05 ... 1.35 x $I_o$ ); shutdown and automatic restart in the event of a short circuit or permanent overload
Operation status indicator	Green LED ( $U_o$ )
<b>Fuse Protection</b>	
Recommended backup fuse	Circuit breakers 6 A (C characteristic), 10 A (B characteristic) or higher; An external DC fuse is required for the DC input voltage.
<b>General Specifications</b>	
Conformity marking	CE
Standards/Approvals	EN 61204-3, EN 60335-1, EN 60950-1, UL 60950, UL 508
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Relative humidity	95 % (no condensation permissible)
Derating	-2.66 % / K (> 55 °C)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721, except for low air pressure)
<b>Safety and Protection</b>	
Housing	PC plastic, light gray, flammability class V2 per UL94
Test voltage (pri.-sec.)	3 kV AC
Protection class	I
Degree of protection	IP20 per EN 60529
Overvoltage protection	< 31 VDC (in the event of a fault)
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	Max. 35 VDC
Parallel operation	Yes
Series connection	Yes
<b>Connection and Mounting Type</b>	
Connectors	Input/Output: <i>picoMAX</i> ® (WAGO 2092 Series)
Conductor range	Input/Output: 0.2 ... 2.5 mm <sup>2</sup> / 24 ... 12 AWG
Strip length	Input/Output: 9 ... 10 mm / 0.35 ... 0.39 inch
Mounting type	DIN-rail mount (EN 60715) or screw mount (back/side)



EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 24 VDC/1.3 A

	Item No.	Pack. Unit
	787-1202	1

EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 24 VDC/2.5 A

	Item No.	Pack. Unit
	787-1212	1

#### Electrical Data

Nominal input voltage $U_{I,nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC, 125 ... 375 VDC
Input voltage derating	-2 % / V (<100 VAC); -1.33 % / V (< 140 VDC)
Input current $I_i$	< 0.6 A
Mains failure hold-up time	≥ 70 ms
Output current $I_o$	1.3 A
Efficiency	> 87 % (230 VAC); > 82 % (110 VAC)
Power loss $P_v$	0.43 W (230 VAC, no load)
Power loss $P_v$ (max.)	5.5 W (100 VAC; 1.3 ADC)
Internal fuse	T 1 A / 250 V
MTBF	> 700,000 h (per IEC 61709)

#### Mechanical Data

Dimensions (mm) W x H x D	54 x 90 x 56, Depth: 52.5 mm from upper-edge of DIN-rail, 48 mm without front panel
Weight	210 g

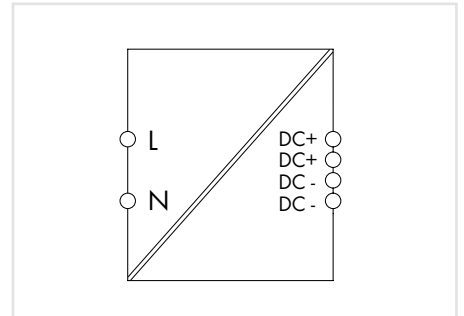
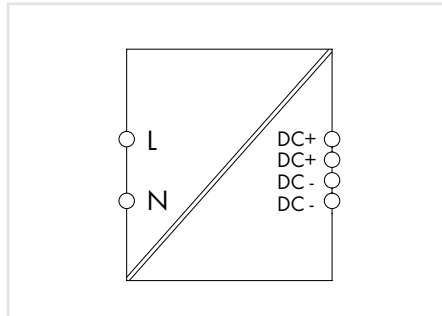
Nominal input voltage $U_{I,nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC, 125 ... 375 VDC
Input voltage derating	-2 % / V (<100 VAC); -1.33 % / V (< 140 VDC)
Input current $I_i$	< 1.5 A
Mains failure hold-up time	≥ 60 ms
Output current $I_o$	2.5 A (2.0 A at $U_i$ < 110 VAC)
Efficiency	> 89 % (230 VAC); > 87 % (110 VAC)
Power loss $P_v$	0.6 W (230 VAC, no load)
Power loss $P_v$ (max.)	9 W (100 VAC; 2.5 ADC)
Internal fuse	T 2 A / 250 V
MTBF	> 500,000 h (per IEC 61709)

Dimensions (mm) W x H x D	72 x 90 x 56, Depth: 52.5 mm from upper-edge of DIN-rail 48 mm without front panel
Weight	270 g

# Switched-Mode Power Supplies, 1-Phase

## EPSITRON® COMPACT Power

### 787 Series



EPSITRON® Switched-Mode Power Supply, COMPACT Power, 1-phase, output: 24 VDC/4.2 A

	Item No.	Pack. Unit
	787-1216	1

EPSITRON® Switched-Mode Power Supply, COMPACT Power, 1-phase, output: 24 VDC/6 A

	Item No.	Pack. Unit
	787-1226	1

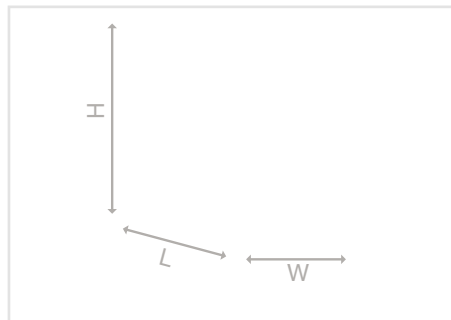
#### Electrical Data

Nominal input voltage $U_{1nom}$	100 ... 240 VAC	100 ... 120 VAC; 220 ... 240 VAC
Input voltage range	85 ... 264 VAC, 125 ... 375 VDC	90 ... 132 VAC; 180 ... 264 VDC
Input voltage derating	-2 % / V (<100 VAC); -1.33 % / V (< 140 VDC)	-2 % / V (< 100 VAC)
Input current $I_i$	< 2.5 A	< 3.8 A
Mains failure hold-up time	≥ 50 ms	≥ 30 ms
Output current $I_o$	4.2 A (3.3 A at $U_i$ < 110 VAC)	6 A (4.8 A at $U_i$ < 110 VAC)
Efficiency	> 90 % (230 VAC), > 87 % (110 VAC)	> 90 % (230 VAC), > 89 % (110 VAC)
Power loss $P_v$	0.7 W (230 VAC, no load)	0.4 W (230 VAC, no load)
Power loss $P_v$ (max.)	15 W (100 VAC; 4.2 ADC)	16.5 W (100 VAC; 6 ADC)
Internal fuse	T 3.15 A / 250 V	T 3.15 A / 250 V
MTBF	> 500,000 h	> 500,000 h
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	108 x 90 x 56, Depth: 52.5 mm from upper-edge of DIN-rail	144 x 90 x 56, Depth: 52.5 mm from upper-edge of DIN-rail
Weight	415 g	510 g



## Switched-Mode Power Supplies, 1-Phase EPSITRON® COMPACT Power

### 787 Series



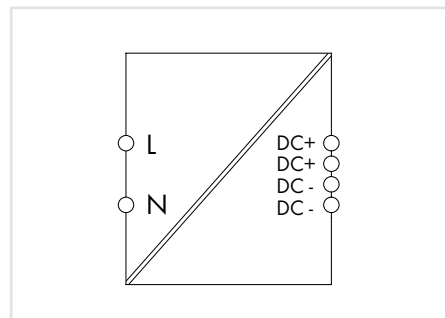
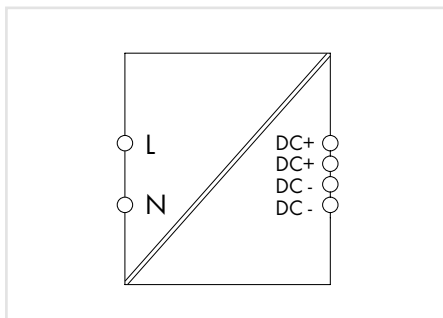
#### Features:

- Switched-mode power supply
- Natural convection cooling when horizontally mounted
- Stepped profile, ideal for distribution boards or distribution boxes
- Overhead mounting is possible with derating
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC, 120 ... 373 VDC
Frequency	44 ... 66 Hz; 0 Hz
Discharge current	1 mA (typ.)
Inrush current	< 30 A, NTC
<b>Output</b>	
Adjustment accuracy	< 2 %
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operation status indicator	Green LED ( $U_o$ )
<b>Fuse Protection</b>	
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +60 °C (UL: -25 ... +55 °C); Device starts at -40 °C type-tested
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	-3 % / K (> 45 °C)
Climatic category	3K3 (per EN 60721)
<b>Safety and Protection</b>	
Housing	Plastic, light gray, flammability class V0 per UL94
Test voltage (pri.-sec.)	4.2 kV (DC)
Protection class	II
Degree of protection	IP20 per EN 60529
Overvoltage category	II
Short-circuit-protection	Yes
No-load proof	Yes
Parallel operation	Yes
Series connection	Yes
MTBF	> 500,000 h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Connectors	Input/Output: WAGO 740 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 inch
Mounting type	DIN-rail mount (EN 60715)





EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 5 VDC/5.5 A

	Item No.	Pack. Unit
	787-1020	1

EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 12 VDC/2 A

	Item No.	Pack. Unit
	787-1001	1

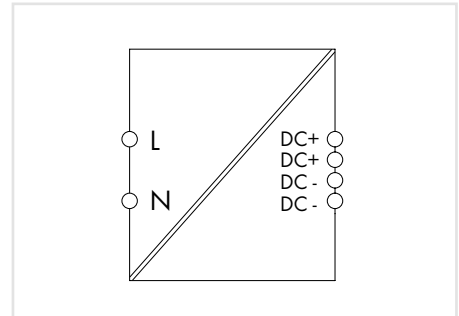
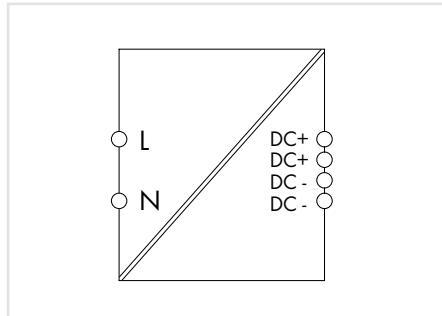
#### Electrical Data

Input voltage derating		< 100 VAC; I <sub>o</sub> max. 1.5 A
Input current I <sub>i</sub>	0.56 A at 110 VAC; 0.29 at 230 VAC	0.6 A at 110 VAC; 0.4 at 230 VAC
Mains failure hold-up time	> 10 ms at 110 VAC; > 80 ms at 230 VAC	> 10 ms at 110 VAC; > 80 ms at 230 VAC
Nominal output voltage U <sub>o,nom</sub>	5 VDC, SELV	12 VDC (SELV)
Output voltage range	4.5 ... 8.5 VDC (adjustable)	10.8 ... 18 VDC (adjustable)
Factory preset	5 VDC	12 VDC
Output current I <sub>o</sub>	5.5 A at 5 VDC; Max. 3.5 A in any mounting position	2 A at 12 VDC; 0.75 A at 18 VDC; Max. 1.4 A at 12 VDC, in any mounting position
Residual ripple	< 100 mV (peak-to-peak) up to 20 MHz	< 100 mV (peak-to-peak) up to 20 MHz
Efficiency	75 % (typ.)	80 % (typ.)
Power loss P <sub>v</sub>	2.4 W (230 VAC, no load) 9.4 W (230 VAC, nominal load)	2.6 W (230 VAC, no load) 6.0 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	9.9 W typ. (264 VAC / 5 VDC, 5.5 A)	6 W typ. (100 VAC / 12 VDC, 2 A)
Internal fuse	T 2 A / 250 V	T 2 A / 250 V
Recommended backup fuse	Circuit breakers ≥ 6 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.	Circuit breakers ≥ 6 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
Storage temperature	-25 ... +80 °C	-25 ... +80 °C
Pollution degree	2 (per EN 50178)	2 (per EN 50178)
Overvoltage protection	< 16 VDC (in the event of a fault)	< 30 VDC (in the event of a fault)
Feedback voltage	Max. 10 VDC	Max. 25 VDC
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	72 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail	54 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail
Weight	240 g	180 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950-1, EN 61204-3, UL 60950-1, UL 508, GL* (*pending)	EN 60950, EN 61204-3, UL 60950, UL 508, GL

## Switched-Mode Power Supplies, 1-Phase

### EPSITRON® COMPACT Power

#### 787 Series



EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 12 VDC/4 A

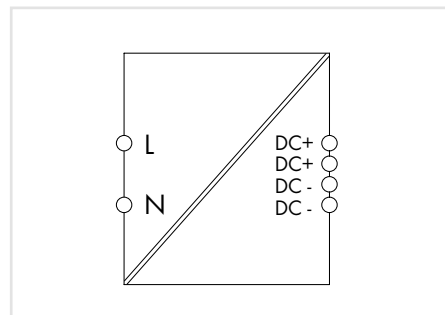
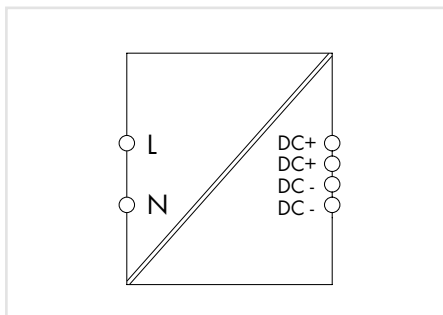
	Item No.	Pack. Unit
	787-1011	1

EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 12 VDC/6.5 A

	Item No.	Pack. Unit
	787-1021	1

#### Electrical Data

Input voltage derating	< 100 VAC: I <sub>o</sub> max. 3.5 A	Max. 6 A (< 100 VAC); 5.5 A (< 90 VAC)
Input current I <sub>i</sub>	0.9 A at 110 VAC; 0.5 at 230 VAC	0.9 A at 110 VAC; 0.5 at 230 VAC
Mains failure hold-up time	> 10 ms at 110 VAC; > 80 ms at 230 VAC	> 15 ms at 110 VAC / > 100 ms at 230 VAC
Nominal output voltage U <sub>o,nom</sub>	12 VDC (SELV)	12 VDC (SELV)
Output voltage range	10.5 ... 15.5 VDC adjustable	10.5 ... 15.5 VDC adjustable
Factory preset	12 VDC	12 VDC
Output current I <sub>o</sub>	4 A at 12 VDC; Max. 2.4 A in any mounting position	6.5 A at 12 VDC; Max. 3.9 A (12 VDC) in any mounting position
Residual ripple	< 100 mV (peak-to-peak) up to 20 MHz	< 100 mV (peak-to-peak) up to 20 MHz
Efficiency	85 % (typ.)	87 % typ.
Power loss P <sub>v</sub>	2.2 W (230 VAC, no load); 8.5 W (230 VAC, nominal load)	< 1 W (no load), 15 W (nominal load)
Power loss P <sub>v</sub> (max.)	9 W typ. (100 VAC / 12 VDC, 4 A)	15 W typ. (100 VAC / 12 VDC, 6.5 A)
Internal fuse	T 2 A / 250 V	T 4 A / 250 V
Recommended backup fuse	Circuit breakers ≥ 6 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.	Circuit breakers ≥ 6 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
Storage temperature	-25 ... +80 °C	-25 ... +80 °C
Pollution degree	2 (per EN 50178)	2 (per EN 50178)
Overvoltage protection	< 30 VDC (in the event of a fault)	< 30 VDC (in the event of a fault)
Feedback voltage	Max. 25 VDC	Max. 25 VDC
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	72 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail	90 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail
Weight	255 g	300 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950, EN 61204-3, UL 60950, UL 508, GL	EN 60950, EN 61204-3, UL 60950, UL 508, GL



EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 18 VDC/2.5 A

Item No.	Pack. Unit
787-1017	1

EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 24 VDC/1.3 A

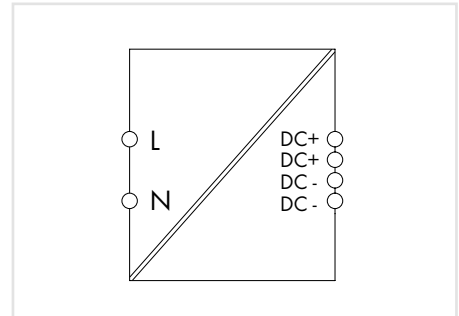
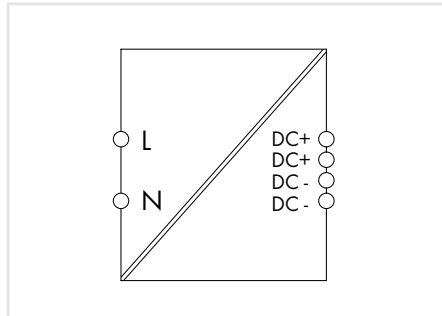
Item No.	Pack. Unit
787-1002	1

#### Electrical Data

Input voltage derating	Max. 2 A (< 100 VAC)	< 100 VAC; I <sub>o</sub> max. 1 A
Input current I <sub>i</sub>	0.9 A at 110 VAC; 0.5 at 230 VAC	0.7 A at 110 VAC; 0.5 at 230 VAC
Mains failure hold-up time	> 10 ms at 110 VAC; > 130 ms at 230 VAC	> 10 ms at 110 VAC; > 80 ms at 230 VAC
Nominal output voltage U <sub>o,nom</sub>	18 VDC	24 VDC (SELV)
Output voltage range	15 ... 28 VDC (adjustable)	22.8 ... 26.4 VDC adjustable
Factory preset	18 VDC	24 VDC
Output current I <sub>o</sub>	2.4 at 18 VDC / 2.0 A at 24 VDC, in any mounting position	1.3 A at 24 VDC; Max. 0.9 A in any mounting position
Residual ripple	< 100 mV (peak-to-peak) up to 20 MHz	< 100 mV (peak-to-peak) up to 20 MHz
Efficiency	84 % (typ.)	82 % (typ.)
Power loss P <sub>v</sub>	2.6 W (230 VAC, no load), 8.1 W (230 VAC, nominal load)	2.6 W (230 VAC, no load) 7.0 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	8.2 W typ. (100 VAC / 18 VDC, 2.4 A)	7.3 W typ. (100 VAC / 24 VDC, 1.3 A)
Internal fuse	T 2 A / 250 V	T 2 A / 250 V
Recommended backup fuse	Circuit breakers ≥ 6 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.	Circuit breakers ≥ 6 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
Storage temperature	-25 ... +80 °C	-25 ... +80 °C
Pollution degree	2 (per EN 50178)	2 (per EN 50178)
Overvoltage protection	< 40 VDC (in the event of a fault)	< 40 VDC (in the event of a fault)
Feedback voltage	Max. 35 VDC	Max. 30 VDC
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	72 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail	54 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail
Weight	250 g	180 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950, EN 61204-3, UL 60950-1, UL 508, GL* (*pending)	EN 60950, EN 61204-3, UL 60950, UL 508, GL

## Switched-Mode Power Supplies, 1-Phase EPSITRON® COMPACT Power

### 787 Series



EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 24 VDC/2.5 A

Item No.	Pack. Unit
787-1012	1

EPSITRON® Switched-Mode Power Supply,  
COMPACT Power, 1-phase,  
output: 24 VDC/4 A

Item No.	Pack. Unit
787-1022	1

#### Electrical Data

Input voltage derating	< 100 VAC: I <sub>o</sub> max. 2.0 A; < 90 V: I <sub>o</sub> max. 1.8 A	upon request
Input current I <sub>i</sub>	1.4 A at 110 VAC; 0.6 at 230 VAC	1.6 A at 110 VAC; 0.9 at 230 VAC
Mains failure hold-up time	> 10 ms at 110 VAC; > 80 ms at 230 VAC	> 15 ms at 110 VAC / > 100 ms at 230 VAC
Nominal output voltage U <sub>o,nom</sub>	24 VDC (SELV)	24 VDC (SELV)
Output voltage range	22.8 ... 26.4 VDC adjustable	22.8 ... 26.4 VDC adjustable
Factory preset	24 VDC	24 VDC
Output current I <sub>o</sub>	2.5 A at 24 VDC Max. 1.6 A in any mounting position	4 A at 24 VDC Max. 2.4 A in any mounting position
Residual ripple	< 100 mV (peak-to-peak) up to 20 MHz	< 100 mV (peak-to-peak) up to 20 MHz
Efficiency	88 % (typ.)	88 % (typ.)
Power loss P <sub>v</sub>	2.2 W (230 VAC, no load); 8.5 W (230 VAC, nominal load)	0.8 W (230 VAC, no load); 13.1 W (230 VAC, nominal load)
Power loss P <sub>v</sub> (max.)	10.5 W typ. (100 VAC / 24 VDC, 2.5 A)	14.8 W typ. 264 VAC / 24 VDC, 6 A)
Internal fuse	T 2 A / 250 V	T 4 A / 250 V
Recommended backup fuse	Circuit breakers ≥ 6 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.	Circuit breakers ≥ 6 A, Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.
Storage temperature	-25 ... +80 °C	-25 ... +80 °C
Pollution degree	2 (per EN 50178)	2 (per EN 50178)
Overvoltage protection	< 40 VDC (in the event of a fault)	< 40 VDC (in the event of a fault)
Feedback voltage	Max. 30 VDC	Max. 30 VDC
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	72 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail	90 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail
Weight	255 g	310 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950, EN 61204-3, UL 60950, UL 508, GL	EN 60950, EN 61204-3, UL 60950, UL 508, GL



# Switched-Mode Power Supply with Integrated UPS Charger and Controller

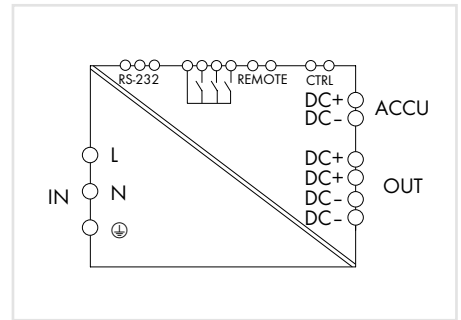
## EPSITRON®

### 787 Series



#### Features:

- Switched-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
- Natural convection cooling when horizontally mounted
- Enclosed for use in control cabinets
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204



EPSITRON® Switched-Mode Power Supply with Integrated UPS Charger and Controller, COMPACT Power, 1-phase, output: 24 VDC/5 A

Item No.	Pack. Unit
787-1675	1

#### Technical Data

Input	
Nominal input voltage $U_{i,nom}$	100 ... 240 VAC
Input voltage range	85 ... 264 VAC; 120 ... 372 VDC
Frequency	44 ... 66 Hz; 0 Hz
Input current $I_i$	1.1 A at 230 VAC and 5 ADC
Discharge current	1 mA (typ.)
Inrush current	< 30 A
Output	
Nominal output voltage $U_{o,nom}$	24 VDC (SELV)
Output voltage range	23.0 ... 28.5 VDC (mains operation) 18.5 ... 27.5 VDC (battery operation)
Output current $I_o$	5 A
Adjustment accuracy	1 % (mains operation)
Residual ripple	< 50 mV (peak-to-peak)
Current limitation	1.1 x $I_o$ ; TopBoost
Buffer time	1 ... 20 min, IPC mode or constant (adjustable)
Switch-on threshold (adjustable)	22 VDC (pre-configured), 20 ... 25.5 VDC (configurable via software)
End-of-charge voltage	26 ... 29.5 V temperature-controlled (fixed or adjustable)
Charging current	0.3 ... 1 A
Recommended battery modules	787-876, 787-871, 787-872, 787-873, 787-1671
Operation status indicator	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	Switches buffer mode off
LineMonitor, parameter setting	Via RS-232 serial interface
Efficiency/Power Losses	
Efficiency	88 % (typ.)
Power loss $P_V$	5.2 W (battery operation, 24 VDC, 5 A); 17 W (mains operation, 230 VAC / 24 VDC, 5 A)
Fuse Protection	
Internal fuse	T 4 A / 250 V (input side)
Recommended backup fuse	Circuit breaker: 6 A, 10 A, 16 A; Tripping characteristic: B, C; An external DC fuse is required for the DC input voltage.

#### General Specifications

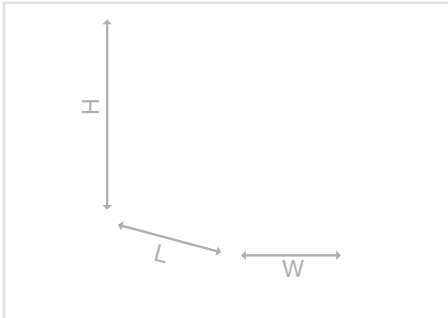
Standards/Approvals	EN 60950, UL 60950, UL 508, EN 61204-3, GL
Environmental Requirements	
Ambient operating temperature	-25 ... +70 °C Device starts at -40 °C type-tested
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	-3 % / K (> +50 °C)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
Safety and Protection	
Test voltage Pri.-Sec./Pri.-GND/Sec.-GND	4.2 kV DC / 2.2 kV DC / 0.7 kV DC
Protection class	I
Reverse voltage protection	Yes
Degree of protection	IP20 per EN 60529
Oversvoltage category	II
Feedback voltage	Max. 35 VDC
Parallel operation	Yes, max. 3 battery modules for buffer time extension
Connection and Mounting Type	
Connectors	Input/Output/Signaling: WAGO 721 Series Interface: WAGO 734 Series
Conductor range	Input/Output/Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Interface: 0.08 ... 1.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	Input/Output/Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch Interface: 6 ... 7 mm / 0.24 ... 0.28 inch
Cable length	≤ 3 m (output, battery control)
Mounting type	DIN-rail mount (EN 60715)
Dimensions and Weight	
Dimensions (mm) W x H x D	60 x 127 x 135.5, depth from upper-edge of DIN-rail
Weight	885 g



# UPS Charger and Controller

## EPSITRON®

### 787 Series



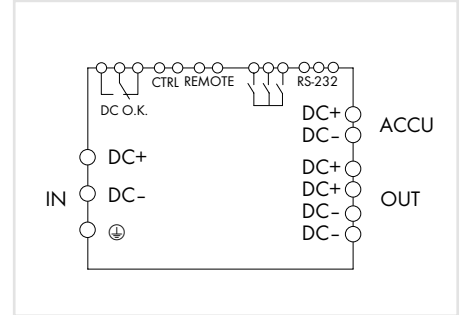
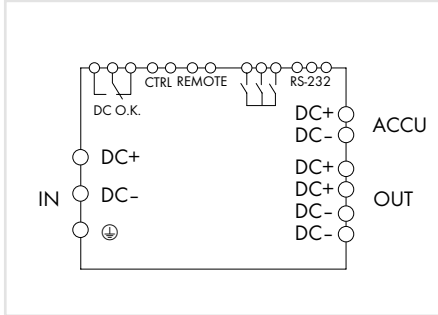
#### Features:

- Charger and controller for uninterruptible power supply (UPS)
- Current and voltage monitoring, as well as parameter setting via RS-232 interface and LCD
- Active signal outputs for watchdog functions
- Remote input for buffered output deactivation
- Input for temperature control of connected battery
- Battery control (from manufacturing no. 215563) detects both battery life and battery type

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	24 VDC
Input voltage range	22 ... 29 VDC
Inrush current	< 4 A (no load)
Switch-on threshold (adjustable)	20 ... 25.5 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC
Buffer time	10 ... 600 s or constant (adjustable)
End-of-charge voltage	26 ... 29.5 VDC or temperature controlled (adjustable)
Operation status indicator	Green LED ( $U_o$ ), yellow LED (warning), red LED (error)
Signaling	LCD, 3 x signal output 24 VDC, 25 mA and 1 x floating relay contact 30 VDC, 1 A
Remote input	Switches buffer mode off
LineMonitor, parameter setting	Via LCD and RS-232 serial interface
<b>Efficiency/Power Losses</b>	
Efficiency	95 % (typ.)
<b>General Specifications</b>	
Standards/Approvals	EN 60950, UL 60950, UL 508, EN 61000-6-2, EN 61000-6-3
<b>Environmental Requirements</b>	
Ambient operating temperature	-10 ... +60 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	Yes
Degree of protection	IP20 per EN 60529
Feedback voltage	Max. 35 VDC
Parallel operation	Yes, a maximum three battery modules for buffer time extension (temperature measurement evaluation is only possible via one battery module)
<b>Connection and Mounting Type</b>	
Cable length	≤ 3 m (input, output, battery control)
Mounting type	DIN-rail-mount (EN 60715) in two positions





EPSITRON® UPS Charger and Controller, input voltage: 24 VDC, output: 24 VDC/10 A, LineMonitor, communication capability

Item No.	Pack. Unit
787-870	1

EPSITRON® UPS Charger and Controller, input voltage: 24 VDC, output: 24 VDC/20 A, LineMonitor, communication capability

Item No.	Pack. Unit
787-875	1

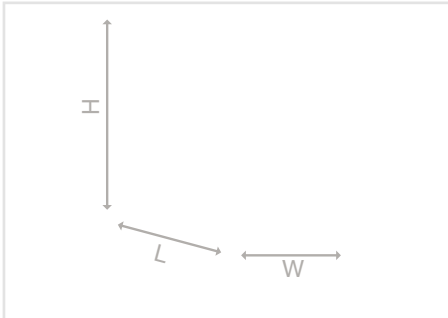
**Electrical Data**

Input current I <sub>i</sub>	0.1 A (no load running), 0.8 A (charging), 10.8 A (max.)	0.1 A (no load running), 1.5 A (charging), 21.5 A (max.)
Output voltage range	U <sub>i</sub> – 1 VDC (below switch-on threshold), 20 ... 25.5 VDC (buffer mode)	U <sub>i</sub> – 1 VDC (below switch-on threshold), 20 ... 25.5 VDC (buffer mode)
Output current I <sub>o</sub>	10 A	20 A
Current limitation	11 ... 14 A (typ.)	22 ... 26 A (typ.)
Charging current	0.6 A (max.)	1.0 A (max.)
Recommended battery modules	787-871, 787-872, 787-873, 787-876, 787-1671	787-871, 787-872, 787-873
Power loss P <sub>v</sub>	15 W (no load) / 20 W (nominal load)	15 W (no load) / 30 W (nominal load)
Internal fuse	15 AT	25 AT
Connectors	Input/Output: WAGO 231 Series Signaling: WAGO 733 Series	Input/Output: WAGO 831 Series Signaling: WAGO 733 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG	Input/Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 0.5 mm <sup>2</sup> / 28 ... 20 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch	Input/Output: 13 ... 15 mm / 0.51 ... 0.59 inch Signaling: 5 ... 6 mm / 0.2 ... 0.24 inch
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	40 x 163 x 163, depth from upper-edge of DIN-rail	57 x 171 x 163, depth from upper-edge of DIN-rail
Weight	800 g	1200 g

## Lead-Acid (AGM) Battery Modules

**EPSITRON®**

### 787 Series



#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	24 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC
End-of-charge voltage	27 VDC (at 25 °C)
<b>Environmental Requirements</b>	
Storage temperature	-20 ... +40 °C
Service life	5 / 4 / 2 years at 20 °C / 30 °C / 40 °C (typ.)
<b>Safety and Protection</b>	
Protection class	III
Degree of protection	IP20 per EN 60529
<b>Connection and Mounting Type</b>	
Cable length	≤ 3 m (input, output, battery control)

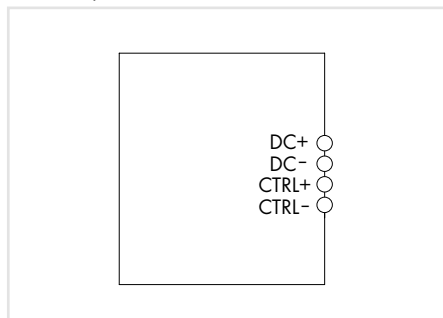
#### Features:

- Lead-acid, absorbed glass mat (AGM) battery module for uninterruptible power supply (UPS)
- Can be connected to both 787-870/875 UPS Charger/Controller and 787-1675 Power Supply with integrated UPS charger and controller
- Parallel operation provides higher buffer time
- Built-in temperature sensor
- Mounting on DIN-35 rail (only 787-876 and 787-1617) or on mounting plate via continuous carrier rail (787-871, -872, -873)
- Battery control (from manufacturing no. 216570) detects both battery life and battery type

5



Similar to pictured device

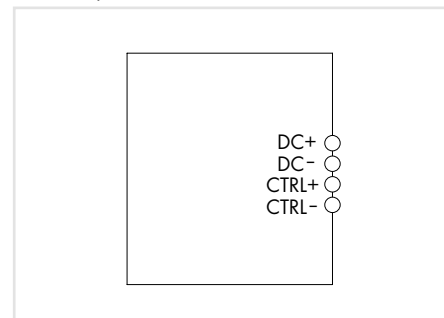


**EPSITRON® Lead-Acid (AGM) Battery Module,**  
input voltage: 24 VDC,  
output current: 7.5 A  
capacity: 1.2 Ah, with battery control

Item No.	Pack. Unit
787-876	1



Similar to pictured device



**EPSITRON® Lead-Acid (AGM) Battery Module,**  
input voltage: 24 VDC,  
output current: 20 A  
capacity: 3.2 Ah, with battery control

Item No.	Pack. Unit
787-871	1

5

Electrical Data	
Output current I <sub>o</sub>	7.5 A (max.)
Charging current	0.3 A (max.)
Capacity	1.2 Ah
Internal fuse	15 AT
Ambient operating temperature	-15 ... +40 °C
Connectors	Input/Output: WAGO 231 Series Battery control: WAGO 231 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Battery control: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Battery control: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
Mechanical Data	
Dimensions (mm) W x H x D	55 x 153 x 136.5 (height incl. female connector), depth from upper-edge of DIN-rail
Weight	1800 g
General Specifications	
Standards/Approvals	Battery is tested to UL 508.

Output current I <sub>o</sub>	20 A
Charging current	0.8 A (max.)
Capacity	3.2 Ah
Internal fuse	25 AT
Ambient operating temperature	-15 ... +40 °C
Connectors	Input/Output: WAGO 231 Series Battery control: WAGO 231 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Battery control: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Battery control: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	Screw mounting
Dimensions (mm) W x H x D	76.2 x 168 x 175.5, depth from upper-edge of DIN-rai006C
Weight	3975 g
Standards/Approvals	Battery is tested to UL 508.

\*For parallel connection, please switch battery capacity setting to "OFF" in the UPS charger and controller.

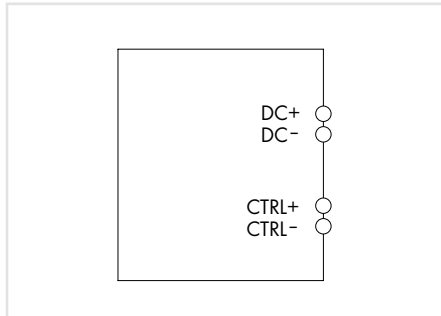
# Lead-Acid (AGM) Battery Modules

**EPSITRON®**

787 Series



Similar to pictured device

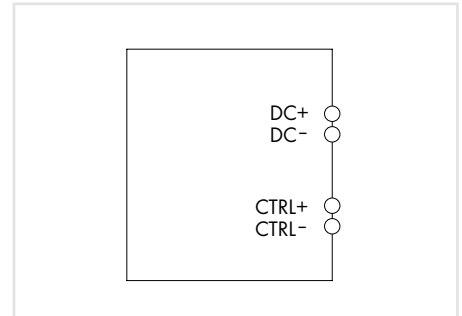


EPSITRON® Lead-Acid (AGM) Battery Module,  
input voltage: 24 VDC,  
output current: 40 A  
capacity: 7 Ah, with battery control

Item No.	Pack. Unit
787-872	1



Similar to pictured device

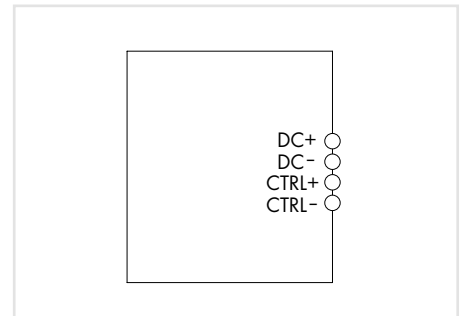


EPSITRON® Lead-Acid (AGM) Battery Module,  
input voltage: 24 VDC,  
output current: 40 A  
capacity: 12 Ah, with battery control

Item No.	Pack. Unit
787-873	1

**Electrical Data**

Output current I <sub>o</sub>	40 A	40 A
Charging current	1.8 A (max.)	3 A (max.)
Capacity	7 Ah	12 Ah
Internal fuse	2 x 25 AT	2 x 25 AT
Ambient operating temperature	-15 ... +40 °C	-15 ... +40 °C
Connectors	Input/Output: WAGO 831 Series Battery control: WAGO 231 Series	Input/Output: WAGO 831 Series Battery control: WAGO 231 Series
Conductor range	Input/Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Battery control: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG	Input/Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Battery control: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 13 ... 15 mm / 0.51 ... 0.59 inch Battery control: 8 ... 9 mm / 0.31 ... 0.35 inch	Input/Output: 13 ... 15 mm / 0.51 ... 0.59 inch Battery control: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	Screw mounting	Screw mounting
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	86 x 239 x 217.5	120.5 x 239 x 217.5
Weight	7100 g	10830 g
<b>General Specifications</b>		
Standards/Approvals	Battery is tested to UL 508.	Battery is tested to UL 508.



EPSITRON® Lead-Acid (AGM) Battery Module,  
input voltage: 24 VDC,  
output current: 5 A  
capacity: 0.8 Ah, with battery control

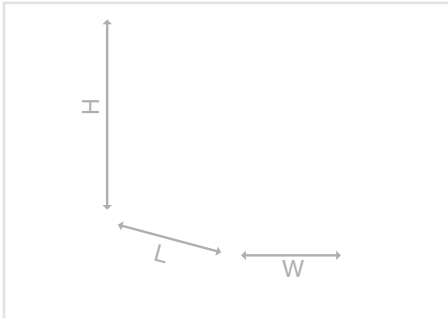
Item No.	Pack. Unit
787-1671	1

Electrical Data	
Output current $I_o$	5 A
Charging current	0.2 A (recommended)
Capacity	0.8 Ah
Internal fuse	10 AT
Ambient operating temperature	-15 ... +40 °C -20 ... +40 °C (during discharging)
Connectors	Input/Output: WAGO 721 Series Battery control: WAGO 721 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Battery control: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Battery control: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
Mechanical Data	
Dimensions (mm) W x H x D	72 x 97 x 124
Weight	1000 g
General Specifications	
Standards/Approvals	UL 508 * (* pending)

## Capacitive Buffer Modules

EPSITRON®

787 Series



### Features:

- WAGO's Capacitive Buffer Module bridges short duration voltage drops or load fluctuations.
- For uninterrupted power supply
- Internal diode between input and output enables operation with decoupled output.
- Buffer modules can be readily parallel-connected to increase buffer time or load current.
- Potential-free contact for charge condition monitoring

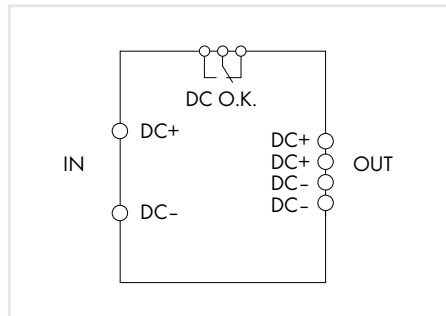
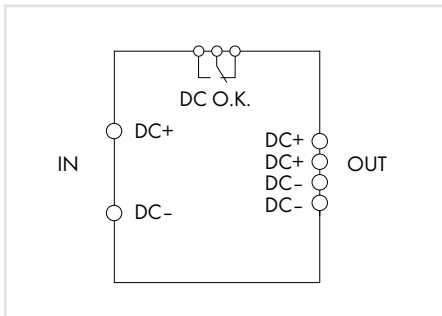
### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	24 VDC
Input voltage range	20 ... 30 VDC
Switch-on threshold (adjustable)	20 ... 24 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC
Charging time	5 min (typ.)
Operation status indicator	Green LED ( $U_o > 20 \text{ V}$ ), yellow LED (charging), red LED ( $U_o < 20 \text{ V}$ )
Signaling	1 x floating relay contact 30 VDC, 1 A
<b>General Specifications</b>	
Standards/Approvals	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3
<b>Environmental Requirements</b>	
Ambient operating temperature	-10 ... +50 °C
Storage temperature	-10 ... +60 °C
Service life	87,600 h typ. (at 25 °C ambient operating temperature), 30,500 h typ. (at 40 °C ambient operating temperature)
Relative humidity	5 ... 96 % (no condensation permissible)
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	Yes
Degree of protection	IP20 per EN 60529
Feedback voltage	Max. 35 VDC
Parallel operation	Yes
<b>Connection and Mounting Type</b>	
Mounting type	DIN-rail-mount (EN 60715) in two positions
<b>Dimensions and Weight</b>	
Weight	1000 g

5



Similar to pictured device



EPSITRON® Capacitive Buffer Module,  
input voltage: 24 VDC,  
output: 24 VDC/10 A  
buffer time: 0.06 ... 7.2 s, signal contact

	Item No.	Pack. Unit
	787-880	1

EPSITRON® Capacitive Buffer Module,  
input voltage: 24 VDC,  
output: 24 VDC/20 A  
buffer time: 0.17 ... 16.5 s, signal contact

	Item No.	Pack. Unit
	787-881	1

**Electrical Data**

Input current $I_i$	60 mA (no load running), 1 A (charging), 11 A (max.)
Output voltage range	$U_i - 0.5$ VDC (below switch-on threshold) 20.4 ... 24 VDC (during buffer mode)
Output current $I_o$	10 A
Current limitation	Electronic, 11 A (typ.)
Buffer time	0.06 ... 7.2 s (depends on load current and switch-on threshold)
Power loss $P_v$	1.5 W (no load) 6.5 W (nominal load)
Connectors	Input/Output: WAGO 231 Series Relay: WAGO 231 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG Relay: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 8 ... 9 mm / 0.31 ... 0.35 inch Relay: 8 ... 9 mm / 0.31 ... 0.35 inch

**Mechanical Data**

Dimensions (mm) W x H x D	57 x 163 x 179, depth from upper-edge of DIN-rail
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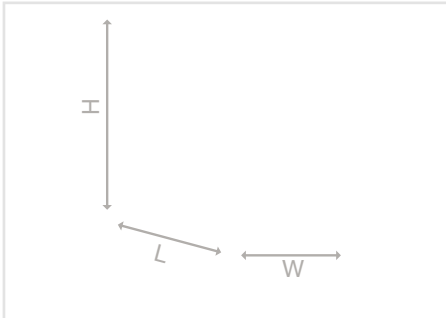
Input current $I_i$	60 mA (no load running), 1 A (charging), 22 A (max.)
Output voltage range	$U_i - 1$ VDC (below switch-on threshold) 20.4 ... 24 VDC (during buffer mode)
Output current $I_o$	20 A
Current limitation	Electronic, 22 A (typ.)
Buffer time	0.17 ... 16.5 s (depends on load current and switch-on threshold)
Power loss $P_v$	1.5 W (no load) 15 W (nominal load)
Connectors	Input/Output: WAGO 831 Series Relay: WAGO 231 Series
Conductor range	Input/Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Relay: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 13 ... 15 mm / 0.51 ... 0.59 inch Relay: 8 ... 9 mm / 0.31 ... 0.35 inch

Dimensions (mm) W x H x D	57 x 181 x 179, depth from upper-edge of DIN-rail
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## Redundancy Modules

EPSITRON®

787 Series



### Features:

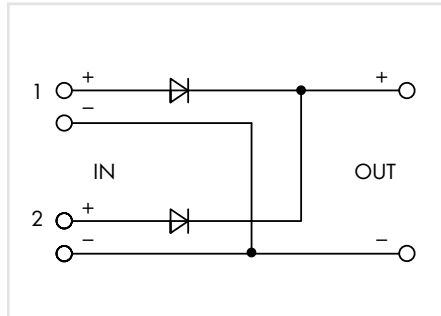
- Redundancy module with two inputs for decoupling two power supplies
- For redundant and fail-safe power supply
- With LED for input voltage monitoring on site

### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	2 x 24 VDC
Input voltage range	2 x 9 ... 54 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	24 VDC ( $U_i - 0.6 \text{ V}$ )
Output voltage range	9 ... 54 VDC
Operation status indicator	2 x green LED ( $U_i > 7.5 \text{ VDC}$ ), 1 x green LED ( $U_o > 7.5 \text{ VDC}$ )
<b>General Specifications</b>	
Standards/Approvals	UL 508
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Relative humidity	≤ 95 % (no condensation permissible)
Derating	-2.66 % / K ( $55 \text{ °C} < T_{\text{amb}} \leq 70 \text{ °C}$ )
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721, except for low air pressure)
Vibration resistance	0.7g (per EN 60068-2-6)
Shock resistance	15g (per EN 60068-2-27)
<b>Safety and Protection</b>	
Test voltage	0.5 kV (input – housing), 0.5 kV (output – housing)
Protection class	III
Degree of protection	IP20 per EN 60529
Overvoltage protection	No
Short-circuit-protection	No
No-load proof	Yes
Feedback voltage	60 V
Parallel operation	Yes
MTBF	> 10 million h (per IEC 61709)
<b>Connection and Mounting Type</b>	
Mounting type	DIN-rail mount (EN 60715)

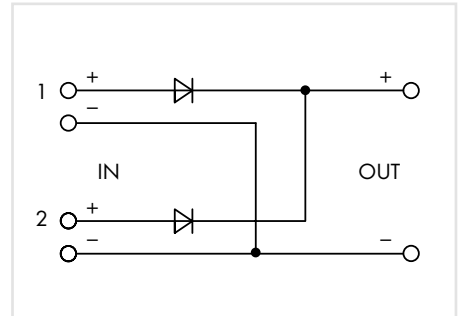
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EPSITRON® Diode Redundancy Module,  
input voltage: 2 x 9 ... 54 VDC,  
max. input current: 12.5 A per path,  
output: 9 ... 54 VDC/25 A

	Item No.	Pack. Unit
	787-783	1



EPSITRON® Diode Redundancy Module,  
input voltage: 2 x 9 ... 54 VDC,  
max. input current: 40 A per path,  
output: 9 ... 54 VDC/76 A

	Item No.	Pack. Unit
	787-785	1

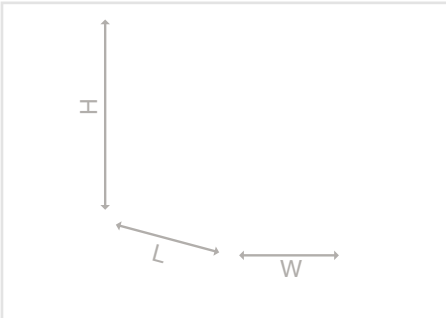
#### Electrical Data

Input current $I_i$	12.5 ADC (max.) per path	40 ADC (max.) per path (in total max. 76 ADC)
Output current $I_o$	25 ADC (max.)	Max. 76 ADC (UL: max. 65 ADC)
Output power	$\leq 1350$ W	$\leq 4104$ W
Efficiency	$\geq 96$ %	$\geq 97$ %
Voltage drop	0.8 V	0.5 V
Power loss $P_v$	19 W (nominal load)	38 W (nominal load)
Connectors	CAGE CLAMP® (WAGO 2706 Series)	CAGE CLAMP® (WAGO 2716 Series)
Conductor range	Solid/fine-stranded: 0.5 ... 6 mm <sup>2</sup> / 20 ... 10 AWG	Solid/fine-stranded: 1.5 ... 16 mm <sup>2</sup> / 16 ... 6 AWG
Strip length	11 ... 12 mm / 0.43 ... 0.47 inch	12 ... 13 mm / 0.47 ... 0.51 inch
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	50 x 130 x 92, length from upper-edge of DIN-rail	83 x 130 x 153, depth from upper-edge of DIN-rail
Weight	340 g	960 g

## Redundancy Module

### EPSITRON®

### 787 Series

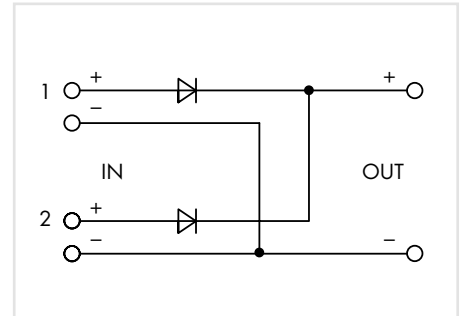
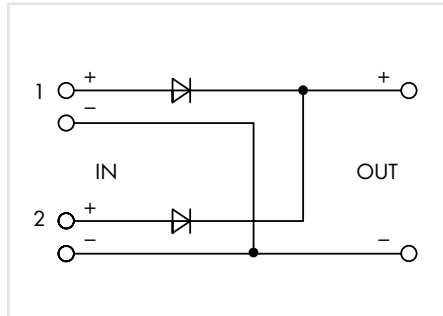


#### Features:

- Redundancy module with two inputs for decoupling two power supplies
- For redundant and fail-safe power supply
- With LED and potential-free contact for input voltage monitoring on site and remotely

#### Technical Data

<b>Output</b>	
Output voltage range	Ui – 0.6 VDC
Output current I <sub>o</sub>	20 A, max. 40 A
Operation status indicator	Green LED (U <sub>o</sub> ), 2 x yellow LED (U <sub>i</sub> )
Signaling	1 x isolated relay contact 30 VDC, 1 A
<b>Fuse Protection</b>	
Internal fuse	No
<b>Environmental Requirements</b>	
Ambient operating temperature	-10 ... +60 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	Yes
Degree of protection	IP20 per EN 60529
Parallel operation	Yes
<b>Connection and Mounting Type</b>	
Connectors	Input/Output: WAGO 831 Series Relay: WAGO 231 Series
Conductor range	Input/Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Relay: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 13 ... 15 mm / 0.51 ... 0.59 inch Relay: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715) in 2 positions
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	40 x 181 x 163, depth from upper-edge of DIN-rail



EPSITRON® Diode Redundancy Module,  
input voltage: 2 x 24 VDC,  
max. input current: 20 A per path,  
output: 24 VDC/40 A, signal contact

	Item No.	Pack. Unit
	787-885	1

EPSITRON® Diode Redundancy Module,  
input voltage: 2 x 48 VDC,  
max. input current: 20 A per path,  
output: 48 VDC/40 A, signal contact

	Item No.	Pack. Unit
	787-886	1

#### Electrical Data

Nominal input voltage $U_{I,nom}$	2 x 24 VDC	2 x 48 VDC
Input voltage range	18 ... 30 VDC	36 ... 54 VDC
Input current $I_I$	20 A (max.) per path	20 A (max.) per path
Nominal output voltage $U_{O,nom}$	24 VDC	48 VDC
Efficiency	97 % (typ.)	96 % (typ.)
Power loss $P_V$	1.5 W (no load) / 14 W (nominal load) (20 A) / 26 W (nominal load) (40 A)	1.7 W (48 VDC / no load) / 20 W (48 VDC / nominal load) (20 A) / 40 W (48 VDC / nominal load) (40 A)
Feedback voltage	33 VDC (max.)	60 VDC (max.)
MTBF	> 500,000 h (per IEC 61709)	> 500,000 h (per IEC 61709)
<b>Mechanical Data</b>		
Weight	870 g	860 g
<b>General Specifications</b>		
Standards/Approvals	EN 60950, UL 60950, UL 508, EN 61000-6-2, EN 61000-6-3	EN 60950, UL 60950*, UL 508*, EN 61000-6-2, EN 61000-6-3 (* pending)

# Redundancy Modules

## EPSITRON®

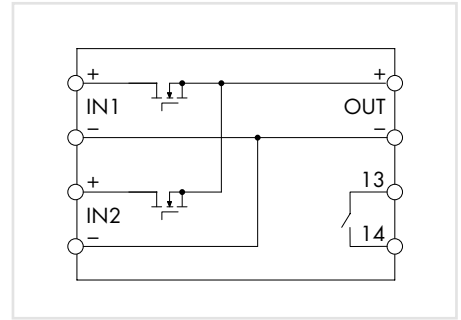
### 787 Series



Similar to pictured device

**Features:**

- Redundancy module with low-loss MOSFET decouples two power supplies.
- For redundant and fail-safe power supply
- Continuous output current: 40 ADC, in any ratio of both inputs (e.g., 20 A/20 A or 0 A/40 A)
- Integrated MOSFET monitoring
- Suitable for EPSITRON® Power Supplies with PowerBoost and TopBoost
- Same profile as EPSITRON® CLASSIC Power Supplies
- Connects to power supplies with electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204



EPSITRON® MOSFET Redundancy Module,  
input voltage: 2 x 24 VDC,  
max. input current: 40 A per path,  
output: 24 VDC/40 A, signal contact

Item No.	Pack. Unit
787-1685	1

**Technical Data**

Input		Test voltage	500 VDC (connectors to housing)
Nominal input voltage $U_{i, nom}$	2 x 24 VDC	Protection class	III
Input voltage range	2 x 10 ... 36 VDC	Degree of protection	IP20 per EN 60529
Input current $I_i$	Max. 40 ADC (from one input path) or 20 ADC (via both input paths) PowerBoost: 60 ADC (for 4 s), 50 ADC (for 8 s) TopBoost: 100 ADC (for 50 ms)	Reverse voltage protection	Yes
Output		Feedback voltage	37 VDC (max.)
Nominal output voltage $U_{o, nom}$	24 VDC	Parallel operation	Yes
Output voltage range	10 ... 36 VDC	MTBF	> 500,000 h
Voltage drop	Max. 100 mV (input/output)	Fire load	4.4 MJ
Output current	40 ADC (max.) PowerBoost: 120 ADC (for 4 s); 100 ADC (for 8 s) TopBoost: 200 ADC (for 50 ms)	<b>Connection and Mounting Type</b>	
Switching frequency	5 kHz	Connectors	Input/Output: WAGO 831 Series Signaling: WAGO 721 Series
Output current limitation	No	Conductor range	Input/Output: 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Operation status indicator	2 x green LED ( $U_i > 10$ VDC)	Strip length	Input/Output: 13 ... 15 mm / 0.51 ... 0.59 inch Signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Signaling	1 x isolated relay contact (DC OK)	Mounting type	DIN-rail mount (EN 60715)
<b>Efficiency/Power Losses</b>		<b>Dimensions and Weight</b>	
Efficiency	99.5 % (typ.)	Dimensions (mm) W x H x D	42 x 127 x 139.5, depth from upper-edge of DIN-rail
Power loss $P_V$	1.5 W (no load), < 9.5 W (nominal load)	Weight	370 g
<b>Fuse Protection</b>			
Internal fuse	No		
<b>General Specifications</b>			
Standards/Approvals	EN 61204-3, EN 60950-1, UL 60950, UL 508, GL* (*pending)		
<b>Environmental Requirements</b>			
Ambient operating temperature	-40 ... +70 °C		
Storage temperature	-40 ... +85 °C		
Relative humidity	5 ... 96 % (no condensation permissible)		
Derating	-1.5 % / K (> 65 °C)		
Pollution degree	2 (per EN 50178)		
Climatic category	3K3 (per EN 60721)		
<b>Safety and Protection</b>			

# Electronic Circuit Breakers (ECBs)

## EPSITRON®

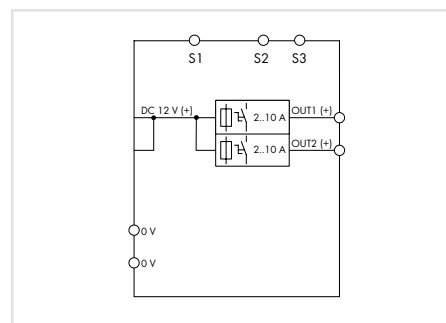
### 787 Series



Similar to pictured device

#### Features:

- Space-saving ECB with two channels
- 2 ... 10 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50,000 µF per channel
- One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets all tripped channels or switches on/off any number of channels via pulse sequence



EPSITRON® MOSFET Redundancy Module,  
input voltage: 2 x 24 VDC,  
max. input current: 40 A per path,  
output: 24 VDC/max. 40 A, signal contact

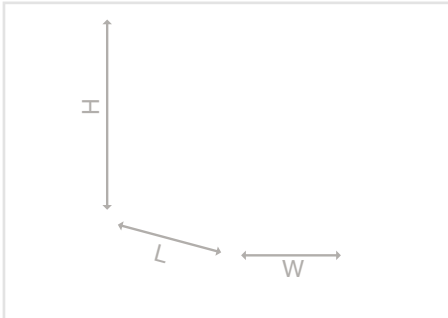
Item No.	Pack. Unit
787-1662/000-100	1

Technical Data		Safety and Protection	
<b>Input</b>		<b>Test voltage</b>	500 VDC (connectors to housing)
Nominal input voltage $U_{i, \text{nom}}$	12 VDC	<b>Protection class</b>	III
Input voltage range	10 ... 16 VDC	<b>Reverse voltage protection</b>	No
<b>Output</b>		<b>Degree of protection</b>	IP20 per EN 60529
Nominal output voltage $U_{o, \text{nom}}$	2 x 12 VDC	<b>Overvoltage protection</b>	Via 33 V suppressor diode at input
Nominal current	2 x 10 ADC (max.) (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)	<b>Feedback voltage</b>	Max. 35 VDC
Voltage drop	200 mV at 10 A	<b>Series connection of several devices</b>	Not permitted
Trip time	Load-dependent (16 ms ... 100 s)	<b>Parallel operation of single channels</b>	Not permitted
Switch-on capacity	> 50,000 µF per channel	<b>Connection and Mounting Type</b>	
Switch-on behavior	Time-delayed channel switching (load-dependent, 50 ms ... 5 s)	<b>Connectors</b>	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Active current limitation	No	<b>Conductor range</b>	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Operation status indicator	Green LED (OK channel) Red LED (tripped channel)	<b>Strip length</b>	Input (+): 13 ... 15 mm / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Signaling	2 x LED (green/red/orange)	<b>Mounting type</b>	DIN-rail mount (EN 60715)
Remote input	Reactivation of all tripped channels via 9 ... 30 VDC pulse for min. 500 ms Switching on/off any number of channels via pulse sequence	<b>Dimensions and Weight</b>	
<b>Efficiency/Power Losses</b>		<b>Dimensions (mm) W x H x D</b>	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Efficiency	99 % (typ.)	<b>Weight</b>	170 g
Power loss $P_V$	0.53 W (no load) / 5.5 W (at 2 x 10 A)		
<b>Fuse Protection</b>			
Internal fuse	15 AT per channel		
<b>General Specifications</b>			
Standards/Approvals	UL 508 *, UL 2367 *, GL, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)		
<b>Environmental Requirements</b>			
Ambient operating temperature	-25 ... +70 °C		
Storage temperature	-25 ... +85 °C		
Relative humidity	5 ... 96 % (no condensation permissible)		
Derating	No derating		
Pollution degree	2 (per EN 50178)		

# Electronic Circuit Breakers with Active Current Limitation

## EPSITRON®

### 787 Series



#### Features:

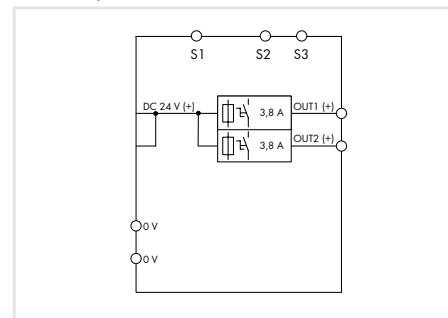
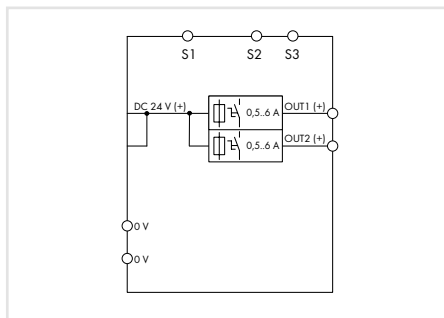
- Space-saving ECB with two channels
- 0.5 ... 6 A nominal current, adjustable for each channel via sealable selector switch
- Active current limitation
- Switch-on capacity > 65,000  $\mu\text{F}$  per channel
- One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets all tripped channels or switches on/off any number of channels via pulse sequence

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	24 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	2 x 24 VDC
Trip time	Load-dependent (16 ms ... 5 s)
Switch-on capacity	> 65,000 $\mu\text{F}$ per channel
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Active current limitation	Yes
Operation status indicator	Green LED (OK channel) Red LED (tripped channel)
Signaling	2 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via pulse sequence, 15 ... 30 VDC for min. 500 ms Switching on/off any number of channels via pulse sequence
<b>Efficiency/Power Losses</b>	
Efficiency	99 % (typ.)
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	No derating
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via 33 V suppressor diode at input
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm <sup>2</sup> / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g



Similar to pictured device



**EPSITRON® Electronic Circuit Breaker, 2-channel, input voltage: 24 VDC, 0.5 ... 6 A adjustable, active current limitation, communication capability**

Item No.	Pack. Unit
787-1662/006-1000	1

**EPSITRON® Electronic Circuit Breaker, 2-channel, input voltage: 24 VDC, 3.8 A, active current limitation, NEC Class 2, communication capability**

Item No.	Pack. Unit
787-1662/004-1000	1

**Electrical Data**

Input voltage range	18 ... 30 VDC
Nominal current	Max. 2 x 6 ADC (0.5, 1, 2, 3, 4, 6 A adjustable for each channel via selector switch)
Voltage drop	145 mV at 6 A
Power loss $P_v$	0.55 W (no load) / 2.5 W (nominal load)
Internal fuse	15 AT per channel
Pollution degree	2 (per EN 50178)
Feedback voltage	Max. 35 VDC

**General Specifications**

Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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Input voltage range	20 ... 28.8 VDC
Nominal current	2 x 3.8 ADC, NEC Class 2 (at 20 ... 24 VDC), 2 x 3.2 ADC, NEC Class 2 (at 28 VDC), fixed nominal current
Voltage drop	125 mV at 3.8 A
Power loss $P_v$	0.65 W (no load) / 1.6 W (at 2 x 3.8 A)
Internal fuse	None
Pollution degree	2 (per EN 50178)
Feedback voltage	28.8 VDC (max.)

Standards/Approvals	UL 508, UL 2367, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)
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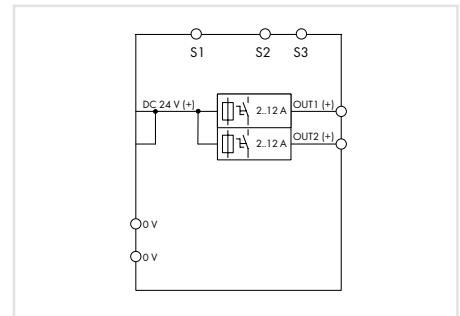
# Electronic Circuit Breakers with Active Current Limitation

## EPSITRON®

### 787 Series



Similar to pictured device



EPSITRON® Electronic Circuit Breaker,  
2-channel, input voltage: 24 VDC,  
2 ... 12 A adjustable, active current limitation,  
communication capability

Item No.	Pack. Unit
787-1662/212-1000	1

#### Electrical Data

Input voltage range	18 ... 30 VDC
Nominal current	Max. 2 x 12 ADC (2, 4, 6, 8, 10, 12 A adjustable for each channel via selector switch)
Voltage drop	210 mV at 12 A
Power loss $P_v$	0.55 W (no load) / 5.6 W (at 2 x 12 A)
Internal fuse	15 AT per channel
Pollution degree	2 (per EN 50178)
Feedback voltage	Max. 35 VDC

#### General Specifications

Standards/Approvals	UL 508, UL 2367, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)
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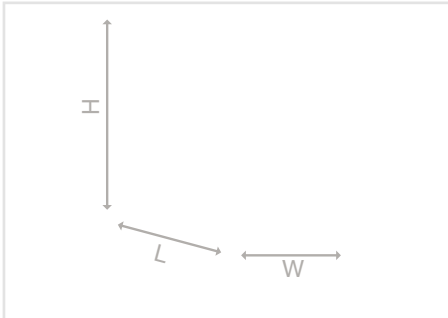




# Electronic Circuit Breakers without Active Current Limitation

## EPSITRON®

### 787 Series



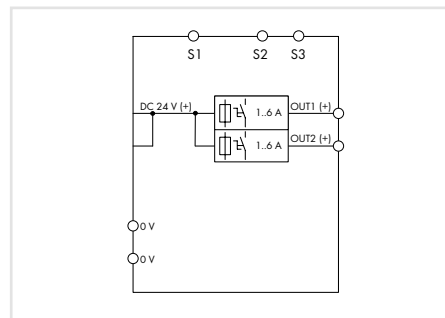
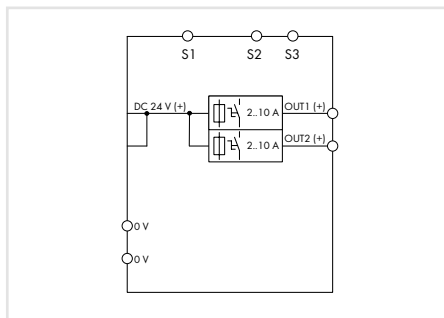
#### Features:

- Space-saving ECB with two channels
- 2 ... 10 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50,000  $\mu$ F per channel
- One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence (only devices with communication capability)
- Remote input for switching on/off any number of channels via pulse sequence (only devices having communication capability)

Note: The pulse sequence only supports devices which are designated as having communication capability.

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, nom}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output</b>	
Nominal output voltage $U_{o, nom}$	2 x 24 VDC
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 50,000 $\mu$ F per channel
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Active current limitation	No
Operation status indicator	Green LED (OK channel), red LED (tripped channel)
Signaling	2 x LED (green/red/orange)
Reactivation of all tripped channels via 15 ... 30 VDC impulse sequence for min. 500 ms	
Switching on/off any number of channels via pulse sequence possible (except devices with potential-free signal contact, 787-166x/xxx-xx5x)	
<b>Remote input</b>	
<b>Efficiency/Power Losses</b>	
Efficiency	99 % (typ.)
<b>Fuse Protection</b>	
Internal fuse	15 AT per channel
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	No derating
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via 33 V suppressor diode at input
Feedback voltage	Max. 35 VDC
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm <sup>2</sup> / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g



**EPSITRON® Electronic Circuit Breaker, 2-channel, input voltage: 24 VDC, 2 ... 10 A adjustable, communication capability**

Item No.	Pack. Unit
787-1662	1

**EPSITRON® Electronic Circuit Breaker, 2-channel, input voltage: 24 VDC, 1 ... 6 A adjustable, communication capability**

Item No.	Pack. Unit
787-1662/106-000	1

**Electrical Data**

Nominal current

Max. 2 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)

Max. 2 x 6 ADC (1, 2, 3, 4, 5, 6 A adjustable for each channel via selector switch)

Factory preset

Voltage drop

200 mV at 10 A

120 mV at 6 A

Power loss  $P_v$

0.85 W (no load) / 5.5 W (nominal load)

0.85 W (no load) / 2.5 W (nominal load)

Pollution degree

2 (per EN 50178)

2 (per EN 50178)

**General Specifications**

Standards/Approvals

UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3

UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3

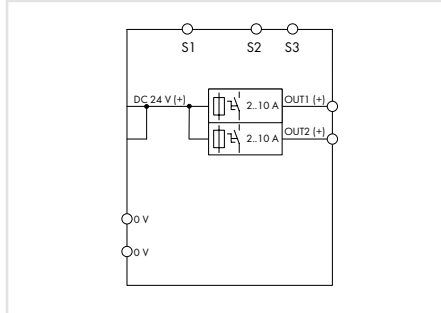
# Electronic Circuit Breakers without Active Current Limitation

**EPSITRON®**

787 Series



Similar to pictured device



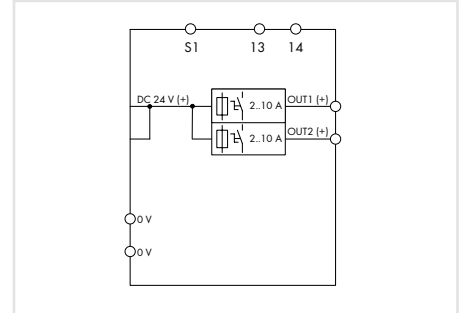
**EPSITRON® Electronic Circuit Breaker, 2-channel, input voltage: 24 VDC, 2 ... 10 A adjustable, communication capability, specialty configuration**

Item No.	Pack. Unit
787-1662/000-004	1

Group signal S3 reports "channel switched off" and "tripped channel."



Similar to pictured device



**EPSITRON® Electronic Circuit Breaker, 2-channel, input voltage: 24 VDC, 2 ... 10 A adjustable, potential-free signal contact 13/14, specialty configuration**

Item No.	Pack. Unit
787-1662/000-054	1

Potential-free signal contact 13 / 14 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence.

**Electrical Data**

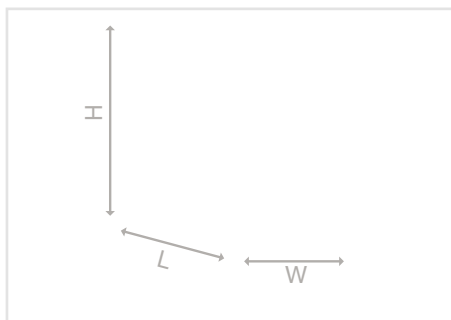
Nominal current	Max. 2 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)	Max. 2 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Factory preset	2 ADC (when switched off)	2 ADC (when switched off)
Voltage drop	200 mV at 10 A	200 mV at 10 A
Power loss P <sub>v</sub>	0.84 W (no load) / 5.5 W (at 2 x 10 A)	0.84 W (no load) / 5.5 W (at 2 x 10 A)
Pollution degree	2 (per EN 50178)	2 (per EN 50178)
<b>General Specifications</b>		
Signaling		Potential-free signal contact 13 / 14, max. 58 VDC / 40 AAC, 100 mA
Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3	UL 508 *, UL 2367 *, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)



## Electronic Circuit Breakers (ECBs)

### EPSITRON®

### 787 Series



#### Features:

- Space-saving ECB with two channels
  - 2 ... 10 A nominal current, adjustable for each channel via sealable selector switch
  - Switch-on capacity > 23,000  $\mu$ F per channel
  - One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
  - Time-delayed switching of channels
  - Tripped message (group signal)
  - Status message for each channel via pulse sequence (only devices with communication capability)
  - Remote input resets all tripped channels
  - Remote input for switching on/off any number of channels via pulse sequence (only devices with communication capability)
- Note: The pulse sequence only supports devices which are designated as having communication capability.

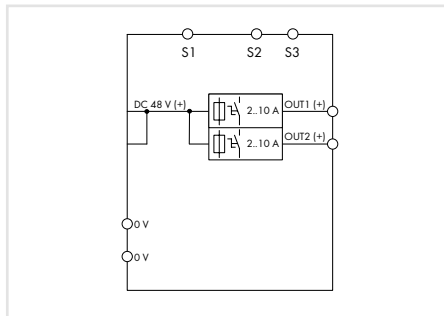
#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	48 VDC
Input voltage range	32 ... 58 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	2 x 48 VDC
Nominal current	Max. 2 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Voltage drop	175 mV at 10 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 23,000 $\mu$ F per channel at 48 VDC, 2.5 mm <sup>2</sup> cable cross-section and 2.5 m cable length
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Active current limitation	No
Operation status indicator	Green LED (OK channel), red LED (tripped channel)
Signaling	2 x LED (green/red/orange)
<b>Efficiency/Power Losses</b>	
Efficiency	99 % (typ.)
Power loss $P_v$	0.84 W (no load) / 4.5 W (at 2 x 10 A)
<b>Fuse Protection</b>	
Internal fuse	15 AT per channel
<b>General Specifications</b>	
Standards/Approvals	UL 508 *, UL 2367 *, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	No derating
Pollution degree	2 (per EN 50178)
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via 68 V suppressor diode at input
Feedback voltage	58 VDC (max.)
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g

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Similar to pictured device

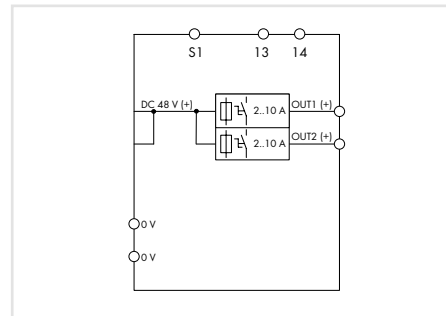


**EPSITRON®** Electronic Circuit Breaker, 2-channel, input voltage: 48 VDC, 2 ... 10 A adjustable, communication capability

Item No.	Pack. Unit
787-1662/000-200	1



Similar to pictured device



**EPSITRON®** Electronic Circuit Breaker, 2-channel, input voltage: 48 VDC, 2 ... 10 A adjustable, potential-free signal contact 13/14

Item No.	Pack. Unit
787-1662/000-250	1

Potential-free signal contact 13 / 14 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence.

**Electrical Data**

Remote input	Reactivation of all tripped channels via 15 ... 58 VDC pulse for min. 500 ms Switching on/off any number of channels via pulse sequence
Signaling	

	Reactivation of all tripped channels via 15 ... 58 VDC pulse for min. 500 ms
	Potential-free signal contact 13 / 14, max. 58 VDC / 40 AAC, 100 mA

# Electronic Circuit Breakers (ECBs)

## EPSITRON®

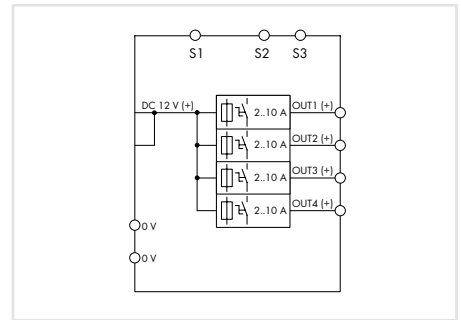
### 787 Series



Similar to pictured device

#### Features:

- Space-saving ECB with four channels
- 2 ... 10 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50,000 µF per channel
- One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence
- Remote input resets all tripped channels or switches on/off any number of channels via pulse sequence



EPSITRON® Electronic Circuit Breaker,  
4-channel, input voltage: 12 VDC,  
2 ... 10 A adjustable, communication capability

Item No.	Pack. Unit
787-1664/000-100	1

Technical Data			
<b>Input</b>		<b>Pollution degree</b>	2 (per EN 50178)
Nominal input voltage $U_{i, nom}$	12 VDC	<b>Safety and Protection</b>	
Input voltage range	10 ... 16 VDC	Test voltage	500 VDC (connectors to housing)
<b>Output</b>		Protection class	III
Nominal output voltage $U_{o, nom}$	4 x 12 VDC	Reverse voltage protection	No
Nominal current	Max. 4 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)	Degree of protection	IP20 per EN 60529
Voltage drop	200 mV at 10 A	Overvoltage protection	Via 33 V suppressor diode at input
Trip time	Load-dependent (16 ms ... 100 s)	Feedback voltage	Max. 35 VDC
Switch-on capacity	> 50,000 µF per channel	Series connection of several devices	Not permitted
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)	Parallel operation of single channels	Not permitted
Active current limitation	No	<b>Connection and Mounting Type</b>	
Operation status indicator	Green LED (OK channel) Red LED (tripped channel)	Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Signaling	4 x LED (green/red/orange)	Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Remote input	Reactivation of all tripped channels via 9 ... 30 VDC pulse for min. 500 ms Switching on/off any number of channels via pulse sequence	Strip length	Input (+): 13 ... 15 mm / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
<b>Efficiency/Power Losses</b>		Mounting type	DIN-rail mount (EN 60715)
Efficiency	99 % (typ.)	<b>Dimensions and Weight</b>	
Power loss $P_V$	0.53 W (no load) / 10 W (at 4 x 10 A)	Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from up-per-edge of DIN-rail
<b>Fuse Protection</b>		Weight	170 g
Internal fuse	15 AT per channel		
<b>General Specifications</b>			
Standards/Approvals	UL 508 *, UL 2367 *, GL, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)		
<b>Environmental Requirements</b>			
Ambient operating temperature	-25 ... +70 °C		
Storage temperature	-25 ... +85 °C		
Relative humidity	5 ... 96 % (no condensation permissible)		
Derating	≥ +50 °C: see instruction manual		

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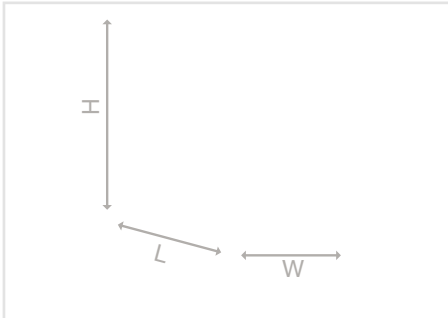




# Electronic Circuit Breakers with Active Current Limitation

## EPSITRON®

### 787 Series

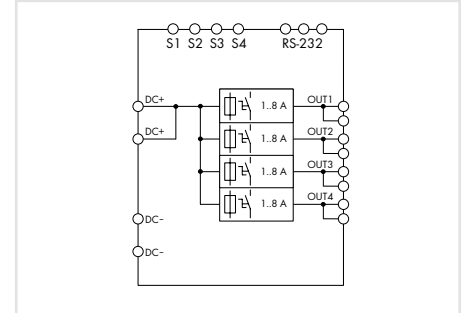
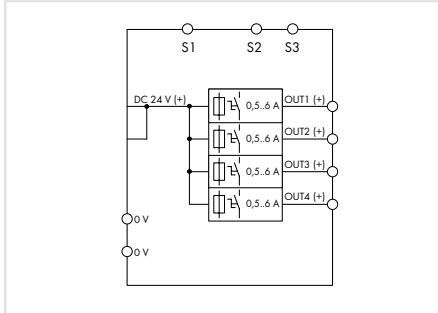


#### Features:

- Space-saving ECB with four channels
- 0.5 ... 6 A nominal current, adjustable for each channel via sealable selector switch
- Active current limitation
- High switch-on capacity per channel
- One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics (787-1664/xxx-1xx), alternatively with display and function buttons (787-861)
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence (only devices with communication capability)
- Remote input resets all tripped channels
- Remote input for switching on/off any number of channels via pulse sequence (only devices with communication capability, 787-1664/xxx-100x)
- Current and voltage monitoring via RS-232 interface and LCD (only 787-861)
- Four active signal outputs for watchdog functions (only 787-861)

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	24 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	4 x 24 VDC
Active current limitation	Yes
<b>Environmental Requirements</b>	
Storage temperature	-25 ... +85 °C
Derating	No derating
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Oversoltage protection	Via 33 V suppressor diode at input
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm <sup>2</sup> / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)



**EPSITRON® Electronic Circuit Breaker, 4-channel, input voltage: 24 VDC, 0.5 ... 6 A adjustable, active current limitation, communication capability**

Item No.	Pack. Unit
787-1664/006-1000	1

**EPSITRON® Electronic Circuit Breaker, 4-channel, input voltage: 24 VDC, 1 ... 8 A adjustable, active current limitation, RS-232 serial interface**

Item No.	Pack. Unit
787-861	1

**Electrical Data**

Input voltage range	18 ... 30 VDC
Nominal current	Max. 4 x 6 ADC (0.5, 1, 2, 3, 4, 6 A adjustable for each channel via selector switch)
Voltage drop	145 mV at 6 A
Trip time	Load-dependent (16 ms ... 5 s)
Switch-on capacity	> 65,000 µF per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, 50 ms ... 5 s)
Operation status indicator	Green LED (OK channel) Red LED (tripped channel)
Signaling	4 x LED (green/red/orange)
LineMonitor, parameter setting	
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	99 % (typ.)
Power loss P <sub>v</sub>	0.77 W (no load) / 4.3 W (nominal load)
Internal fuse	15 AT per channel
Ambient operating temperature	-25 ... +70 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Feedback voltage	Max. 35 VDC
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g
<b>General Specifications</b>	
Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3

Input voltage range	18 ... 30 VDC
Nominal current	4 x 1 ... 8 ADC (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	20000 µF (max.)
Switch-on behavior	Time-delayed channel switching (250 ms each)
Operation status indicator	Green LED (all channels OK), Yellow LED (warnings), Red LED (at least one channel has tripped)
Signaling	LCD, 4 x signal output 24 VDC, 25 mA Via LCD and RS-232 serial interface
LineMonitor, parameter setting	
Remote input	
Efficiency	96 % (typ.)
Power loss P <sub>v</sub>	2 W (no load) / 8.2 W (nominal load)
Internal fuse	15 AT
Ambient operating temperature	-25 ... +60 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Feedback voltage	33 VDC (max.)
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 231 Series
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	40 x 171 x 163, depth from upper-edge of DIN-rail
Weight	800 g
<b>General Specifications</b>	
Standards/Approvals	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3

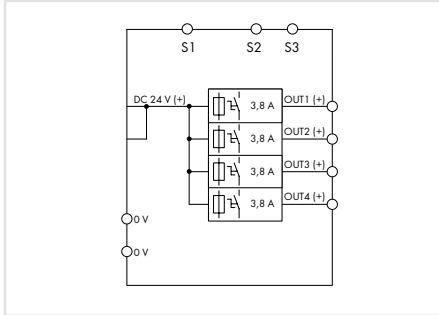
# Electronic Circuit Breakers with Active Current Limitation

## EPSITRON®

### 787 Series



Similar to pictured device

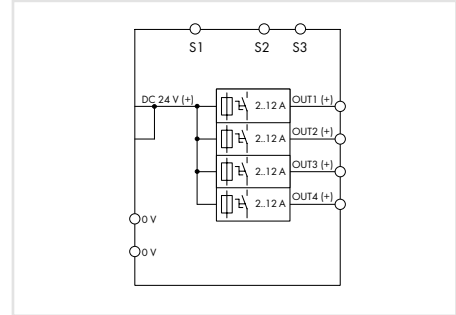


EPSITRON® Electronic Circuit Breaker, 4-channel, input voltage: 24 VDC, 3.8 A, active current limitation, NEC Class 2, communication capability

Item No.	Pack. Unit
787-1664/004-1000	1



Similar to pictured device



EPSITRON® Electronic Circuit Breaker, 4-channel, input voltage: 24 VDC, 2 ... 12 A adjustable, active current limitation, communication capability

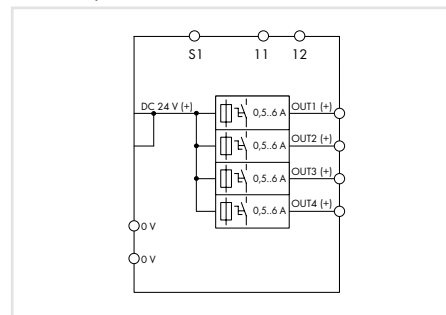
Item No.	Pack. Unit
787-1664/212-1000	1

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Electrical Data	
Input voltage range	20 ... 28.8 VDC
Nominal current	4 x 3.8 A, NEC Class 2 (at 20 ... 24 VDC), 4 x 3.2 A, NEC Class 2 (at 28 VDC) fixed nominal current
Voltage drop	150 mV at 3.8 A
Trip time	Load-dependent (16 ms ... 5 s)
Switch-on capacity	> 65,000 µF per channel
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Operation status indicator	Green LED (OK channel) Red LED (tripped channel)
Signaling	4 x LED (green/red/orange)
LineMonitor, parameter setting	
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	99 % (typ.)
Power loss P <sub>v</sub>	0.82 W (no load) / 3.1 W (at 4 x 3.8 A)
Internal fuse	None
Ambient operating temperature	-25 ... +70 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Feedback voltage	28.8 VDC (max.)
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Mechanical Data	
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g
General Specifications	
Standards/Approvals	UL 508, UL 2367, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)



Similar to pictured device



**EPSITRON®** Electronic Circuit Breaker,  
4-channel, input voltage 24 VDC,  
0.5 ... 6 A adjustable, active current limitation,  
potential-free signal contact 11/12, specialty  
configuration

Item No.	Pack. Unit
787-1664/006-1054	1

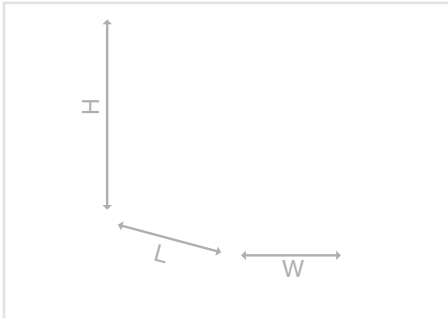
Potential-free signal contact 11 / 12 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence.

Electrical Data	
Input voltage range	18 ... 30 VDC
Nominal current	Max. 4 x 6 ADC (0.5, 1, 2, 3, 4, 6 A adjustable for each channel via selector switch)
Voltage drop	145 mV at 6 A
Trip time	Load-dependent (16 ms ... 5 s)
Switch-on capacity	> 58000 µF per channel
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Operation status indicator	Green LED (OK channel) Red LED (tripped channel)
Signaling	4 x LED (green/red/orange) Potential-free signal contact 11 / 12, max. 58 VDC / 40 A AC, 100 mA
LineMonitor, parameter setting	
Remote input	Reactivation of all tripped channels via 15 ... 30 VDC pulse for min. 500 ms
Efficiency	99 % (typ.)
Power loss $P_v$	0.77 W (no load) / 4.3 W (at 4 x 6 A)
Internal fuse	15 AT per channel
Ambient operating temperature	-25 ... +70 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Feedback voltage	Max. 35 VDC
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
<b>Mechanical Data</b>	
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g
<b>General Specifications</b>	
Standards/Approvals	UL 508, UL 2367, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)

## Electronic Circuit Breakers without Active Current Limitation

### EPSITRON®

### 787 Series



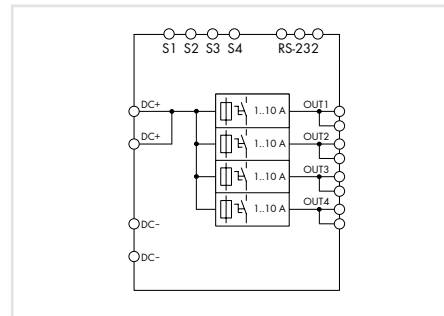
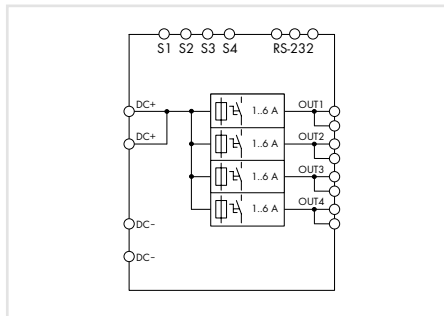
#### Features:

- Electronic circuit breaker with four channels, parametrizable
- Time-delayed switching of channels
- Potential-free signal contact (only 787-860, -862, -1664/xxx-xx5x)
- Current and voltage monitoring via RS-232 interface and LCD (only 787-860, -862)
- Four active signal outputs for watchdog functions (only 787-860, -862)
- Tripped message (group signal)
- Remote input resets all tripped channels
- One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics (787-1664/xxx-xxxx)
- Status message for each channel via pulse sequence (only devices with communication capability, 787-1664/xxx-xx0x)
- Remote input for switching on/off any number of channels via pulse sequence (only devices with communication capability, 787-1664/xxx-xx0x)

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	4 x 24 VDC
Active current limitation	No
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via suppressor diode at input
Feedback voltage	33 VDC (max.)
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm <sup>2</sup> / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715) in 2 positions

5



**EPSITRON® Electronic Circuit Breaker,**  
4-channel, input voltage: 24 VDC,  
1 ... 6 A adjustable, RS-232 serial interface

Item No.	Pack. Unit
787-860	1

**EPSITRON® Electronic Circuit Breaker,**  
4-channel, input voltage: 24 VDC,  
1 ... 10 A adjustable, RS-232 serial interface

Item No.	Pack. Unit
787-862	1

5

Electrical Data	
Nominal current	4 x 1 ... 6 ADC
Factory preset	(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	20000 µF (max.)
Switch-on behavior	Time-delayed channel switching (250 ms each)
Operation status indicator	Green LED (all channels OK), Yellow LED (warning), Red LED (at least one channel has tripped)
Signaling	LCD, 4 x 24 VDC signal output, 25 mA
Remote input	Reactivation of all tripped channels via 18 ... 30 VDC pulse for min. 50 ms
LineMonitor, parameter setting	Via LCD and RS-232 serial interface
Efficiency	96 % (typ.)
Power loss P <sub>v</sub>	2 W (no load) / 5.5 W (nominal load)
Internal fuse	15 AT
Ambient operating temperature	-10 ... +60 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 231 Series
Mechanical Data	
Dimensions (mm) W x H x D	40 x 171 x 163, depth from upper-edge of DIN-rail
Weight	800 g
General Specifications	
Standards/Approvals	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3

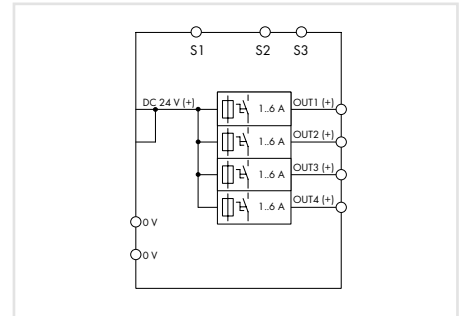
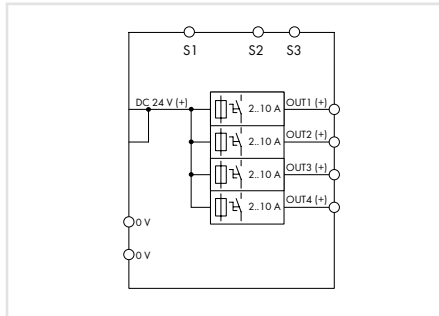
Nominal current	4 x 1 ... 10 ADC
Factory preset	(adjustable for each channel in 1 A steps)
Voltage drop	140 mV at 6 A; 240 mV at 10 A
Trip time	100 s (100 ms .. 600 s; adjustable)
Switch-on capacity	20000 µF (max.)
Switch-on behavior	Time-delayed channel switching (250 ms each)
Operation status indicator	Green LED (all channels OK), Yellow LED (warning), Red LED (at least one channel has tripped)
Signaling	LCD, 4 x 24 VDC signal output, 25 mA
Remote input	Reactivation of all tripped channels via 18 ... 30 VDC pulse for min. 50 ms
LineMonitor, parameter setting	Via LCD and RS-232 serial interface
Efficiency	96 % (typ.)
Power loss P <sub>v</sub>	2 W (no load) / 12 W (nominal load)
Internal fuse	15 AT
Ambient operating temperature	-10 ... +60 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 231 Series
Dimensions (mm) W x H x D	40 x 171 x 163, depth from upper-edge of DIN-rail
Weight	800 g
Standards/Approvals	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3

Nominal current	4 x 1 ... 10 ADC
Factory preset	(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	20000 µF (max.)
Switch-on behavior	Time-delayed channel switching (250 ms each)
Operation status indicator	Green LED (all channels OK), Yellow LED (warning), Red LED (at least one channel has tripped)
Signaling	LCD, 4 x 24 VDC signal output, 25 mA
Remote input	Reactivation of all tripped channels via 18 ... 30 VDC pulse for min. 50 ms
LineMonitor, parameter setting	Via LCD and RS-232 serial interface
Efficiency	96 % (typ.)
Power loss P <sub>v</sub>	2 W (no load) / 12 W (nominal load)
Internal fuse	15 AT
Ambient operating temperature	-10 ... +60 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 231 Series
Dimensions (mm) W x H x D	40 x 171 x 163, depth from upper-edge of DIN-rail
Weight	800 g
Standards/Approvals	EN 60950, UL 508, EN 61000-6-2, EN 61000-6-3

# Electronic Circuit Breakers without Active Current Limitation

## EPSITRON®

### 787 Series



EPSITRON® Electronic Circuit Breaker,  
4-channel, input voltage: 24 VDC,  
2 ... 10 A adjustable, communication capability

	Item No.	Pack. Unit
	787-1664	1

EPSITRON® Electronic Circuit Breaker,  
4-channel, input voltage: 24 VDC,  
1 ... 6 A adjustable, communication capability

	Item No.	Pack. Unit
	787-1664/106-000	1

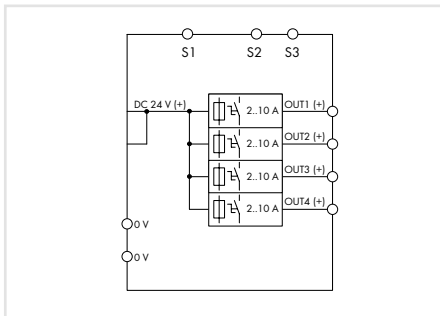
#### Electrical Data

Nominal current	Max. 4 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)	Max. 4 x 6 ADC (1, 2, 3, 4, 5, 6 A adjustable for each channel via selector switch)
Factory preset		
Voltage drop	200 mV at 10 A	120 mV at 6 A
Trip time	Load-dependent (16 ms ... 100 s)	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 50,000 µF per channel	> 50,000 µF per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, 50 ms ... 5 s)	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Operation status indicator	Green LED (OK channel), Red LED (tripped channel)	Green LED (OK channel) Red LED (tripped channel)
Signaling	4 x LED (green/red/orange)	4 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via pulse sequence, 15 ... 30 VDC for min. 500 ms Switching on/off any number of channels via pulse sequence	Reactivation of all tripped channels via pulse sequence, 15 ... 30 VDC for min. 500 ms Switching on/off any number of channels via pulse sequence
LineMonitor, parameter setting		
Efficiency	99 % (typ.)	99 % (typ.)
Power loss $P_v$	0.84 W (no load) / 10 W (at 4 x 10 A)	0.84 W (no load) / 4.2 W (at 4 x 6 A)
Internal fuse	15 AT per channel	15 AT per channel
Ambient operating temperature	-25 ... +70 °C	-25 ... +70 °C
Storage temperature	-25 ... +85 °C	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)	5 ... 96 % (no condensation permissible)
Derating	≥ +50 °C: see instruction manual	No derating
Pollution degree		
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g	170 g
<b>General Specifications</b>		
Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3





Similar to pictured device



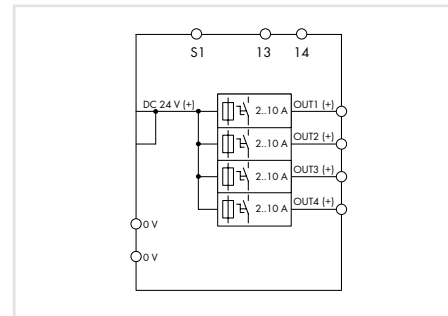
EPSITRON® Electronic Circuit Breaker, 4-channel, input voltage: 24 VDC, 2 ... 10 A adjustable, communication capability, speciality configuration

Item No.	Pack. Unit
787-1664/000-004	1

Group signal S3 reports "channel switched off" and "tripped channel."



Similar to pictured device



EPSITRON® Electronic Circuit Breaker, 4-channel, input voltage: 24 VDC, 2 ... 10 A adjustable, potential-free signal contact 13/14, speciality configuration

Item No.	Pack. Unit
787-1664/000-054	1

Potential-free signal contact 13 / 14 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence.

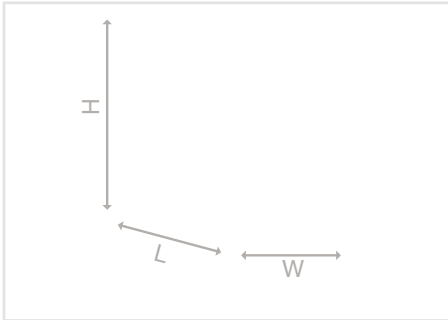
### Electrical Data

Nominal current	Max. 4 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)	Max. 4 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Factory preset	2 ADC (when switched off)	2 ADC (when switched off)
Voltage drop	200 mV at 10 A	200 mV at 10 A
Trip time	Load-dependent (16 ms ... 100 s)	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 50,000 µF per channel	> 50,000 µF per channel
Switch-on behavior	Time-delayed channel switching (load-dependent, 50 ms ... 5 s)	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Operation status indicator	Green LED (OK channel), Red LED (tripped channel)	Green LED (OK channel), Red LED (tripped channel)
Signaling	4 x LED (green/red/orange)	4 x LED (green/red/orange), potential-free signal contact 13 / 14, max. 58 VDC / 40 AAC, 100 mA
Remote input	Reactivation of all tripped channels via pulse sequence, 15 ... 30 VDC for min. 500 ms Switching on/off any number of channels via pulse sequence	Reactivation of all tripped channels via pulse sequence, 15 ... 30 VDC for min. 500 ms
LineMonitor, parameter setting		
Efficiency	99 % (typ.)	99 % (typ.)
Power loss P <sub>v</sub>	0.84 W (no load) / 10 W (at 4 x 10 A)	0.84 W (no load) / 10 W (at 4 x 10 A)
Internal fuse	15 AT per channel	15 AT per channel
Ambient operating temperature	-25 ... +70 °C	-25 ... +70 °C
Storage temperature	-25 ... +85 °C	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)	5 ... 96 % (no condensation permissible)
Derating	≥ +50 °C: see instruction manual	≥ +50 °C: see instruction manual
Pollution degree	2 (per EN 50178)	2 (per EN 50178)
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
<b>Mechanical Data</b>		
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g	170 g
<b>General Specifications</b>		
Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3	UL 508 *, UL 2367 *, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)

## Electronic Circuit Breakers (ECBs)

### EPSITRON®

### 787 Series



#### Features:

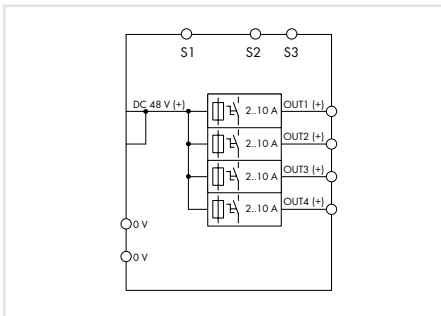
- Space-saving ECB with four channels
  - 2 ... 10 A nominal current, adjustable for each channel via sealable selector switch
  - Switch-on capacity > 23,000 µF per channel
  - One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
  - Time-delayed switching of channels
  - Tripped message (group signal)
  - Status message for each channel via pulse sequence (only devices with communication capability)
  - Remote input resets all tripped channels
  - Remote input for switching on/off any number of channels via pulse sequence (only devices having communication capability)
- Note: The pulse sequence only supports devices which are designated as having communication capability.

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i,nom}$	48 VDC
Input voltage range	32 ... 58 VDC
<b>Output</b>	
Nominal output voltage $U_{o,nom}$	4 x 48 VDC
Nominal current	Max. 4 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Voltage drop	175 mV at 10 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 23,000 µF per channel at 48 VDC, 2.5 mm <sup>2</sup> cable cross-section and 2.5 m cable length
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Active current limitation	No
Operation status indicator	Green LED (OK channel) Red LED (tripped channel)
Signaling	4 x LED (green/red/orange)
<b>Efficiency/Power Losses</b>	
Efficiency	99 % (typ.)
Power loss $P_v$	0.84 W (no load) / 8 W (at 4 x 10 A)
<b>Fuse Protection</b>	
Internal fuse	15 AT per channel
<b>General Specifications</b>	
Standards/Approvals	UL 508 *, UL 2367 *, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	≥ +50 °C: see instruction manual
Pollution degree	2 (per EN 50178)
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via 68 V suppressor diode at input
Feedback voltage	58 VDC (max.)
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	45 x 90 x 115.5, depth from upper-edge of DIN-rail
Weight	170 g



Similar to pictured device

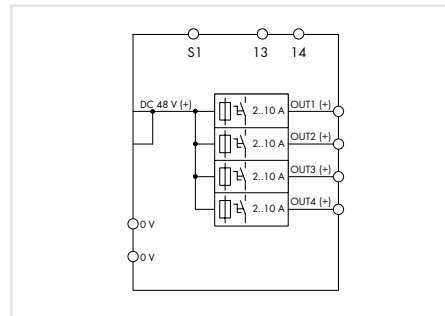


**EPSITRON®** Electronic Circuit Breaker, 4-channel, input voltage: 48 VDC, 2 ... 10 A adjustable, communication capability

Item No.	Pack. Unit
787-1664/000-200	1



Similar to pictured device



**EPSITRON®** Electronic Circuit Breaker, 4-channel, input voltage: 48 VDC, 2 ... 10 A adjustable, potential-free signal contact 13/14

Item No.	Pack. Unit
787-1664/000-250	1

Potential-free signal contact 13 / 14 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence.

**Electrical Data**

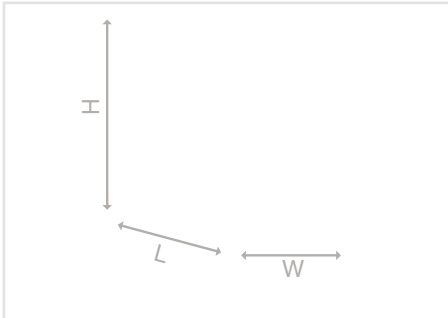
Remote input	Reactivation of all tripped channels via 15 ... 58 VDC pulse for min. 500 ms Switching on/off any number of channels via pulse sequence
Signaling	

	Reactivation of all tripped channels via 15 ... 58 VDC pulse for min. 500 ms
	Potential-free signal contact 13 / 14, max. 58 VDC / 40 AAC, 100 mA

# Electronic Circuit Breakers with Active Current Limitation

## EPSITRON®

### 787 Series



#### Features:

- Space-saving ECB with eight channels
- 0.5 ... 6 A nominal current, adjustable for each channel via sealable selector switch
- Active current limitation
- Switch-on capacity > 65,000 µF per channel
- One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence (only devices with communication capability)
- Remote input resets all tripped channels
- Remote input for switching on/off any number of channels via pulse sequence (only devices having communication capability)

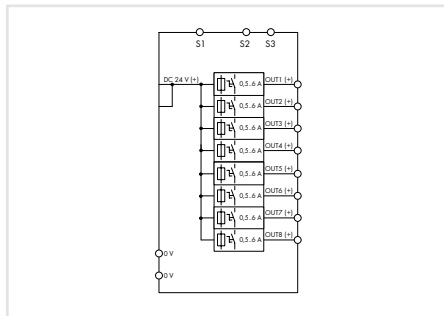
Note: The pulse sequence only supports devices which are designated as having communication capability.

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	8 x 24 VDC
Nominal current	Max. 8 x 6 ADC (0.5, 1, 2, 3, 4, 6 A adjustable for each channel via selector switch)
Voltage drop	155 mV at 6 A
Trip time	Load-dependent (16 ms ... 5 s)
Switch-on behavior	Time-delayed channel switching (load-dependent, 50 ms ... 5 s)
Active current limitation	Yes
Operation status indicator	Green LED (OK channel) Red LED (tripped channel)
Signaling	8 x LED (green/red/orange)
<b>Efficiency/Power Losses</b>	
Efficiency	99 % (typ.)
<b>Fuse Protection</b>	
Internal fuse	15 AT per channel
<b>General Specifications</b>	
Standards/Approvals	UL 508*, UL 2367*, GL, EN 60950, EN 61000-6-2, EN 61000-6-3 (*pending)
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	No derating
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via 33 V suppressor diode at input
Feedback voltage	Max. 35 VDC
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm <sup>2</sup> / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	42 x 127 x 142.5, depth from upper-edge of DIN-rail
Weight	440 g



Similar to pictured device

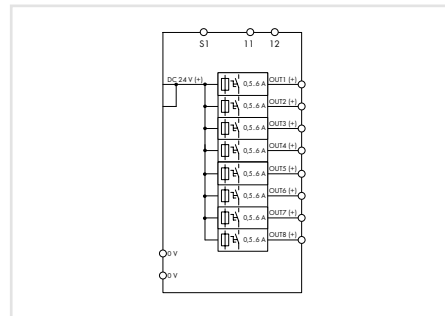


EPSITRON® Electronic Circuit Breaker, 8-channel, input voltage: 24 VDC, 0.5 ... 6 A adjustable, active current limitation, communication capability

Item No.	Pack. Unit
787-1668/006-1000	1



Similar to pictured device



EPSITRON® Electronic Circuit Breaker, 8-channel, input voltage: 24 VDC, 0.5 ... 6 A adjustable, active current limitation, potential-free signal contact 11/12, specialty configuration

Item No.	Pack. Unit
787-1668/006-1054	1

Potential-free signal contact 11 / 12 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence

Electrical Data

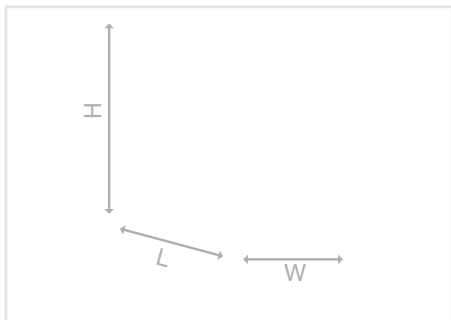
Factory preset	
Switch-on capacity	> 65,000 µF per channel
Remote input	Reactivation of all tripped channels via pulse sequence, 15 ... 30 VDC for min. 500 ms Switching on/off any number of channels via pulse sequence
Power loss P <sub>v</sub>	8.6 W (nominal load)
Pollution degree	
Signaling	

0.5 ADC (when switched off)	
> 58000 µF per channel	
Reactivation of all tripped channels via pulse sequence, 15 ... 30 VDC for min. 500 ms	
1.15 W (no load) / 8.6 W (at 8 x 6 A)	
2 (per EN 50178)	
Potential-free signal contact 11 / 12, max. 58 VDC / 40 AAC, 100 mA	

# Electronic Circuit Breakers without Active Current Limitation

## EPSITRON®

### 787 Series



#### Features:

- Space-saving ECB with eight channels
- 1 ... 6 A nominal current, adjustable for each channel via sealable selector switch
- Switch-on capacity > 50,000 µF per channel
- One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
- Time-delayed switching of channels
- Tripped message (group signal)
- Status message for each channel via pulse sequence (only devices with communication capability)
- Remote input resets all tripped channels
- Remote input for switching on/off any number of channels via pulse sequence (only devices having communication capability)

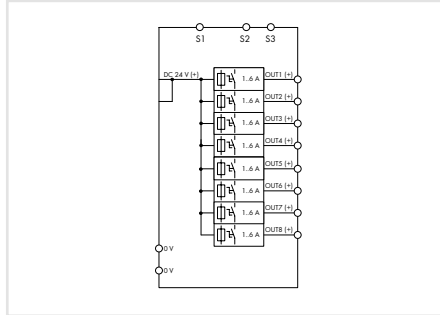
Note: The pulse sequence only supports devices which are designated as having communication capability.

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, nom}$	24 VDC
Input voltage range	18 ... 30 VDC
<b>Output</b>	
Nominal output voltage $U_{o, nom}$	8 x 24 VDC
Switch-on capacity	> 50,000 µF per channel
Active current limitation	No
Operation status indicator	Green LED (OK channel), red LED (tripped channel)
Signaling	8 x LED (green/red/orange)
Remote input	Reactivation of all tripped channels via pulse sequence, 15 ... 30 VDC for min. 500 ms Switching on/off any number of channels via pulse sequence
<b>Efficiency/Power Losses</b>	
Efficiency	99 % (typ.)
<b>Fuse Protection</b>	
Internal fuse	15 AT per channel
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via 33 V suppressor diode at input
Feedback voltage	Max. 35 VDC
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm <sup>2</sup> / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	42 x 127 x 142.5, depth from upper-edge of DIN-rail



Similar to pictured device

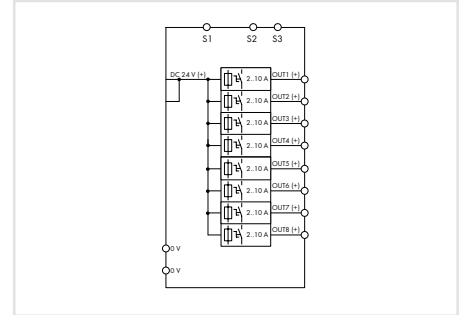


**EPSITRON® Electronic Circuit Breaker, 8-channel, input voltage: 24 VDC, 1 ... 6 A adjustable, communication capability**

Item No.	Pack. Unit
787-1668/106-000	1



Similar to pictured device



**EPSITRON® Electronic Circuit Breaker, 8-channel, input voltage: 24 VDC, 2 ... 10 A adjustable, communication capability**

Item No.	Pack. Unit
787-1668	1

**Electrical Data**

Nominal current	Max. 8 x 6 ADC (1, 2, 3, 4, 5, 6 A adjustable for each channel via selector switch)
Factory preset	
Voltage drop	120 mV at 6 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on behavior	Time-delayed channel switching (load-dependent, 50 ms ... 5 s)
Power loss P <sub>v</sub>	8 W (nominal load)
Derating	No derating

**Mechanical Data**

Weight	440 g
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**General Specifications**

Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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Max. 8 x 6 ADC (1, 2, 3, 4, 5, 6 A adjustable for each channel via selector switch)

Voltage drop	120 mV at 6 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on behavior	Time-delayed channel switching (load-dependent, 50 ms ... 5 s)
Power loss P <sub>v</sub>	8 W (nominal load)
Derating	No derating

Weight	440 g
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Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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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 (16 ms ... 100 s)
Switch-on behavior	Time-delayed channel switching (load-dependent, 50 ms ... 5 s)
Power loss P <sub>v</sub>	1.3 W (no load) / 20 W (nominal load)
Derating	≥ +50 °C: see instruction manual

Weight	440 g
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Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3
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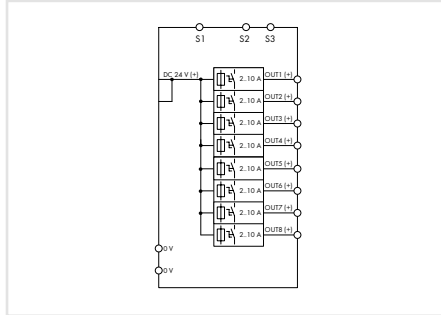
# Electronic Circuit Breakers (ECBs)

**EPSITRON®**

787 Series



Similar to pictured device



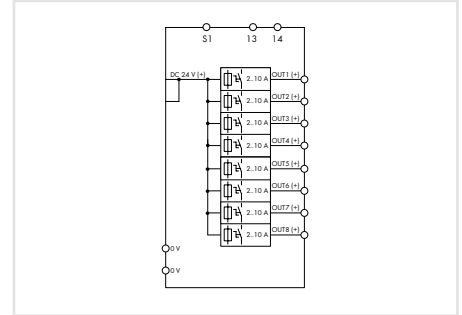
**EPSITRON® Electronic Circuit Breaker, 8-channel, input voltage: 24 VDC, 2 ... 10 A adjustable, communication capability, specialty configuration**

Item No.	Pack. Unit
787-1668/000-004	1

Group signal S3 reports "channel switched off" and "tripped channel."



Similar to pictured device



**EPSITRON® Electronic Circuit Breaker, 8-channel, input voltage: 24 VDC, 2 ... 10 A adjustable, potential-free signal contact 13/14, specialty configuration**

Item No.	Pack. Unit
787-1668/000-054	1

Potential-free signal contact 13 / 14 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence.

**Electrical Data**

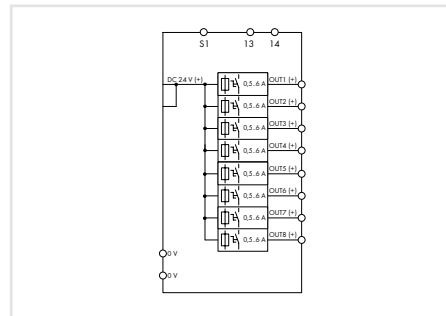
Nominal current	Max. 8 x 10 ADC (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Factory preset	2 ADC (when switched off)
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Power loss P <sub>v</sub>	1.3 W (no load) / 20 W (nominal load)
Derating	≥ +50 °C: see instruction manual
Signaling	
<b>Mechanical Data</b>	
Weight	420 g
<b>General Specifications</b>	
Standards/Approvals	UL 508, UL 2367, GL, EN 60950, EN 61000-6-2, EN 61000-6-3

Max. 10 ADC per channel; max. 70 ADC in total (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
2 ADC (when switched off)
200 mV at 10 A
Load-dependent (16 ms ... 100 s)
Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
1.32 W (no load) / 20 W (at 8 x 10 A)
≥ +50 °C: see instruction manual
Potential-free signal contact 13 / 14, max. 58 VDC / 40 AAC, 100 mA
440 g
UL 508 *, UL 2367 *, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)





Similar to pictured device



**EPSITRON®** Electronic Circuit Breaker,  
8-channel, input voltage: 24 VDC,  
0.5 ... 6 A adjustable, potential-free signal contact  
13/14

Item No.	Pack. Unit
787-1668/106-054	1

Potential-free signal contact 13 / 14 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence.

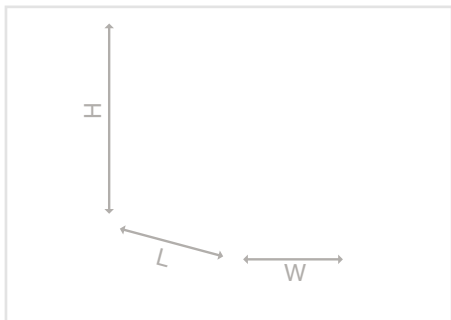
#### Electrical Data

Nominal current	Max. 8 x 6 ADC (0.5, 1, 2, 3, 4, 6 A adjustable for each channel via selector switch)
Factory preset	0.5 ADC (when switched off)
Voltage drop	120 mV at 6 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Power loss $P_V$	0.84 W (no load) / 8 W (at 8 x 6 A)
Derating	No derating
Signaling	Potential-free signal contact 13 / 14, max. 58 VDC / 40 AAC, 100 mA
<b>Mechanical Data</b>	
Weight	440 g
<b>General Specifications</b>	
Standards/Approvals	UL 508 *, UL 2367 *, GL *, EN 60950, EN 61000-6-2, EN 61000-6-3 (* pending)

## Electronic Circuit Breakers (ECBs)

### EPSITRON®

### 787 Series



#### Features:

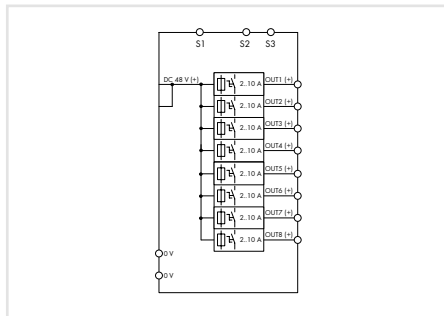
- Space-saving ECB with eight channels
  - 2 ... 10 A nominal current, adjustable for each channel via sealable selector switch
  - Switch-on capacity > 23,000 µF per channel
  - One illuminated, three-colored button per channel simplifies switching (on/off), resetting and on-site diagnostics
  - Time-delayed switching of channels
  - Tripped message (group signal)
  - Status message for each channel via pulse sequence (only devices with communication capability)
  - Remote input for switching on/off any number of channels via pulse sequence (only devices having communication capability)
- Note: The pulse sequence only supports devices which are designated as having communication capability.

#### Technical Data

<b>Input</b>	
Nominal input voltage $U_{i, \text{nom}}$	48 VDC
Input voltage range	32 ... 58 VDC
<b>Output</b>	
Nominal output voltage $U_{o, \text{nom}}$	8 x 48 VDC
Nominal current	Max. 10 ADC per channel; max. 70 ADC in total (2, 3, 4, 6, 8, 10 A adjustable for each channel via selector switch)
Voltage drop	200 mV at 10 A
Trip time	Load-dependent (16 ms ... 100 s)
Switch-on capacity	> 23,000 µF per channel at 48 VDC, 2.5 mm <sup>2</sup> cable cross-section and 2.5 m cable length
Switch-on behavior	Time-delayed switching of channels (load-dependent, 50 ms ... 5 s)
Active current limitation	No
Operation status indicator	Green LED (OK channel), red LED (tripped channel)
Signaling	8 x LED (green/red/orange)
<b>Efficiency/Power Losses</b>	
Efficiency	99 % (typ.)
Power loss $P_v$	1.3 W (no load) / 20 W (at 8 x 10 A)
<b>Fuse Protection</b>	
Internal fuse	15 AT per channel
<b>General Specifications</b>	
Standards/Approvals	UL 508*, UL 2367*, GL*, EN 60950, EN 61000-6-2, EN 61000-6-3 (*pending)
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-25 ... +85 °C
Relative humidity	5 ... 96 % (no condensation permissible)
Derating	≥ +50 °C: see instruction manual
Pollution degree	2 (per EN 50178)
<b>Safety and Protection</b>	
Test voltage	500 VDC (connectors to housing)
Protection class	III
Reverse voltage protection	No
Degree of protection	IP20 per EN 60529
Overvoltage protection	Via 68 V suppressor diode at input
Feedback voltage	58 VDC (max.)
Series connection of several devices	Not permitted
Parallel operation of single channels	Not permitted
<b>Connection and Mounting Type</b>	
Connectors	Input (+): WAGO 831 Series Input (-), output, signaling: WAGO 721 Series
Conductor range	Input (+): 0.5 ... 10 mm <sup>2</sup> / 20 ... 8 AWG Input (-), output, signaling: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input (+): 13 ... 15 mm / 0.51 ... 0.59 inch Input (-), output, signaling: 8 ... 9 mm / 0.31 ... 0.35 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	42 x 127 x 142.5, depth from upper-edge of DIN-rail
Weight	440 g



Similar to pictured device

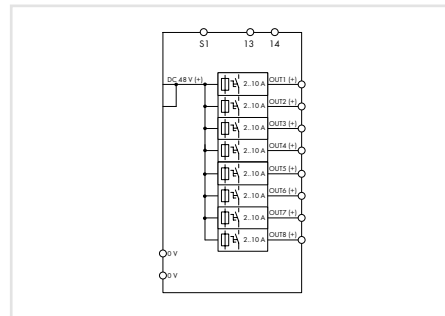


EPSITRON® Electronic Circuit Breaker, 8-channel, input voltage: 48 VDC, 2 ... 10 A adjustable, communication capability

Item No.	Pack. Unit
787-1668/000-200	1



Similar to pictured device



EPSITRON® Electronic Circuit Breaker, 8-channel, input voltage: 48 VDC, 2 ... 10 A adjustable, potential-free signal contact 13/14

Item No.	Pack. Unit
787-1668/000-250	1

Potential-free signal contact 13 / 14 reports "channel switched off" and "tripped channel" – does not support communication via pulse sequence.

**Electrical Data**

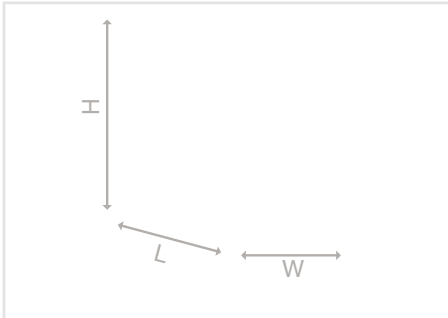
Remote input	Reactivation of all tripped channels via 15 ... 58 VDC pulse for min. 500 ms Switching on/off any number of channels via pulse sequence
Signaling	

	Reactivation of all tripped channels via 15 ... 58 VDC pulse for min. 500 ms
	Potential-free signal contact 13 / 14, max. 58 VDC / 40 AAC, 100 mA

## DC/DC converters

### EPSITRON® COMPACT Power

#### 787 Series



#### Features:

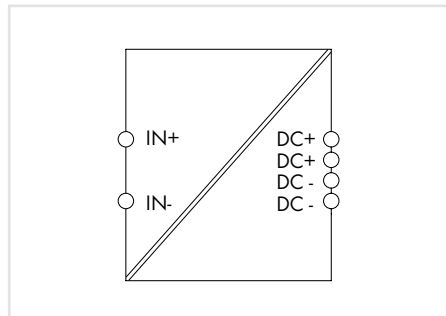
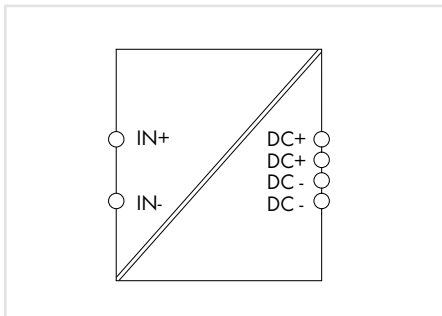
- Switched-mode power supply
- Natural convection cooling when horizontally mounted
- Stepped profile, ideal for distribution boards or distribution boxes
- Suitable for both parallel and series operation
- Electrically isolated output voltage (SELV) per EN 60950-1/UL 60950-1; PELV per EN 60204
- Control deviation:  $\pm 2\%$  ( $\pm 10\%$  within the application range of EN 50121-3-2)

#### Technical Data

<b>Input</b>	
Frequency	0 Hz
Inrush current	< 30 A, NTC
<b>Output</b>	
Nominal output voltage $U_{o, nom}$	24 VDC (SELV)
Output current $I_o$	2.0 A at 24 VDC, 1.6 A (max.) in any mounting position
Factory preset	24 VDC
Residual ripple	< 100 mV (peak-to-peak) up to 20 MHz
Current limitation	1.1 x $I_o$ typ.
Overload behavior	Constant current
Operation status indicator	Green LED ( $U_o$ )
<b>Fuse Protection</b>	
Internal fuse	T 4 A / 125 VDC
Recommended backup fuse	Circuit breakers 6 A, 10 A, B, C characteristic
<b>General Specifications</b>	
Standards/Approvals	EN 60950, EN 61204-3, EN 50121-3-2, EN 50125 *, UL 60950 *, UL 508 *, GL * * (pending)
<b>Environmental Requirements</b>	
Ambient operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +85 °C
Relative humidity	5 ... 96 % (coated PCB)
Derating	-1.5 % / K (> 55 °C)
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721)
Shock and vibration	Category 1, Class B (per EN 61373:2010)
<b>Safety and Protection</b>	
Housing	Plastic, light gray, flammability class V0 per UL94
Test voltage (pri.-sec.)	4.2 kV (DC)
Protection class	II
Degree of protection	IP20 per EN 60529
Overvoltage category	II
Overvoltage protection	Varistor (input side), internal protective circuit, < 40 VDC (output side in case of an error)
Short-circuit-protection	Yes
No-load proof	Yes
Feedback voltage	Max. 35 VDC
Parallel operation	Yes
Series connection	Yes
MTBF	> 500,000 h
Fire load	7 MJ
<b>Connection and Mounting Type</b>	
Connectors	Input/Output: WAGO 740 Series
Conductor range	Input/Output: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	Input/Output: 6 ... 7 mm / 0.24 ... 0.28 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	72 x 89 x 59, Depth: 55 mm from upper-edge of DIN-rail
Weight	240 g



Similar to pictured device



EPSITRON® DC-DC Converter, COMPACT Power,  
input voltage: 110 VDC,  
output: 24 VDC/2 A

Item No.	Pack. Unit
787-1014	1

EPSITRON® DC-DC Converter, COMPACT Power,  
input voltage: 72 VDC,  
output: 24 VDC/2 A

Item No.	Pack. Unit
787-1014/072-000	1

**Electrical Data**

Nominal input voltage $U_{I,nom}$	110 VDC
Input voltage range	77 ... 140 VDC
Input current $I_i$	0.77 A at 77 VDC; 0.42 A at 140 VDC
Mains failure hold-up time	> 8 ms at 77 VDC; > 25 ms at 140 VDC
Adjustment accuracy	10 %
Efficiency	85 % (typ.)
Power loss $P_v$	1.9 W (110 VDC / no load), 9.9 W (110 VDC / nominal load)
Power loss $P_v$ (max.)	9.9 W typ. (77 VDC / 24 VDC, 2 A)

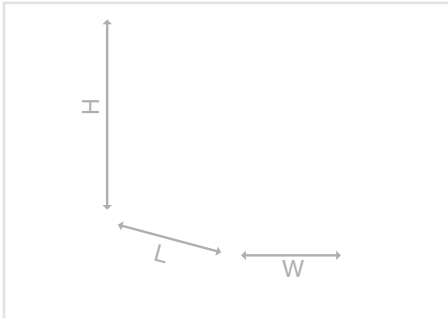
Nominal input voltage $U_{I,nom}$	72 VDC
Input voltage range	40 ... 90 VDC
Input current $I_i$	0.79 A at 72 VDC
Mains failure hold-up time	> 8 ms at 72 VDC
Adjustment accuracy	2 %
Efficiency	84 % (typ.)
Power loss $P_v$	2.0 W (72 VDC / no load), 9.0 W (72 VDC / nominal load)
Power loss $P_v$ (max.)	10.5 W typ. (40 VDC / 24 VDC, 2 A)

Nominal input voltage $U_{I,nom}$	72 VDC
Input voltage range	40 ... 90 VDC
Input current $I_i$	0.79 A at 72 VDC
Mains failure hold-up time	> 8 ms at 72 VDC
Adjustment accuracy	2 %
Efficiency	84 % (typ.)
Power loss $P_v$	2.0 W (72 VDC / no load), 9.0 W (72 VDC / nominal load)
Power loss $P_v$ (max.)	10.5 W typ. (40 VDC / 24 VDC, 2 A)

## DC/DC converters

## EPSITRON®

## 787 Series



## Features:

- DC/DC converter in a compact 6 mm housing
- 787-28xx DC/DC Converters supply devices with 5, 10, 12 or 24 VDC from a 24 or 48 VDC power supply with an output power up to 12 W.
- Output voltage monitoring via DC OK contact
- Can be commoned with 857 and 2857 Series
- Comprehensive range of approvals for multiple applications

## Technical Data

<b>Input</b>	
Inrush current	< 0.5 A (1 ms, at nominal input voltage)
<b>Output</b>	
Output current $I_o$	0.5 A
Mains/load regulation	< 1 %
Residual ripple	≤ 20 mV (peak-to-peak)
Operation status indicator	Green LED (U <sub>o</sub> ), Red LED (short circuit)
Signaling	DC OK contact (U <sub>i</sub> , max. 15 mA)
<b>Fuse Protection</b>	
Internal fuse	None
<b>Environmental Requirements</b>	
Ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Relative humidity	95 % (no condensation permissible)
Derating	No derating
Pollution degree	2 (per EN 50178)
Climatic category	3K3 (per EN 60721, except for low air pressure)
<b>Safety and Protection</b>	
Protection class	III
Reverse voltage protection	Yes
Degree of protection	IP20 per EN 60529
Short-circuit-protection	Yes
No-load proof	Yes
Parallel operation	No
Series connection	No
MTBF	> 1,800,000 h
<b>Connection and Mounting Type</b>	
Connectors	Push-in CAGE CLAMP® (WAGO 857 Series)
Conductor range	Solid: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG Fine-stranded: 0.34 ... 2.5 mm <sup>2</sup> / 22 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Mounting type	DIN-rail mount (EN 60715)
<b>Dimensions and Weight</b>	
Dimensions (mm) W x H x D	6 x 97.8 x 94, height from upper-edge of DIN-rail
Weight	38 g



DC O.K.	1		5	n.c.
GND	2	DC O.K.	6	n.c.
Vout+	3		7	Vin+
GND	4	OUT	IN	8
				GND

DC O.K.	1		5	n.c.
GND	2	DC O.K.	6	n.c.
Vout+	3		7	Vin+
GND	4	OUT	IN	8
				GND

EPSITRON® DC-DC Converter,  
input voltage: 24 VDC,  
output: 5 VDC / 0.5 A

	Item No.	Pack. Unit
	787-2801	1

EPSITRON® DC-DC Converter,  
input voltage: 24 VDC,  
output: 10 VDC / 0.5 A

	Item No.	Pack. Unit
	787-2802	1

#### Electrical Data

Nominal input voltage $U_{I,nom}$	24 VDC
Input voltage range	10 ... 30 VDC
Input current $I_i$	< 0.34 A
Nominal output voltage $U_{O,nom}$	5 VDC ( $\pm 3\%$ )
Adjustment accuracy	< 3 %
Efficiency	> 82.5 % (at nominal input voltage and nominal output)
Power loss $P_v$	< 0.13 W (no load); < 0.6 W (nominal load)
Feedback voltage	16 V

#### General Specifications

Standards/Approvals	CE; EN 61000-6-2, EN 61000-6-3, EN 60950-1, UL 60950 *, UL 508 *, ANSI/ISA 12.12.01 *, ATEX *, IEC Ex*, GL* (*pending)
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Nominal input voltage $U_{I,nom}$	24 VDC
Input voltage range	15 ... 30 VDC
Input current $I_i$	< 0.42 A
Nominal output voltage $U_{O,nom}$	10 VDC ( $\pm 2\%$ )
Adjustment accuracy	< 2 %
Efficiency	> 89 % (at nominal input voltage and nominal output)
Power loss $P_v$	< 0.19 W (no load); < 0.7 W (nominal load)
Feedback voltage	16 V

Standards/Approvals	CE; EN 61000-6-2, EN 61000-6-3, EN 60950-1, UL 60950 *, UL 508 *, ANSI/ISA 12.12.01 *, ATEX *, IEC Ex*, GL* (*pending)
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# DC/DC converters

## EPSITRON®

### 787 Series



DC O.K.	1		5	n.c.
GND	2		6	n.c.
Vout+	3		7	Vin+
GND	4	OUT	8	GND
		IN		

DC O.K.	1		5	n.c.
GND	2		6	n.c.
Vin+	3		7	Vout+
GND	4	IN	8	GND
		OUT		

EPSITRON® DC-DC Converter,  
input voltage: 24 VDC,  
output: 12 VDC / 0.5 A

EPSITRON® DC-DC Converter,  
input voltage: 48 VDC,  
output: 24 VDC / 0.5 A

	Item No.	Pack. Unit
	787-2805	1

	Item No.	Pack. Unit
	787-2803	1

**Electrical Data**

Nominal input voltage $U_{i,nom}$	24 VDC
Input voltage range	15 ... 30 VDC
Input current $I_i$	< 0.5 A
Nominal output voltage $U_{o,nom}$	12 VDC ( $\pm 2\%$ )
Adjustment accuracy	< 2 %
Efficiency	> 90 % (at nominal input voltage and nominal output)
Power loss $P_v$	< 0.21 W (no load); < 0.7 W (nominal load)
Feedback voltage	16 V
<b>General Specifications</b>	
Standards/Approvals	CE; EN 61000-6-2, EN 61000-6-3, EN 60950-1, UL 60950*, UL 508*, ANSI/ISA 12.12.01*, ATEX*, IEC Ex*, GL* (* pending)

Nominal input voltage $U_{i,nom}$	48 VDC
Input voltage range	40 ... 55 VDC
Input current $I_i$	< 0.34 A
Nominal output voltage $U_{o,nom}$	24 VDC ( $\pm 2\%$ )
Adjustment accuracy	< 3 %
Efficiency	> 91 % (at nominal input voltage and nominal output)
Power loss $P_v$	< 0.29 W (no load); < 1.2 W (nominal load)
Feedback voltage	27 V
<b>General Specifications</b>	
Standards/Approvals	CE; EN 61000-6-2, EN 61000-6-3, EN 60950-1, UL 60950*, UL 508*, ANSI/ISA 12.12.01*, ATEX*, IEC Ex*, GL* (* pending)

5





DC O.K.	1	DC O.K.	5	n.c.
GND	2		6	n.c.
Vout+	3	OUT	7	Vin+
GND	4	IN	8	GND

EPSITRON® DC-DC Converter,  
input voltage: 24 VDC,  
adjustable output voltage: 5/10/12 VDC,  
output current: 0.5 A

Item No.	Pack. Unit
787-2810	1

#### Electrical Data

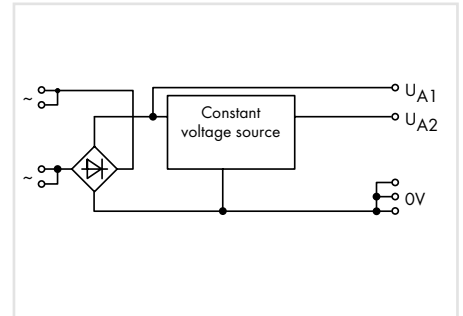
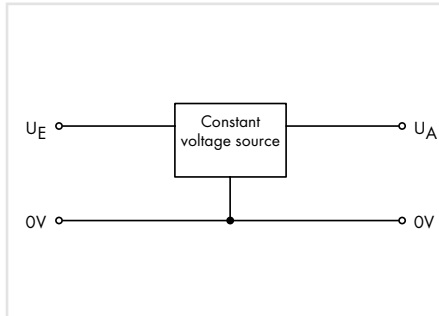
Nominal input voltage $U_{i, nom}$	24 VDC
Input voltage range	15 ... 30 VDC
Input current $I_i$	< 0.5 A
Nominal output voltage $U_{o, nom}$	5/10/12 VDC ( $\pm 3\%$ ), adjustable via DIP switches
Adjustment accuracy	< 3 %
Efficiency	> 82.5 % (at nominal input voltage and nominal output)
Power loss $P_V$	< 0.21 W (no load); < 0.7 W (nominal load)
Feedback voltage	16 V

#### General Specifications

Standards/Approvals	CE; EN 61000-6-2, EN 61000-6-3, EN 60950-1, UL 60950*, UL 508*, ANSI/ISA 12.12.01*, ATEX*, IEC Ex*, GL* (*pending)
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# Rail-Mount Modules – Constant Voltage Sources

## 289/288 Series



Constant voltage source,  
input voltage: 27 ... 35 VDC,  
output voltage: 24 VDC,  
output current: 3 A,  
with mounting feet

	Item No.	Pack. Unit
	289-907	1

Constant voltage source,  
input voltage: 24 VDC,  
output voltage: 24 VDC,  
output current: 3 A,  
with mounting carrier


	Item No.	Pack. Unit
	288-800	1

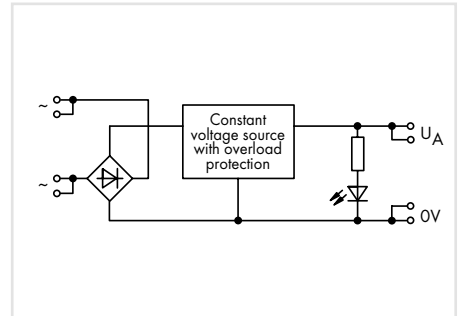
### Technical Data

Input voltage	27 ... 35 VDC	24 VDC +10 %
Output voltage	24 VDC (±10 %)	24 VDC (±10 %)
Nominal output current	3 A	3 A
Oversvoltage protection		
Voltage recovery after clearing the overload		
Permissible ambient operating temperature	-25 ... +40 °C	-25 ... +40 °C
Weight	88 g	209 g
Dimensions (mm) W x H x D	78.5 x 39 x 66, height from upper-edge of DIN-rail	140 x 44 x 85, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (236 Series)	CAGE CLAMP® (236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch	5 ... 6 mm / 0.2 ... 0.24 inch

### Accessories (Selection)

Marking strips for mounting carrier	white	709-198	1	white	709-198	1
	translucent	709-196	1	translucent	709-196	1

 WMB Multi marking system,  
see page 608



Constant voltage source,  
input voltage: 24 VDC,  
output voltage: 24 VDC,  
output current: 5 A,  
with mounting carrier

	Item No.	Pack. Unit
	288-801	1

#### Technical Data


Input voltage	24 VDC +10 %
Output voltage	24 VDC (±10 %)
Nominal output current	5 A
Overvoltage protection	Electronic
Voltage recovery after clearing the overload	After 4 s
Permissible ambient operating temperature	0 ... +30 °C
Weight	600.5 g
Dimensions (mm) W x H x D	170 x 85 x 108, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch

#### Accessories (Selection)

Marking strips for mounting carrier

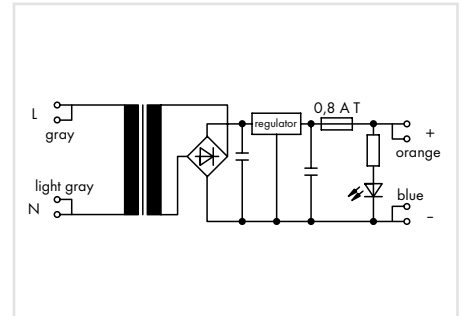
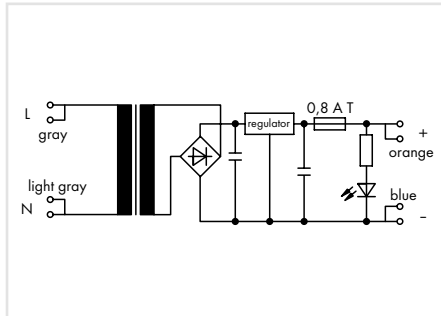
	Item No.	Pack. Unit
white	709-198	1
translucent	709-196	1

	Item No.	Pack. Unit
white	709-198	1
translucent	709-196	1

 WMB Multi marking system,  
see page 608

# Rail-Mount Modules – Power Supplies

## 288 Series



Stabilized power supply,  
input voltage: 115 VAC,  
output voltage: 24 VDC,  
output current: 0.5 A,  
with mounting carrier

Stabilized power supply,  
input voltage: 230 VAC,  
output voltage: 24 VDC,  
output current: 0.5 A,  
with mounting carrier

	Item No.	Pack. Unit
	288-809	1

	Item No.	Pack. Unit
	288-800	1

### Technical Data

Nominal input voltage $U_{I,nom}$	115 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	30 VA
Nominal output voltage $U_{O,nom}$	24 VDC
Output voltage range	±4 %
Output current $I_o$	0.5 A
Residual ripple	≤ 10 mVss
Input fuse	
Output fuse	0.8 A, slow
Short-circuit current	
Permissible ambient operating temperature	0 ... +50 °C
Weight	579 g
Dimensions (mm) W x H x D	77 x 52 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

Nominal input voltage $U_{I,nom}$	230 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	30 VA
Nominal output voltage $U_{O,nom}$	24 VDC
Output voltage range	±4 %
Output current $I_o$	0.5 A
Residual ripple	≤ 10 mVss
Input fuse	
Output fuse	0.8 A, slow
Short-circuit current	
Permissible ambient operating temperature	0 ... +50 °C
Weight	552 g
Dimensions (mm) W x H x D	77 x 52 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

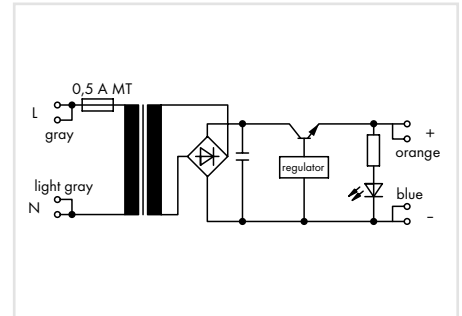
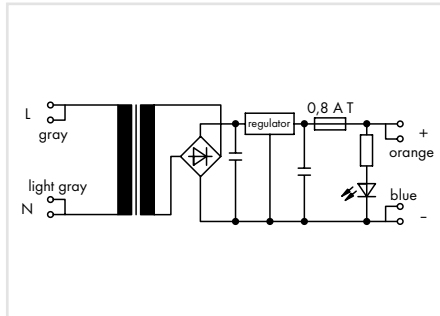
Nominal input voltage $U_{I,nom}$	230 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	30 VA
Nominal output voltage $U_{O,nom}$	24 VDC
Output voltage range	±4 %
Output current $I_o$	0.5 A
Residual ripple	≤ 10 mVss
Input fuse	
Output fuse	0.8 A, slow
Short-circuit current	
Permissible ambient operating temperature	0 ... +50 °C
Weight	552 g
Dimensions (mm) W x H x D	77 x 52 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

### Accessories (Selection)

Marking strips for mounting carrier	white	709-198	1
	translucent	709-196	1

Marking strips for mounting carrier	white	709-198	1
	translucent	709-196	1

WMB Multi marking system,  
see page 608



Stabilized power supply,  
input voltage: 230 VAC,  
output voltage: 12 VDC,  
output current: 0.5 A,  
with mounting carrier

	Item No.	Pack. Unit
	288-808	1

Stabilized power supply,  
input voltage: 115 VAC,  
output voltage: 24 VDC,  
output current: 2 A,  
with mounting carrier

	Item No.	Pack. Unit
	288-813	1

**Technical Data**

Nominal input voltage $U_{i,nom}$	230 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	23 VA
Nominal output voltage $U_{o,nom}$	12 VDC
Output voltage range	± 4 %
Output current $I_o$	0.5 A
Residual ripple	≤ 10 mVss
Input fuse	
Output fuse	0.8 A, slow
Short-circuit current	
Permissible ambient operating temperature	0 ... +50 °C
Weight	574 g
Dimensions (mm) W x H x D	77 x 52 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

Nominal input voltage $U_{i,nom}$	115 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	80 VA
Nominal output voltage $U_{o,nom}$	24 VDC
Output voltage range	± 10 %
Output current $I_o$	2 A
Residual ripple	≤ 80 mVss
Input fuse	0.5 A, medium-slow
Output fuse	Electronic, short-circuit protected
Short-circuit current	2.5 A
Permissible ambient operating temperature	0 ... +40 °C
Weight	1969 g
Dimensions (mm) W x H x D	182 x 98 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (256 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

**Accessories (Selection)**

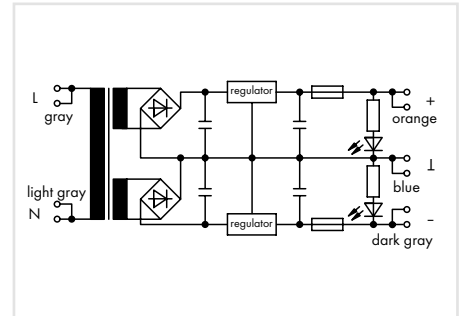
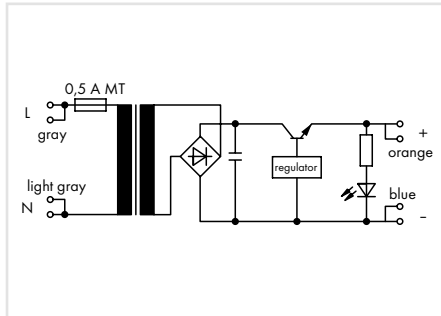
Marking strips for mounting carrier	white	709-198	1
	translucent	709-196	1

Marking strips for mounting carrier	white	709-198	1
	translucent	709-196	1

WMB Multi marking system,  
see page 608

# Rail-Mount Modules – Power Supplies

## 288 Series



Stabilized power supply,  
input voltage: 230 VAC,  
output voltage: 24 VDC,  
output current: 2 A,  
with mounting carrier

	Item No.	Pack. Unit
	288-812	1

Stabilized power supply,  
input voltage: 230 VAC,  
output voltage: ± 12 VDC,  
output current: 2 x 0.5 A,  
with mounting carrier

$U_{o\ nom}$	Item No.	Pack. Unit
± 12 VDC	288-814	1

### Technical Data

Nominal input voltage $U_{i\ nom}$	230 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	80 VA
Nominal output voltage $U_{o\ nom}$	24 VDC
Output voltage range	± 10 %
Output current $I_o$	2 A
Residual ripple	≤ 80 mVss
Input fuse	0.5 A, medium-slow
Output fuse	Electronic, short-circuit protected
Short-circuit current	2.5 A
Permissible ambient operating temperature	0 ... +40 °C
Weight	1900 g
Dimensions (mm) W x H x D	182 x 98 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (256 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

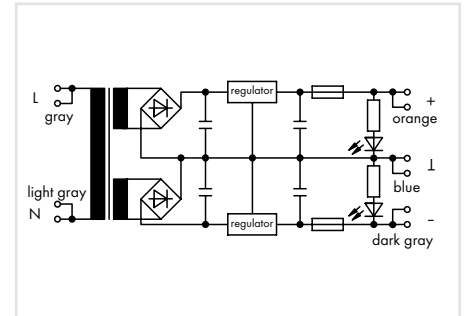
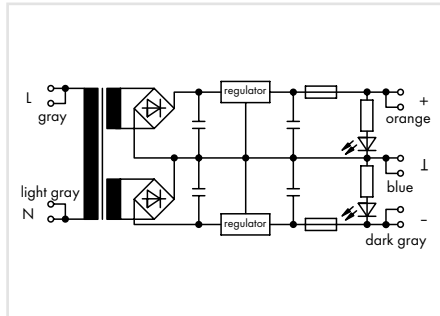
Nominal input voltage $U_{i\ nom}$	230 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	27 VA
Nominal output voltage $U_{o\ nom}$	± 12 VDC
Output voltage range	± 4 %
Output current $I_o$	2 x 0.5 A
Residual ripple	≤ 10 mVss
Input fuse	0.5 A, medium-slow
Output fuse	2 x 0.8 A, slow
Short-circuit current	2.5 A
Permissible ambient operating temperature	0 ... +40 °C
Weight	675 g
Dimensions (mm) W x H x D	94 x 57 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (256 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

### Accessories (Selection)

	Item No.	Pack. Unit
Marking strips for mounting carrier	white	709-198
	translucent	709-196

	Item No.	Pack. Unit
Marking strips for mounting carrier	white	709-198
	translucent	709-196

WMB Multi marking system,  
see page 608



Stabilized power supply,  
input voltage: 230 VAC,  
output voltage: ± 15 VDC,  
output current: 2 x 0.5 A,  
with mounting carrier

$U_{o,nom}$	Item No.	Pack. Unit
± 15 VDC	288-815	1

Stabilized power supply,  
input voltage: 230 VAC,  
output voltage: ± 15 VDC,  
output current: 2 x 1 A,  
with mounting carrier

$U_{o,nom}$	Item No.	Pack. Unit
± 15 VDC	288-816	1

**Technical Data**

Nominal input voltage $U_{i,nom}$	230 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	27 VA
Nominal output voltage $U_{o,nom}$	± 15 VDC
Output voltage range	± 4 %
Output current $I_o$	2 x 0.5 A
Residual ripple	≤ 10 mVss
Input fuse	
Output fuse	2 x 0.8 A, slow
Short-circuit current	
Permissible ambient operating temperature	0 ... +40 °C
Weight	665 g
Dimensions (mm) W x H x D	94 x 57 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (256 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

Nominal input voltage $U_{i,nom}$	230 VAC
Input voltage range	± 10 %
Frequency	50 ... 60 Hz
Power consumption at nominal load	53 VA
Nominal output voltage $U_{o,nom}$	± 15 VDC
Output voltage range	± 4 %
Output current $I_o$	2 x 1 A
Residual ripple	≤ 10 mVss
Input fuse	
Output fuse	
Short-circuit current	Approx. 1.5 A
Permissible ambient operating temperature	0 ... +40 °C
Weight	1011 g
Dimensions (mm) W x H x D	138 x 87 x 106, height from upper-edge of DIN-rail
Connectors	CAGE CLAMP® (256 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/Approvals	Transformer per VDE 0551

**Accessories (Selection)**

Marking strips for mounting carrier	
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	Item No.	Pack. Unit
white	709-198	1
translucent	709-196	1

	Item No.	Pack. Unit
white	709-198	1
translucent	709-196	1

WMB Multi marking system,  
see page 608

## Accessories

### EPSITRON® Communication Cable with an RS-232 Interface

#### 787 Series

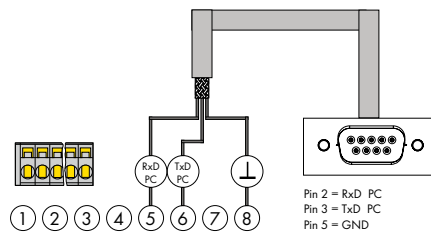


Similar to pictured device

WAGO's 787-890 and 787-892 Communication Cables are used for configuration and visualization via PC or controller. They are suitable for 787-1675 or all 787-8xx Series devices equipped with an RS-232 serial interface. Download the corresponding PC software for all 787 Series devices at [www.wago.com/epsitron](http://www.wago.com/epsitron).

Function blocks for communication with the WAGO-I/O-SYSTEM 750 and other control systems are also available.

**Note:**  
The communication cables (787-890, 787-892) are not electrically isolated.



Wiring diagram shows 787-890

#### Technical Data

Signal type	Serial signal (RS-232)
Connectors	1 x 8-pole female connector (733-108) with strain relief (787-890, module side 787-8xx), or 1 x 4-pole female connector (734-104) with strain relief (787-892, module side 787-1675), 1 x 9-pole D-sub female connector (PC/controller side)
Isolation	No
Conductor range	3 x 0.34 mm <sup>2</sup> (22 AWG), shielded
Ambient operating temperature	-10 ... +70 °C
Degree of protection	IP20
Length	1.8 m

#### Communication cable with an RS-232 interface

for	Item No.	Pack. Unit
787-8xx	787-890	1
787-1675	787-892	1

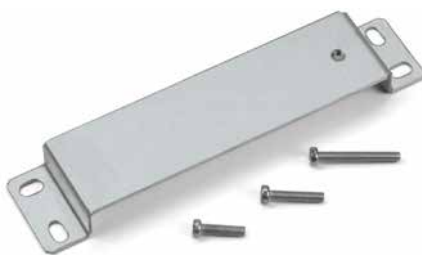


## Accessories

### EPSITRON® Wall-Mount Adapter/Carrier Rail Adapters

#### 787 Series

##### EPSITRON® Wall-Mount Adapter



WAGO's 787-895 Wall-Mount Adapter secures 787-8xx devices on a mounting plate or wall without DIN-35 rail. This adapter replaces the rail support of the 787-8xx device. The adapter is secured to the 787-8xx device via provided screws.

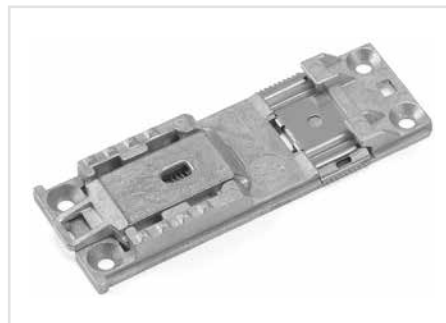
#### Technical Data

Material	Galvanized sheet steel
Dimensions (mm) W x H x D	35 x 15 x 158.5
Mounting	Mounting holes: 4 slots, (5.3 x 9) mm Mounting hole spacing: (143 x 19.5) mm
Scope of delivery	Wall-mount adapter 1x screw M4 x 16 1x screw M4 x 20 1x screw M4 x 30

Wall-mount adapter, secures 787-8xx devices on a mounting plate or wall, without DIN-35 rail

Item No.	Pack. Unit
787-895	5

##### EPSITRON® Carrier Rail Adapters



Carrier rail adapter for mounting 787-8xx devices to a DIN-35 rail. WAGO's 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 easily changed.

Carrier rail adapter made of zinc die-cast for mounting 787-8xx devices to a DIN-35 rail. WAGO's 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 easily changed.

Carrier rail adapter, for mounting 787-8xx devices to a DIN-35 rail

Item No.	Pack. Unit
787-896	1

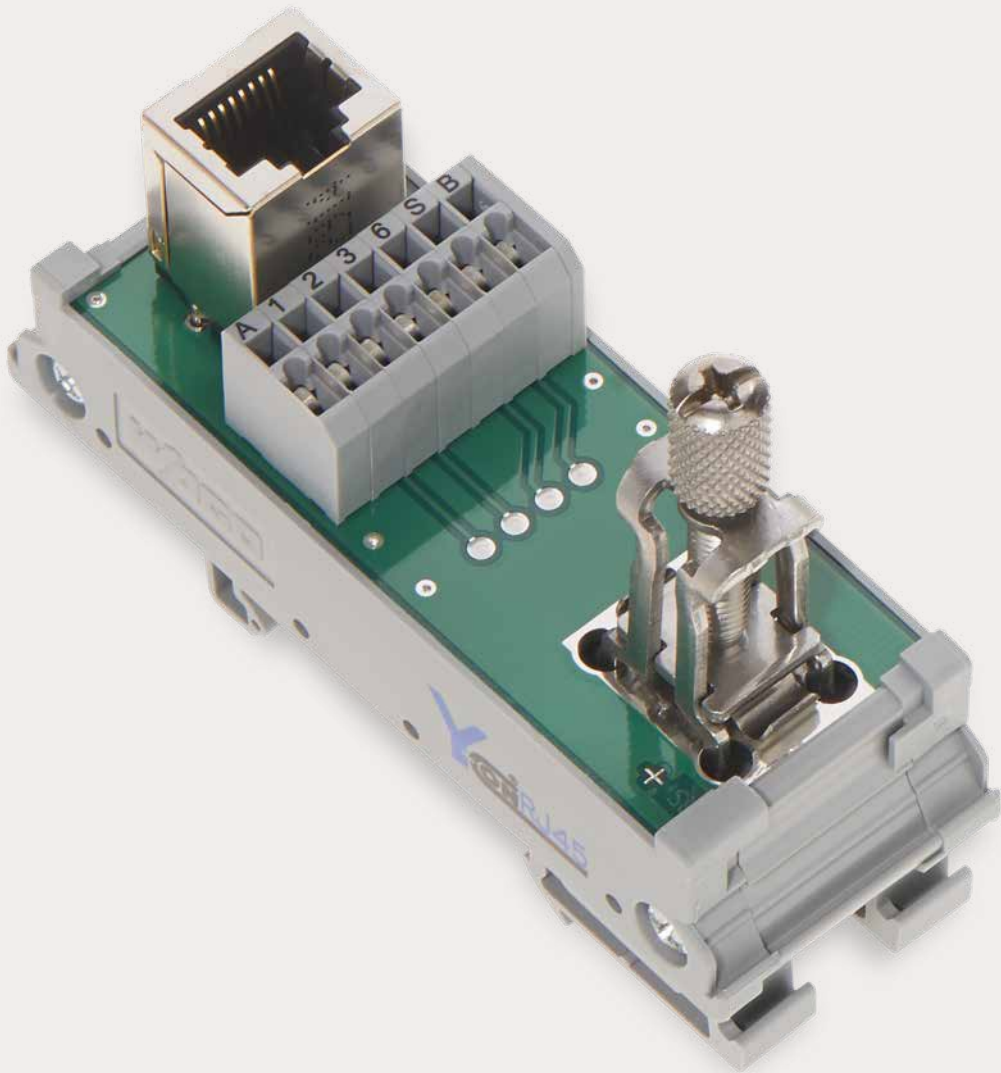
Carrier rail adapter, zinc die-cast, for mounting 787-8xx devices to a DIN-35 rail

Item No.	Pack. Unit
787-897	1

#### Technical Data


Material	Galvanized sheet steel
Dimensions (mm) W x H x D	35 x 136.5 x 15.5
Mounting	Slide both single parts into the guide slot and then screw.
Scope of delivery	Carrier rail adapter Assembly instructions

Material	Zinc die-cast
Dimensions (mm) W x H x D	37 x 102.5 x 10.5
Mounting	Press the adapter into the guide slot.
Scope of delivery	Carrier rail adapter Assembly instructions



# Interface Modules

## Interface Modules

	Page
	<b>Interface Modules, for D-Sub/HD D-Sub Connectors</b> Male Connectors, for Mating Connectors with Solder Connection, 289 Series 435 Male Connectors, for Mating IDC Connectors, 289 Series 438 Female Connectors, for Mating Connectors with Solder Connection, 289 Series 441 Female Connectors, for Mating IDC Connectors, 289 Series 445
	<b>Interface Modules, for Connectors per DIN 41651</b> 289 Series 446
	<b>Interface Modules, for Connectors per DIN 41612</b> 289 Series 450
	<b>Interface Modules, for RJ-45 Connectors</b> RJ-45, 289 Series 454 RJ-45, with Power Contacts, 289 Series 457
	<b>Connection Modules, for Sensors and Actuators</b> 289 Series 460

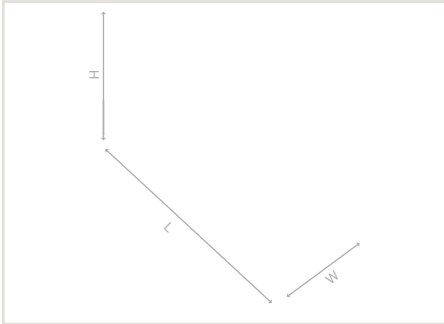
## Interface Modules for D-Sub/HD D-Sub Connectors

### Male Connectors, 289 Series



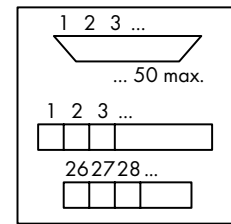
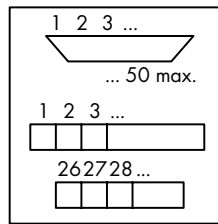
#### Technical Data

Connector contact	Au over Ni
Pull relief stud bolt	UNC 4-40
Ambient operating temperature	-20 ... +50 °C
Storage temperature	-40 ... +70 °C
Relative humidity	Max. 85 % (no condensation)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Conductor range	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG



## Interface Modules for D-Sub/HD D-Sub Connectors

### Male Connectors, for Mating Connectors with Solder Connection, 289 Series



#### \*Notice:

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with D-subminiature male connector, for mating connectors with solder connection, vertical insertion, double-row PCB terminal blocks, with mounting feet

Pole No.	Width	Item No.	Pack. Unit
9	38,0	289-445	1
15	53,5	289-446	1
25	79,0	289-447	1
37	120,0	289-448	1
50	157,0	289-449	1

Interface module, with D-subminiature male connector, for mating connectors with solder connection, vertical insertion, double-row PCB terminal blocks, mounting carrier

Pole No.	Width	Item No.	Pack. Unit
9	38,0	289-545	1
15	46,0	289-546	1
25	72,0	289-547	1
37	102,0	289-548	1
50	94,0	289-549	1

#### Technical Data

Operating voltage	30 VAC/50 VDC
Nominal current	1 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 19 x 63.5, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)

Operating voltage	100 VAC/125 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 34 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)

#### Accessories

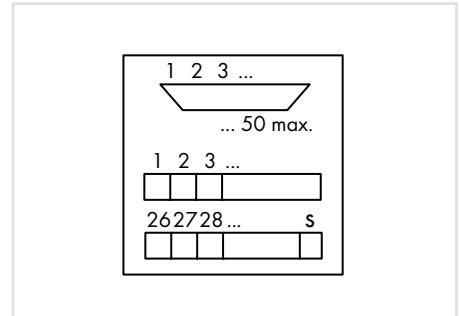
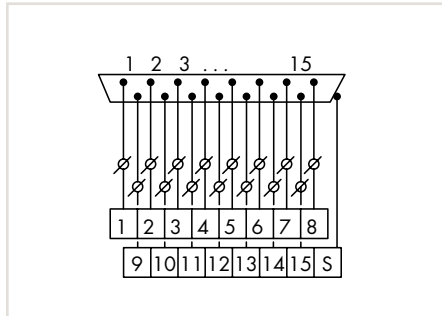
Marker strips for mounting carrier	
Cover carrier, type 1 (57.5 x 128 mm)	
Cover, transparent, type 1, 1 m long	

Color	Item No.	Pack. Unit
white	709-198	1
	709-167	10
	709-153	10

Color	Item No.	Pack. Unit
white	709-198	1

# Interface Modules for D-Sub/HD D-Sub Connectors

## Male Connectors, for Mating Connectors with Solder Connection, 289 Series



**\*Notice:**  
Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with D-subminiature male connector, double-row PCB terminal blocks, mounting carrier, with solder pin

Pole No.	Width	Item No.	Pack. Unit
9	33,5	289-720	1
15	43,5	289-721	1

One solder pin per pole is available for testing and patching (except for shield contact).

Interface module, with D-subminiature male connector, for mating connectors with solder connection, vertical insertion, double-row PCB terminal blocks, mounting carrier, with shield connection

Pole No.	Width	Item No.	Pack. Unit
9	38,5	289-585	1
15	46	289-586	1
25	71,5	289-587	1
37	102	289-588	1

### Technical Data

Operating voltage	30 VAC/50 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 48 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 736 Series)

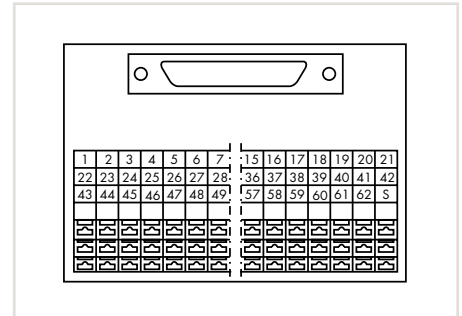
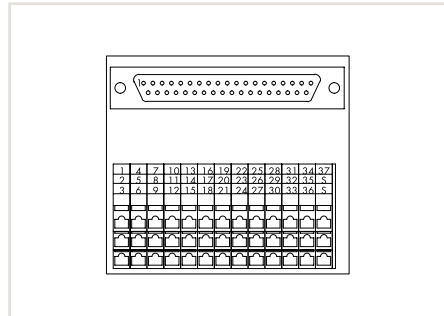
Operating voltage	100 VAC/125 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 34 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)

### Accessories

Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10

Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1

Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1



Interface module, with D-subminiature male connector, for mating connectors with solder connection, vertical insertion, triple-deck PCB terminal blocks, mounting carrier, with shield connection

Pole No.	Width	Item No.	Pack. Unit
25	56,0	289-620	1
37	74,0	289-621	1

Interface module, with HD D-subminiature male connector, triple-deck PCB terminal blocks, mounting carrier

Pole No.	Width	Item No.	Pack. Unit
15	35,0	289-714	1
62	108,0	289-710	1

6

**Technical Data**

Operating voltage	100 VAC/125 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 62 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 737 Series)

Operating voltage	100 VAC/125 VDC
Nominal current	1 A
Contact resistance	≤ 15 mΩ
Performance level	3 / 50 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 62 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 737 Series)

Operating voltage	100 VAC/125 VDC
Nominal current	1 A
Contact resistance	≤ 15 mΩ
Performance level	3 / 50 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 62 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 737 Series)

**Accessories**

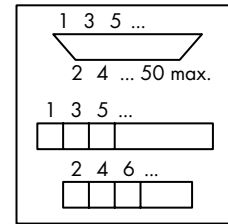
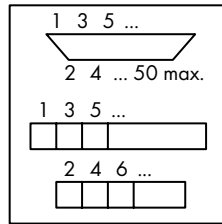
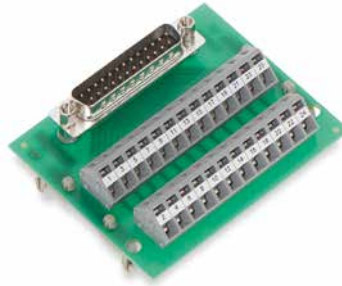
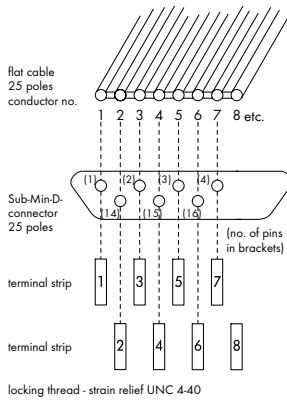
Marker strips for mounting carrier	
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Color	Item No.	Pack. Unit
white	709-198	1

Color	Item No.	Pack. Unit
white	709-198	1

# Interface Modules for D-Sub/HD D-Sub Connectors

## Male Connectors, with IDC, 289 Series



**\*Notice:**  
Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with D-subminiature male connector, for mating connectors with IDC, vertical insertion, double-row PCB terminal blocks, with mounting feet

Pole No.	Width	Item No.	Pack. Unit
9	38,0	289-440	1
15	53,5	289-441	1
25	79,0	289-442	1
37	120,0	289-443	1
50	157,0	289-444	1

Interface module, with D-subminiature male connector, for mating connectors with IDC, vertical insertion, triple-row PCB terminal blocks, mounting carrier

Pole No.	Width	Item No.	Pack. Unit
9	38,0	289-540	1
15	46,0	289-541	1
25	72,0	289-542	1
37	102,0	289-543	1
50	94,0	289-544	1

**Technical Data**

Operating voltage	30 VAC/50 VDC
Nominal current	1 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 19 x 63.5, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)

Operating voltage	100 VAC/125 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 34 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)

**Accessories**

Marker strips for mounting carrier	
Cover carrier, type 1 (57.5 x 128 mm)	
Cover, transparent, type 1, 1 m long	

Color	Item No.	Pack. Unit
white	709-198	1
	709-167	10
	709-153	10

Color	Item No.	Pack. Unit
white	709-198	1





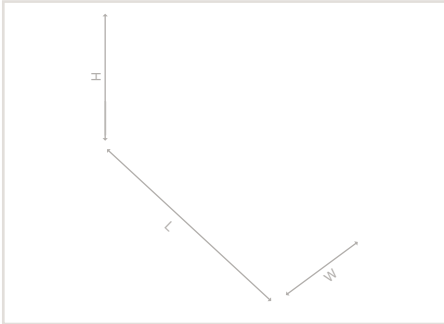
## Interface Modules for D-Sub/HD D-Sub Connectors

### Female Connector, 289 Series



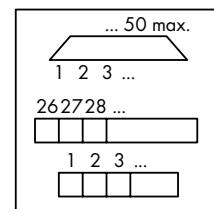
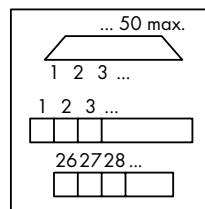
#### Technical Data

Connector contact	Au over Ni
Pull relief stud bolt	UNC 4-40
Ambient operating temperature	-20 ... +50 °C
Storage temperature	-40 ... +70 °C
Relative humidity	Max. 85 % (no condensation)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Conductor range	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG



## Interface Modules for D-Sub/HD D-Sub Connectors

### Female Connectors, for Mating Connectors with Solder Connection, 289 Series



#### \*Notice:

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with D-subminiature female connector, for mating connectors with solder connection, vertical insertion, double-row PCB terminal blocks, with mounting feet

Pole No.	Width	Item No.	Pack. Unit
9	38,0	289-455	1
15	53,5	289-456	1
25	79,0	289-457	1
37	120,0	289-458	1
50	157,0	289-459	1

Interface module, with D-subminiature female connector, for mating connectors with solder connection, vertical insertion, double-row PCB terminal blocks, mounting carrier

Pole No.	Width	Item No.	Pack. Unit
9	38,0	289-555	1
15	46,0	289-556	1
25	72,0	289-557	1
37	102,0	289-558	1
50	94,0	289-559	1

#### Technical Data

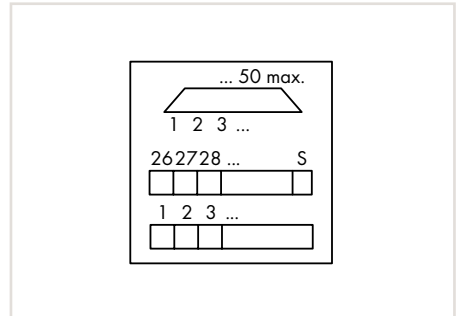
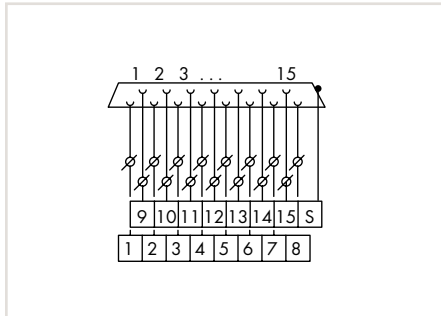
Operating voltage	30 VAC/50 VDC	100 VAC/125 VDC
Nominal current	1 A	2 A
Contact resistance	≤ 30 mΩ	≤ 30 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage	50 V	100 V
Rated surge voltage	0.8 kV	0.8 kV
Pollution degree	2	2
Protection type	IP00*	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	B x 19 x 63.5, height from upper-edge of DIN-rail	W x 34 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)	CAGE CLAMP® (WAGO 236 Series)

#### Accessories

Marker strips for mounting carrier	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
	white	709-198	1	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10			
Cover, transparent, type 1, 1 m long		709-153	10			

# Interface Modules for D-Sub/HD D-Sub Connectors

## Female Connectors, for Mating Connectors with Solder Connection, 289 Series



**\*Notice:**  
Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with D-subminiature female connector, double-deck PCB terminal blocks, mounting carrier, with solder pin

Pole No.	Width	Item No.	Pack. Unit
9	33,5	289-725	1
15	43,5	289-726	1

One solder pin per pole is available for testing and patching (except for shield contact).

Interface module, with D-subminiature female connector, for mating connectors with solder connection, vertical insertion, double-row PCB terminal blocks, mounting carrier, with shield connection

Pole No.	Width	Item No.	Pack. Unit
9	33,0	289-575	1
15	43,0	289-576	1
25	68,5	289-577	1
37	99,0	289-578	1

### Technical Data

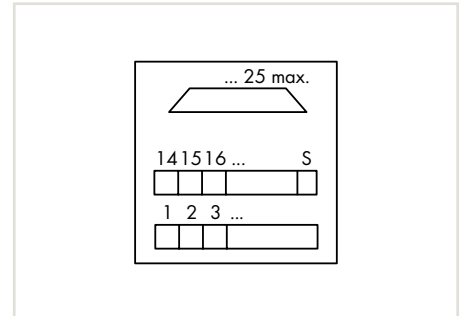
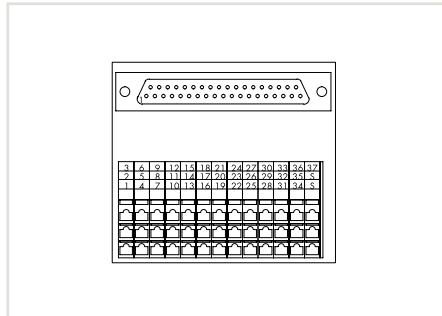
Operating voltage	30 VAC/50 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 48 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 736 Series)

Operating voltage	100 VAC/125 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 34 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)

### Accessories

Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10

Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1



Interface module, with D-subminiature female connector, for mating connectors with solder connection, vertical insertion, triple-deck PCB terminal blocks, mounting carrier, with shield connection

Pole No.	Width	Item No.	Pack. Unit
25	56,0	289-623	1
37	74,0	289-624	1

Interface module, with D-subminiature female connector, double-deck PCB terminal blocks, mounting carrier, with shield connection

Pole No.	Width	Item No.	Pack. Unit
9	33,0	289-650	1
25	68,5	289-652	1

6

**Technical Data**

Operating voltage	100 VAC/125 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 62 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 737 Series)

Operating voltage	100 VAC/125 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 48 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 736 Series)

Operating voltage	100 VAC/125 VDC
Nominal current	2 A
Contact resistance	≤ 30 mΩ
Performance level	2 / 200 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 48 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 736 Series)

**Accessories**

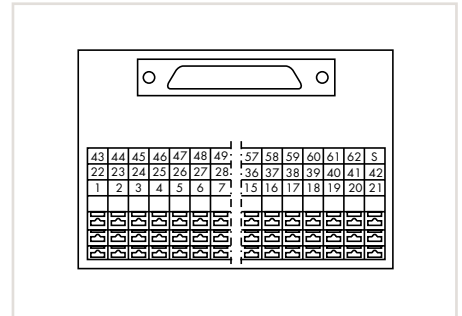
Marker strips for mounting carrier	
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Color	Item No.	Pack. Unit
white	709-198	1

Color	Item No.	Pack. Unit
white	709-198	1

# Interface Modules for D-Sub/HD D-Sub Connectors

## Female Connector, for Mating Connectors with Solder Connection, 289 Series



Interface module, with HD D-subminiature female connector, triple-deck PCB terminal blocks, mounting carrier

Pole No.	Width	Item No.	Pack. Unit
15	35	289-713	1
44	79	289-707	1
62	108	289-708	1

### Technical Data

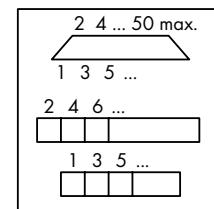
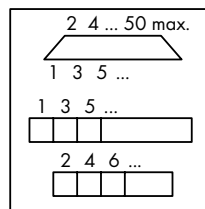
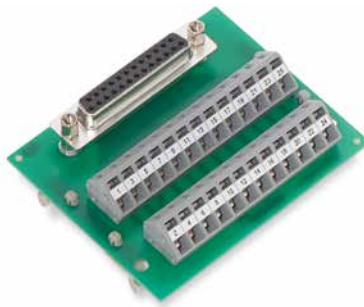
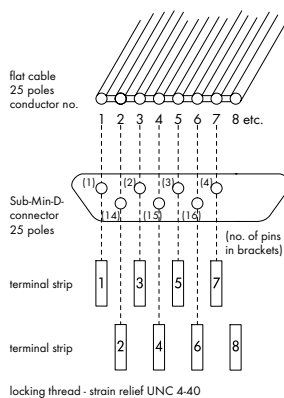
Operating voltage	100 VAC/125 VDC
Nominal current	1 A
Contact resistance	≤ 15 mΩ
Performance level	3 / 50 mating cycles
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 62 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 737 Series)

### Accessories

Marker strips for mounting carrier			
	Color	Item No.	Pack. Unit
	white	709-198	1

## Interface Modules for D-Sub/HD D-Sub Connectors

### Female Connector, for Mating Connectors with IDC, 289 Series



#### \*Notice:

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with D-subminiature female connector, for mating IDC connectors, vertical insertion, double-row PCB terminal blocks, with mounting feet

Pole No.	Width	Item No.	Pack. Unit
9	38,0	289-450	1
15	53,5	289-451	1
25	79,0	289-452	1
37	120,0	289-453	1
50	157,0	289-454	1

Interface module, with D-subminiature female connector, for mating IDC connectors, vertical insertion, double-row PCB terminal blocks, mounting carrier

Pole No.	Width	Item No.	Pack. Unit
9	38,0	289-550	1
15	46,0	289-551	1
25	72,0	289-552	1
37	102,0	289-553	1
50	94,0	289-554	1

#### Technical Data

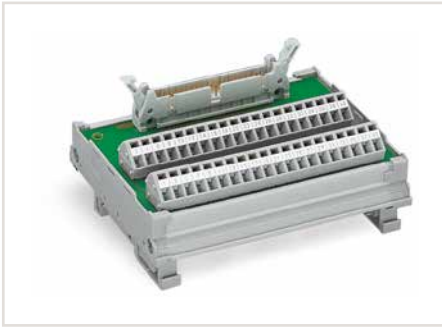
Operating voltage	30 VAC/50 VDC	100 VAC/125 VDC
Nominal current	1 A	2 A
Contact resistance	≤ 30 mΩ	≤ 30 mΩ
Performance level	2 / 200 mating cycles	2 / 200 mating cycles
Nominal voltage	50 V	100 V
Rated surge voltage	0.8 kV	0.8 kV
Pollution degree	2	2
Protection type	IP00*	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	B x 19 x 63.5, height from upper-edge of DIN-rail	W x 34 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)	CAGE CLAMP® (WAGO 236 Series)

#### Accessories

Marker strips for mounting carrier	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
	white	709-198	1	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10			
Cover, transparent, type 1, 1 m long		709-153	10			

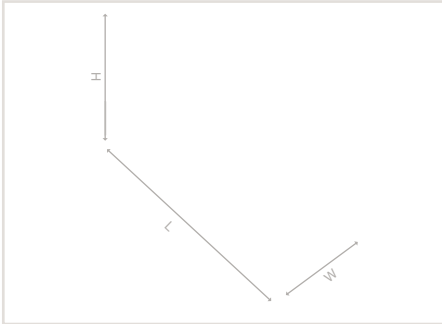
## Interface Modules for Pluggable Connectors per DIN 41651

### Male Connector, 289 Series

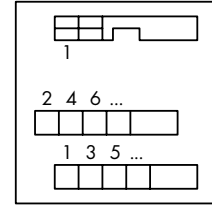
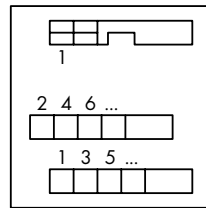
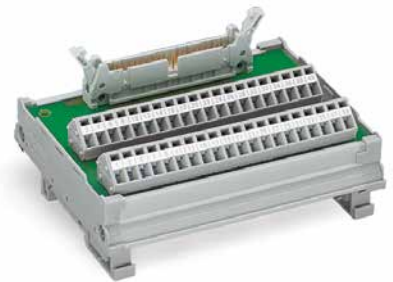
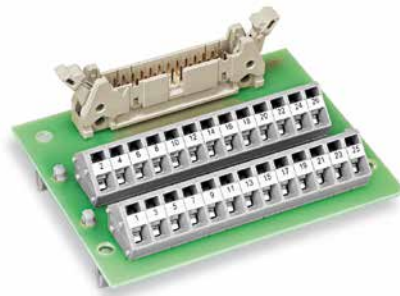


#### Technical Data

Nominal current	1 A
Connector contact	Au over Ni
Performance level	3 / 50 mating cycles
Ambient operating temperature	-20 ... +55 °C
Storage temperature	-40 ... +70 °C
Relative humidity	Max. 85 % (no condensation)
Conductor range	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch





**\*Notice:**

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with connector per DIN 41651, double-row PCB terminal blocks, with mounting feet

Pole No.	Width	Item No.	Pack. Unit
10	41,0	289-401	1
14	51,5	289-402	1
16	56,5	289-403	1
20	66,5	289-404	1
26	81,0	289-405	1
34	102,0	289-406	1
40	126,0	289-407	1
50	151,0	289-408	1
64	187,0	289-409	1

Interface module, with connector per DIN 41651, double-row PCB terminal blocks, mounting carrier

Pole No.	Width	Item No.	Pack. Unit
10	38,0	289-501	1
14	43,0	289-502	1
16	46,0	289-503	1
20	53,5	289-504	1
26	71,0	289-505	1
34	94,0	289-506	1
40	114,0	289-507	1
50	132,0	289-508	1
64	170,0	289-509	1
64	120,0	289-510	1

**Technical Data**

Operating voltage	30 VAC/50 VDC
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 28 x 63.5, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)

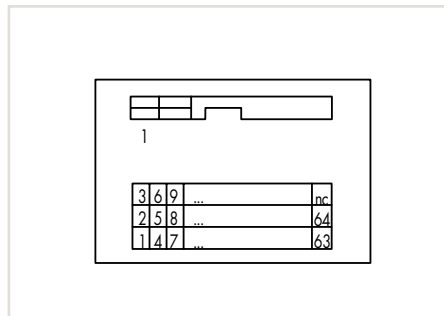
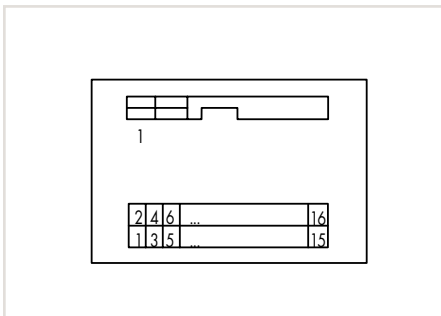
Operating voltage	100 VAC/125 VDC
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 36 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)

**Accessories**

	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
Marker strips for mounting carrier	white	709-198	1	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10			
Cover, transparent, type 1, 1 m long		709-153	10			

# Interface Modules for Pluggable Connectors per DIN 41651

## Male Connector, 289 Series



Interface module,  
with connector per DIN 41651,  
double-deck PCB terminal blocks,  
mounting carrier

Pole No.	Width	Item No.	Pack. Unit
10	35,0	289-611	1
14	40,0	289-612	1
16	45,0	289-613	1

Interface module,  
with connector per DIN 41651,  
triple-deck PCB terminal blocks,  
mounting carrier

Pole No.	Width	Item No.	Pack. Unit
20	47,0	289-614	1
26	55,0	289-615	1
34	65,0	289-616	1
40	74,0	289-617	1
50	88,0	289-618	1
64	114,0	289-619	1

### Technical Data

Operating voltage	100 VAC/125 VDC
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 48 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 736 Series)

Operating voltage	100 VAC/125 VDC
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 62 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 737 Series)

### Accessories

	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
Marker strips for mounting carrier	white	709-198	1	white	709-198	1

6



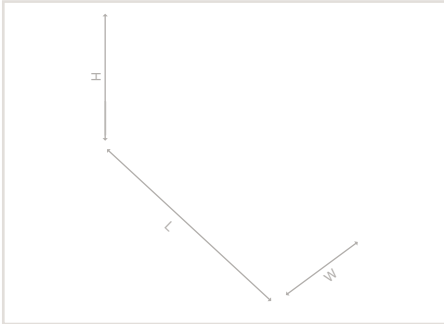
## Interface Modules for Pluggable Connectors per DIN 41612

### Female Connector, Type C, 289 Series

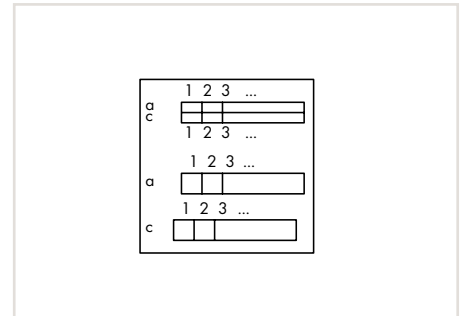
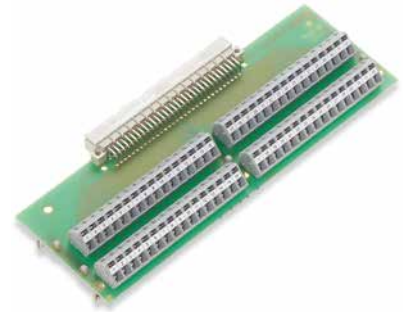
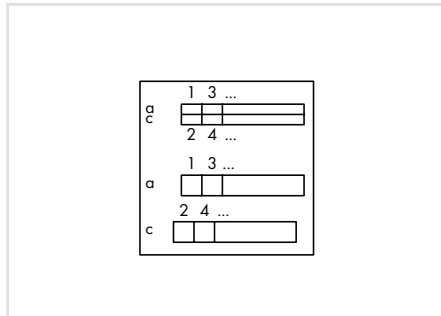
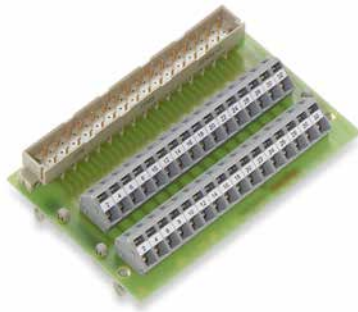


#### Technical Data

Nominal current	1 A
Connector contact	Copper alloy, gold plated
Contact resistance	≤ 20 mΩ
Performance level	2 / 400 mating cycles
Ambient operating temperature	-20 ... +50 °C
Storage temperature	-40 ... +70 °C
Relative humidity	Max. 85 % (no condensation)
Connection technology	CAGE CLAMP® (WAGO 236 Series)
Conductor range	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



## Interface Modules for Pluggable Connectors per DIN 41612 Female Connector, Type C, 289 Series



### \*Notice:

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with connector per DIN 41612, 64-pole, for mating IDC connectors, vertical insertion, double-row PCB terminal blocks, with mounting feet, type C

Pole No.	Width	Item No.	Pack. Unit
64	187,0	289-422	1

Interface module, with connector per DIN 41612, 64-pole, for mating connectors for solder connection, horizontal insertion, double-row PCB terminal blocks, with mounting feet, type C

Pole No.	Width	Item No.	Pack. Unit
64	187,0	289-427	1

### Technical Data

Operating voltage	30 VAC/50 VDC
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 21 x 63.5, height from upper-edge of DIN-rail

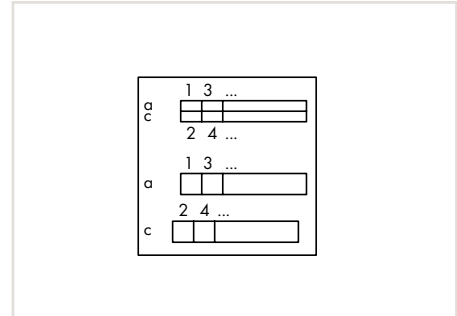
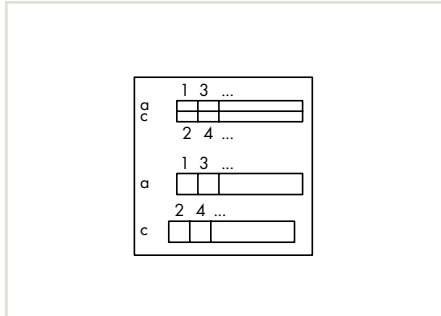
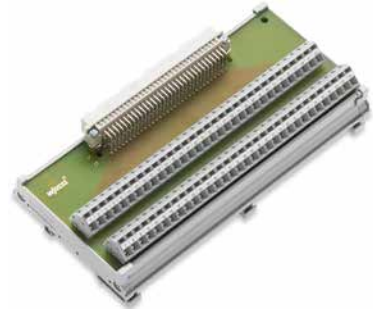
Operating voltage	30 VAC/50 VDC
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 21 x 63.5, height from upper-edge of DIN-rail

### Accessories

	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
Marker strips for mounting carrier	white	709-198	1	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10		709-153	10

# Interface Modules for Pluggable Connectors per DIN 41612

## Female Connector, Type C, 289 Series



**\*Notice:**  
Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with connector per DIN 41612, 64-pole, for mating IDC connectors, vertical insertion, double-row PCB terminal blocks, mounting carrier, type C

Interface module, with connector per DIN 41612, 64-pole, for mating IDC connectors, horizontal insertion, double-row PCB terminal blocks, mounting carrier, type C

Pole No.	Width	Item No.	Pack. Unit
64	171,0	289-522	1

Pole No.	Width	Item No.	Pack. Unit
64	171,0	289-523	1

### Technical Data

Operating voltage	100 VAC/125 VDC
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 34 x 85, height from upper-edge of DIN-rail

Operating voltage	30 VAC/50 VDC
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 34 x 85, height from upper-edge of DIN-rail

Operating voltage	30 VAC/50 VDC
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Protection type	IP00*
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 34 x 85, height from upper-edge of DIN-rail

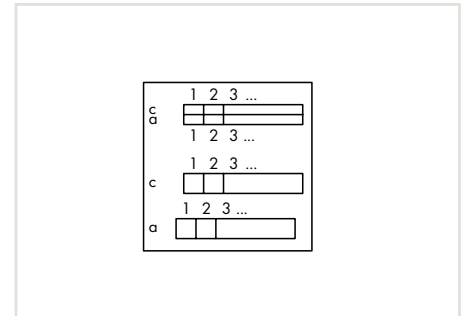
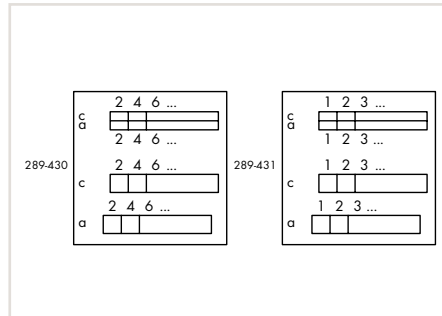
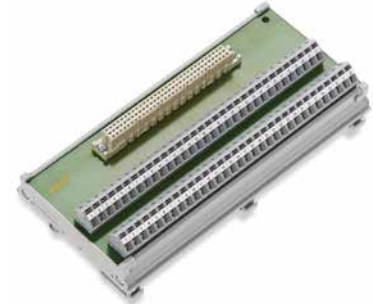
### Accessories

Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10

Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10

Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10

## Interface Modules for Pluggable Connectors per DIN 41612 Female Connector, Type C, 289 Series



### \*Notice:

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment builder, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation requirements for the particular application must be observed.

Interface module, with connector per DIN 41612, for mating connectors for solder connection, vertical insertion, double-row PCB terminal blocks, with mounting feet, type C

Pole No.	Width	Item No.	Pack. Unit
32	97,0	289-430	1
64	187,0	289-431	1

Interface module, with connector per DIN 41612, 64-pole, for mating connectors for solder connection, vertical insertion, double-row PCB terminal blocks, mounting carrier, type C

Pole No.	Width	Item No.	Pack. Unit
64	171,0	289-531	1

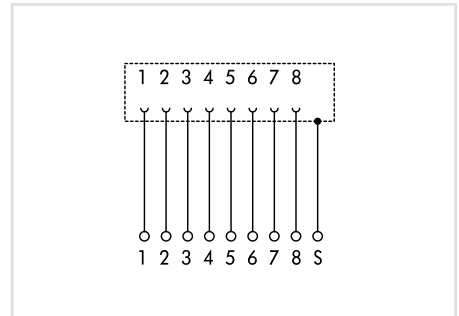
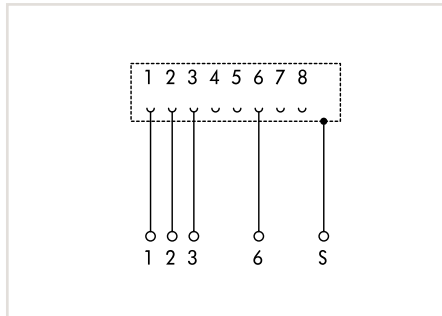
### Technical Data

Operating voltage	30 VAC/50 VDC	100 VAC/125 VDC
Nominal voltage	50 V	100 V
Rated surge voltage	0.8 kV	0.8 kV
Pollution degree	2	2
Protection type	IP00*	IP20
Dimensions incl. mounting carrier or feet (mm) W x H x D	W x 21 x 63.5, height from upper-edge of DIN-rail	W x 34 x 85, height from upper-edge of DIN-rail

### Accessories

Marker strips for mounting carrier	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
	white	709-198	1	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10			
Cover, transparent, type 1, 1 m long		709-153	10			

# Interface Modules for RJ-45 Pluggable Connectors 289 Series



RJ-45 interface module,  
with PCB terminal blocks, Cat. 5  
mounting carrier, with shield connection

	Item No.	Pack. Unit
	289-174	1
with shield clamping saddle	289-174/790-108	1

RJ-45 interface module,  
with double-row PCB terminal blocks, Cat. 5,  
mounting carrier, with shield connection

	Item No.	Pack. Unit
	289-175	1
with shield clamping saddle	289-175/790-108	1

6

### Technical Data

Connection cable	Cat. 5 (min.)
Transmission length (max.)	100 m
Pluggable connector	RJ-45, shielded
Mating cycles (min.)	500
Current load	≤ 1.5 A
Insulation resistance	> 500 MΩ
Dielectric strength, contact/contact	1 kV <sub>rms</sub>
Contact resistance	< 20 mΩ (typ.)
Ambient operating temperature	-40 ... +85 °C (actuation: -35 ... +85 °C)
Relative humidity	Max. 85 % (no condensation)
Dimensions incl. mounting carrier or feet (mm) W x H x D	24 x 40 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 739 Series)
Conductor range	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	ISO/IEC 11801: 2002-09; EN 55022

Connection cable	Cat. 5 (min.)
Transmission length (max.)	100 m
Pluggable connector	RJ-45, shielded
Mating cycles (min.)	500
Current load	≤ 1.5 A
Insulation resistance	> 500 MΩ
Dielectric strength, contact/contact	1 kV <sub>rms</sub>
Contact resistance	< 20 mΩ (typ.)
Ambient operating temperature	-40 ... +85 °C (actuation: -35 ... +85 °C)
Relative humidity	Max. 85 % (no condensation)
Dimensions incl. mounting carrier or feet (mm) W x H x D	24 x 40 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 739 Series)
Conductor range	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	ISO/IEC 11801: 2002-09; EN 55022

Connection cable	Cat. 5 (min.)
Transmission length (max.)	100 m
Pluggable connector	RJ-45, shielded
Mating cycles (min.)	500
Current load	≤ 1.5 A
Insulation resistance	> 500 MΩ
Dielectric strength, contact/contact	1 kV <sub>rms</sub>
Contact resistance	< 20 mΩ (typ.)
Ambient operating temperature	-40 ... +85 °C (actuation: -35 ... +85 °C)
Relative humidity	Max. 85 % (no condensation)
Dimensions incl. mounting carrier or feet (mm) W x H x D	24 x 40 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 739 Series)
Conductor range	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	ISO/IEC 11801: 2002-09; EN 55022

### Accessories

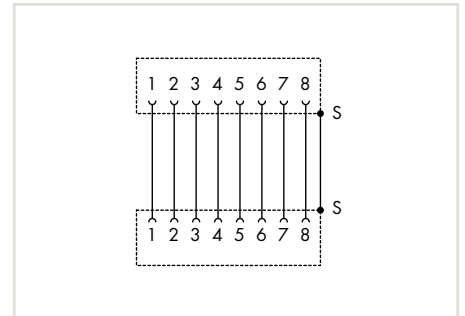
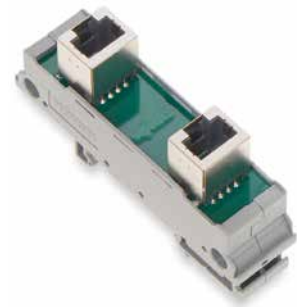
Marker strips for mounting carrier	Color	Item No.	Pack. Unit
	white	709-198	1
WAGO shield clamping saddle 11 mm wide; cable diameter up to 8 mm		790-108	50

Color	Item No.	Pack. Unit
white	709-198	1
	790-108	50

Color	Item No.	Pack. Unit
white	709-198	1
	790-108	50

WMB Multi marking system,  
see page 608





RJ-45 interface module, Cat. 5,  
mounting carrier

	Item No.	Pack. Unit
	289-172	1

#### Technical Data

Connection cable	Cat. 5 (min.)
Transmission length (max.)	100 m
Pluggable connector	RJ-45, shielded
Mating cycles (min.)	500
Current load	≤ 1.5 A
Voltage load	30 VAC/42 VDC
Insulation resistance	> 500 MΩ
Dielectric strength, contact/contact	1 kV <sub>rms</sub>
Contact resistance (typ.)	< 20 mΩ
WAGO shield clamping saddle	
Ambient operating temperature	-40 ... +85 °C
Relative humidity	Max. 85 % (no condensation)
Dimensions incl. mounting carrier or feet (mm) W x H x D	20.5 x 51 x 85, height from upper-edge of DIN-rail
Connection technology	
Conductor range	
Strip length	
Standards/approvals	ISO/IEC 11801: 2002-09; EN 55022

#### Accessories

Marker strips for mounting carrier			
	Color	Item No.	Pack. Unit
	white	709-198	1

## Interface Modules for RJ-45 Pluggable Connectors

### 289 Series



RJ-45 interface module,  
with IDC, Cat. 6,  
mounting carrier,  
with shield connection

Item No.	Pack. Unit
289-195	1

#### Technical Data

##### RJ-45 Base Module

Connection cable	Cat. 6 (min.)
Pluggable connector	1 x RJ-45/SC-RJ, shielded
Contact material	CuSn
Contact plating	> 0.76 µm Au over > 1.2 µm Ni
Contact resistance (typ.)	< 50 mΩ (at 20 °C)
Mating cycles (min.)	750
Pole No.	8
Connection technology	IDC connection
IDC surface treatment	CuSn, tin-plated
Conductor range	Solid: 0.2 ... 0.32 mm <sup>2</sup> / 24 ... 22 AWG Stranded: 0.2 ... 0.32 mm <sup>2</sup> / 26/7 ... 22/7 AWG
Strip length	0.8 ... 1.6 mm / 0.03 ... 0.06 inch
Shield contacting	Large area, via shield latch

##### Mounting Adapter

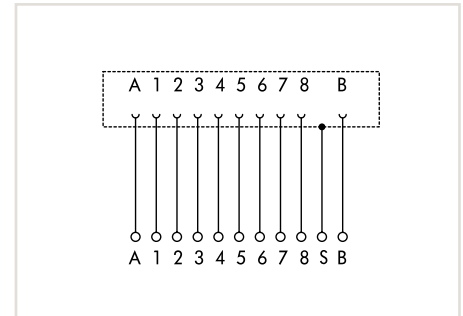
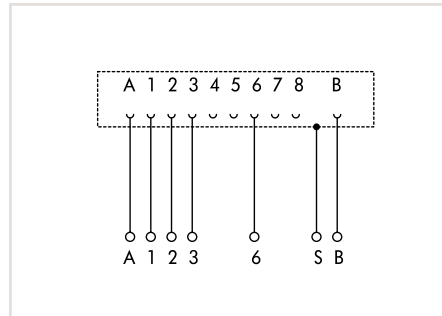
Housing color	gray
Shield	Bronze (CuSn <sub>6</sub> ), tin coating
Contact resistance	≤ 20 mΩ
Contact resistance	≤ 5 mΩ

##### General Specifications

Dimensions (mm) W x H x D	26.8 x 64.4 x 81.4, height from upper-edge of DIN-rail
Protection type	IP20
Ambient operating temperature	-10 ... +60 °C
Storage temperature	-40 ... +70 °C
Relative humidity	< 95 % (no condensation)
Standards/approvals	ISO/IEC 11801: 2011-06; IEC 60603-7; EN 50173-1:May 2011

# Interface Modules with Power Contacts for RJ-45 Pluggable Connectors

## 289 Series



RJ-45 interface module,  
with power contacts,  
PCB terminal blocks,  
Cat. 5, mounting carrier  
with shield connection,  
with shield clamping saddle

	Item No.	Pack. Unit
	289-178	1

RJ-45 interface module,  
with power contacts,  
double-row PCB terminal blocks,  
Cat. 5, mounting carrier,  
with shield connection,  
with shield clamping saddle

	Item No.	Pack. Unit
	289-179	1

### Technical Data

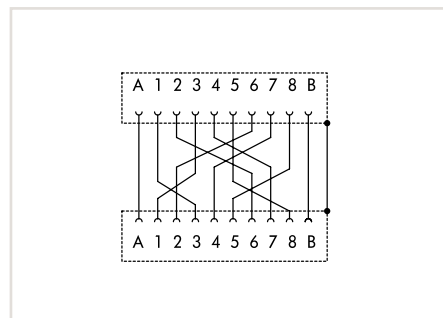
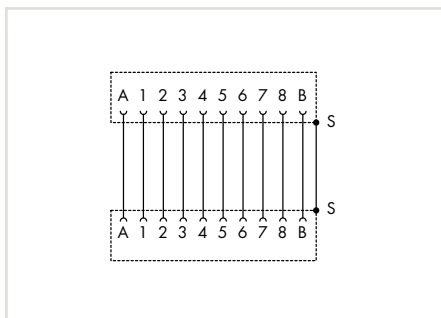
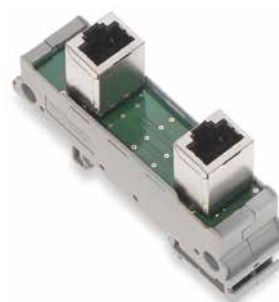
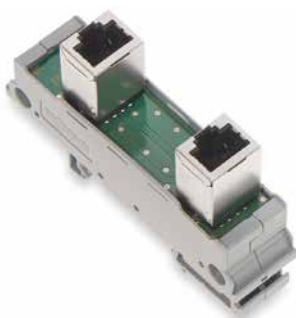
	289-178	289-179
Connection cable	Cat. 5 (min.)	Cat. 5 (min.)
Transmission length (max.)	100 m	100 m
Pluggable connector	RJ-45, shielded, with two additional power contacts	RJ-45, shielded, with two additional power contacts
Mating cycles (min.)	1000	1000
Current load	≤ 2.1 A	≤ 2.1 A
Voltage load	35 VAC/50 VDC	35 VAC/50 VDC
Insulation resistance	> 500 MΩ	> 500 MΩ
Dielectric strength, contact/contact	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Contact resistance (typ.)	40 mΩ (typ.)	< 40 mΩ
WAGO shield clamping saddle	11 mm wide; cable diameter up to 8 mm	11 mm wide; cable diameter up to 8 mm
Ambient operating temperature	-40 ... +85 °C (actuation: -35 ... +85 °C)	-40 ... +85 °C (actuation: -35 ... +85 °C)
Relative humidity	Max. 85 % (no condensation)	Max. 85 % (no condensation)
Dimensions incl. mounting carrier or feet (mm) W x H x D	30 x 67 x 85, height from upper-edge of DIN-rail	30 x 67 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 739 Series)	CAGE CLAMP® (WAGO 739 Series)
Conductor range	0.08 mm² ... 1.5 mm² / 28 ... 14 AWG	0.08 mm² ... 1.5 mm² / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	ISO/IEC 11801: 2002-09; EN 55022	ISO/IEC 11801: 2002-09; EN 55022

### Accessories

	Color	Item No.	Pack. Unit
Marker strips for mounting carrier	white	709-198	1

# Interface Modules with Power Contacts for RJ-45 Pluggable Connectors

## 289 Series



RJ-45 interface module, with power contacts, RJ-45, Cat. 5, mounting carrier

Item No.	Pack. Unit
289-176	1

Item No.	Pack. Unit
289-177	1

6

### Technical Data

Connection cable	Cat. 5 (min.)	Cat. 5 (min.)
Transmission length (max.)	100 m	100 m
Pluggable connector	RJ-45, shielded, with two additional power contacts	RJ-45, shielded, with two additional power contacts
Mating cycles (min.)	1000	1000
Current load	≤ 2.1 A	≤ 2.1 A
Voltage load	35 VAC/50 VDC	35 VAC/50 VDC
Insulation resistance	> 500 MΩ	> 500 MΩ
Dielectric strength, contact/contact	1 kV <sub>rms</sub>	1 kV <sub>rms</sub>
Contact resistance (typ.)	< 40 mΩ	< 40 mΩ (typ.)
WAGO shield clamping saddle		
Ambient operating temperature	-40 ... +85 °C	-40 ... +85 °C
Relative humidity	Max. 85 % (no condensation)	Max. 85 % (no condensation)
Dimensions incl. mounting carrier or feet (mm) W x H x D	30 x 51 x 85, height from upper-edge of DIN-rail	30 x 51 x 85, height from upper-edge of DIN-rail
Connection technology		
Conductor range		
Strip length		
Standards/approvals	ISO/IEC 11801: 2002-09; EN 55022	ISO/IEC 11801: 2002-09; EN 55022

### Accessories

Marker strips for mounting carrier	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
	white	709-198	1	white	709-198	1

WMB Multi marking system, see page 608



## Interface Modules

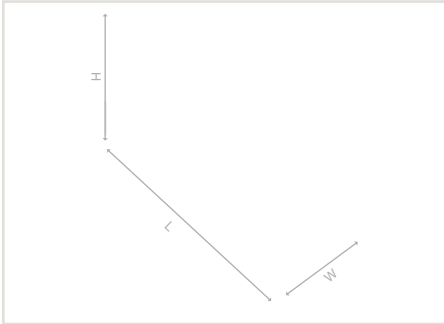
### Connection Modules for Sensors and Actuators

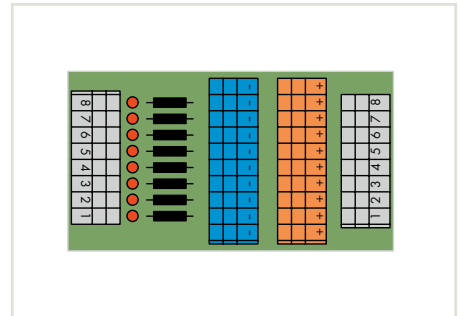
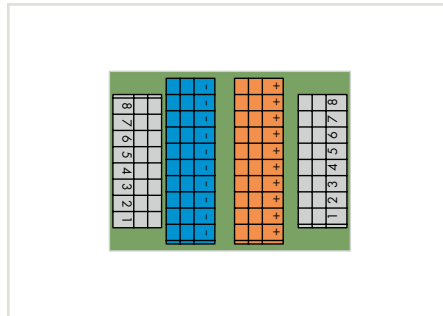
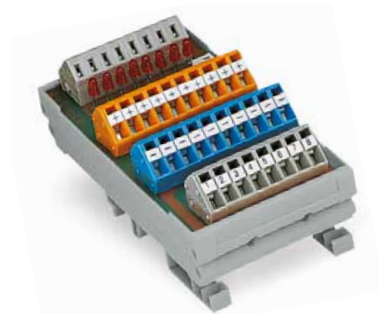
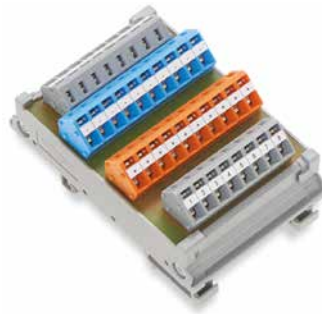
#### 289 Series



#### Technical Data

Max. current per connection	1 A
Max. total current	8 A
Ambient operating temperature	-20 ... +50 °C
Storage temperature	-40 ... +70 °C
Relative humidity	Max. 85 % (no condensation)
Connection technology	CAGE CLAMP® (WAGO 236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch





Sensor/actuator module,  
8-channel digital input,  
3-conductor,  
with mounting carrier

Item No.	Pack. Unit
289-664	1

Sensor/actuator module,  
8-channel digital input,  
3-conductor, high-side switching,  
red status indicator,  
with mounting carrier

Item No.	Pack. Unit
289-665	1

6

**Technical Data**

Operating voltage	100 VAC/125 VDC
Power consumption LED	
Nominal voltage	100 V
Rated surge voltage	0.8 kV
Pollution degree	2
Dimensions incl. mounting carrier or feet (mm) W x H x D	56 x 34 x 85, height from upper-edge of DIN-rail

Operating voltage	24 VDC (±10 %)
Power consumption LED	5.2 mA
Nominal voltage	
Rated surge voltage	
Pollution degree	2
Dimensions incl. mounting carrier or feet (mm) W x H x D	56 x 34 x 105, height from upper-edge of DIN-rail

**Accessories**

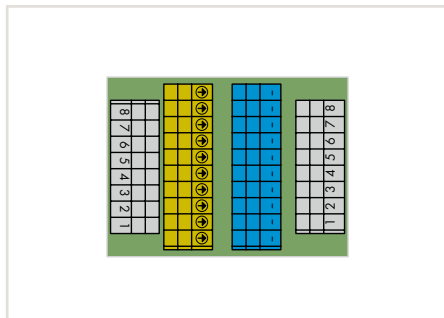
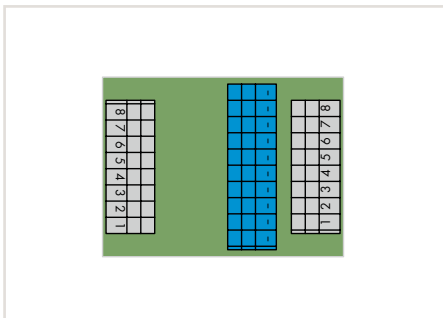
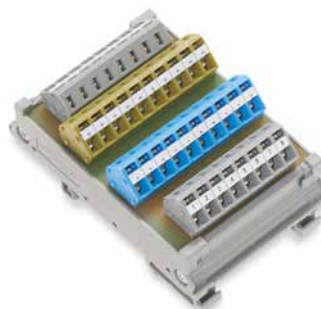
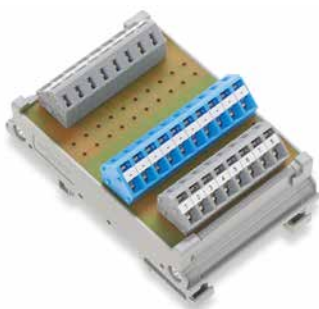
Color	Item No.	Pack. Unit
white	709-198	1

Color	Item No.	Pack. Unit
white	709-198	1

# Interface Modules

## Connection Modules for Sensors and Actuators

### 289 Series



Sensor/actuator module,  
8-channel digital output,  
2-conductor,  
mounting carrier

Item No.	Pack. Unit
289-667	1

Sensor/actuator module,  
8-channel digital output,  
2-conductor,  
with functional ground,  
mounting carrier

Item No.	Pack. Unit
289-671	1

#### Technical Data

Operating voltage	100 VAC/125 VDC	100 VAC/125 VDC
Power consumption LED		
Nominal voltage	100 V	100 V
Rated surge voltage	1.5 kV	1.5 kV
Pollution degree	2	2
Dimensions incl. mounting carrier or feet (mm) W x H x D	56 x 34 x 85, height from upper-edge of DIN-rail	56 x 34 x 105, height from upper-edge of DIN-rail

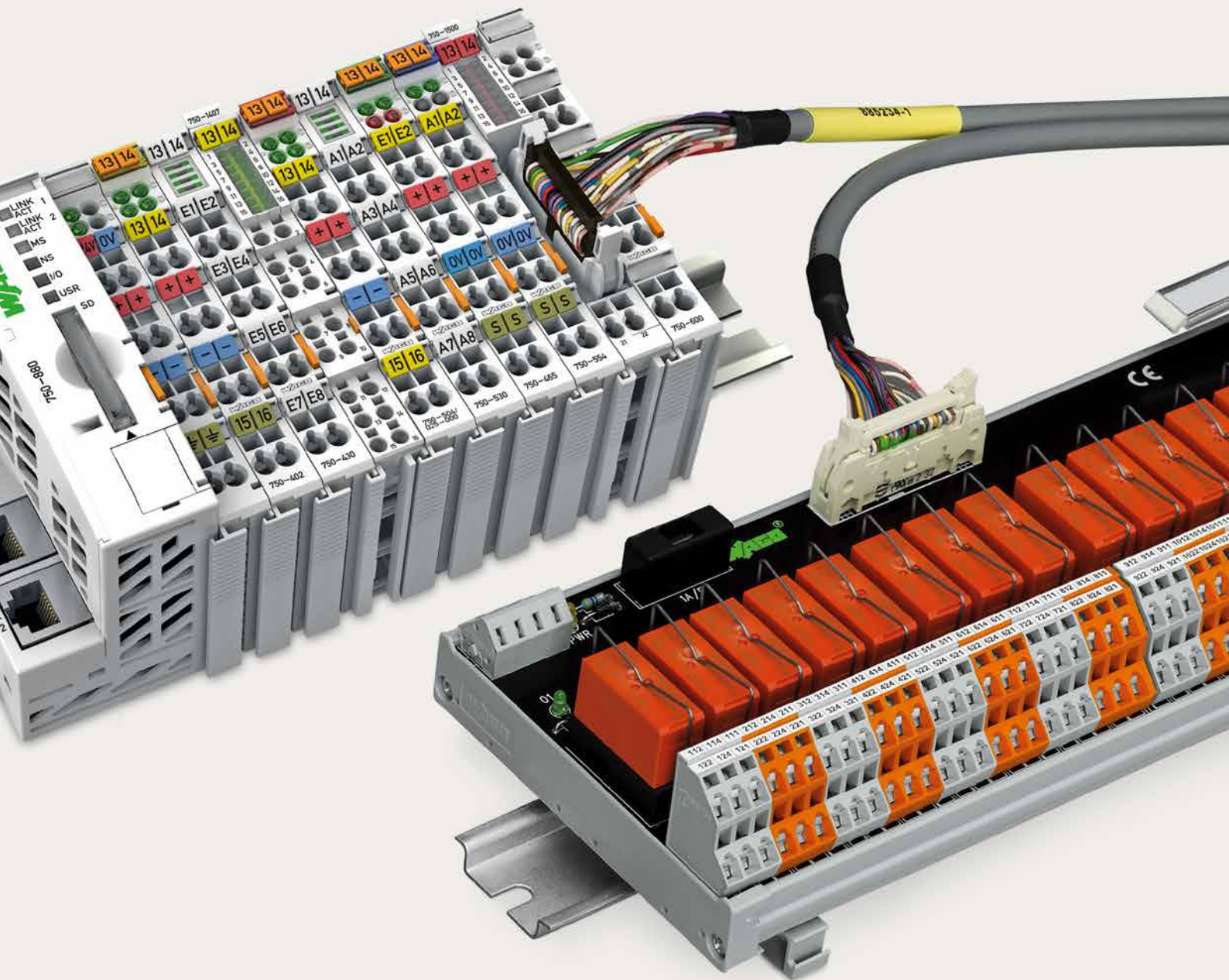
#### Accessories

Marker strips for mounting carrier	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
	white	709-198	1	white	709-198	1

6










# System Wiring

## System Wiring

	Page
	<b>WAGO System Wiring</b> Overview and Application Examples <span style="float: right;">466</span>
	<b>Interface Modules for System Wiring</b> Input/Output Modules, 704 Series <span style="float: right;">470</span> Interface Adapters, 857 Series <span style="float: right;">480</span>
	<b>WAGO Interface Cables, 706 Series</b> for 289, 704 Series <span style="float: right;">482</span> for Interface Adapters, 857 Series <span style="float: right;">488</span>

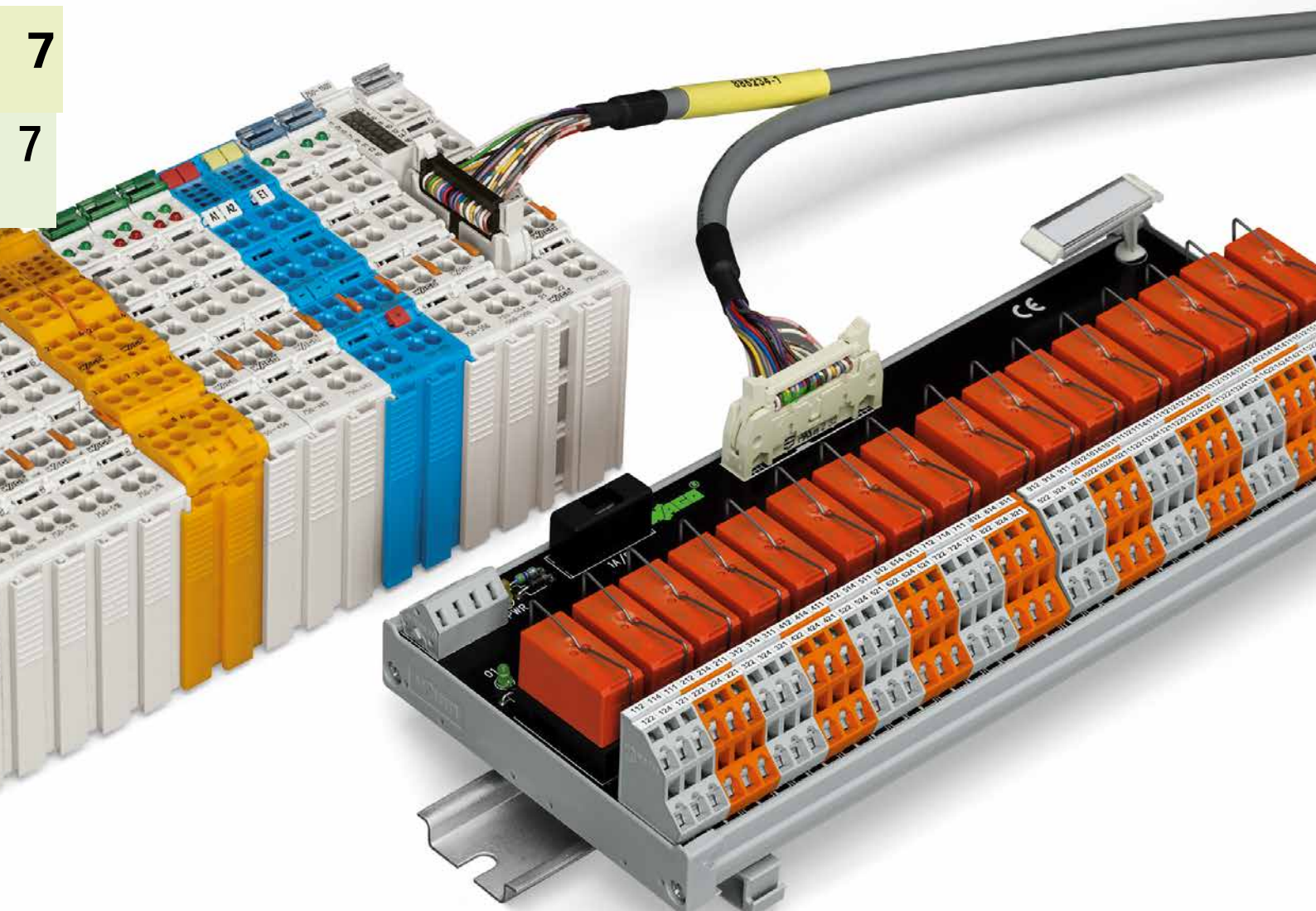
## WAGO System Wiring Overview and Application Examples

### 16-channel I/O module with interface module

The new 750-14xx and 750-15xx Series I/O Modules with cable connection acc. to DIN 41651 offer 16 digital channels in a module less than 1/2 inch (12mm) wide. Offering quick connections and a space-efficient design, the DIN-rail-mount interface modules simplify installation in confined areas and conveniently 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 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 socket-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. Six variants are available: two 16-channel input or output modules (one high-side and one low-side switching variant), as well as two versions combining 8 inputs and 8 outputs.



Application Example		
WAGO-I/O-SYSTEM 753	WAGO Interface Cables	WAGO Interface Modules
		
753-430 (x2), 16 DI	WAGO-753 T8ES, 2 m long 706-7753/301-200	T16ES 704-2004

WAGO-I/O-SYSTEM 753			WAGO Interface Cables		WAGO Interface Modules	
	I/O Modules		Item No.	Qty.	Type	Qty.
DI	753-430 (x1)	8 DI	706-7753/300-XXX	1	T8ES	1
	753-430 (x2)	16 DI	706-7753/301-XXX	1	T16ES	1
	753-431 (x1)	8 DI	706-7753/300-XXX	1	T8ES	1
	753-431 (x2)	16 DI	706-7753/301-XXX	1	T16ES	1
DO	753-530 (x1)	8 DO	706-7753/300-XXX	1	T8ES/T8S	1
	753-530 (x2)	16 DO	706-7753/301-XXX	1	T16ES/T16S	1

Overview over cables and interface modules see page 469!

WAGO-I/O-SYSTEM 750			WAGO Interface Cables		WAGO Interface Modules	
	I/O Modules		Item No.	Qty.	Type	Qty.
DI	750-1400	16 DI	706-3057/300-XXX	1	T16ES	1
DO	750-1500	16 DO	706-3057/300-XXX	1	T16ES	1
DI/DO	750-1502	8 DI/8 DO	706-7753/302-XXX	1	T8ES/T8S	1/1
	750-1502	8 DI/8 DO	706-3057/300-XXX	1	T16ES	1

Overview over cables and interface modules see page 469!

## WAGO System Wiring Overview and Application Examples

SIEMENS S7-300			WAGO Interface Cables		WAGO Interface Modules	
			Item No.	Qty.	Type	Qty.
CPU	6ES7 313-5BE01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-5BF03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-6BE01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-6BF03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-6CE01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 313-6CF03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 314-6BF01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 314-6BG03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
	6ES7 314-6CF01-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1
6ES7 314-6CG03-0AB0	16 DI/16 DO	706-2300/301-XXX	1	T16ES/T16S	1/1	
DI	6ES7 321-1BH02-0AA0	16 DI	706-2300/300-XXX	1	T16ES	1
	6ES7 321-1BH10-0AA0	16 DI	706-2300/300-XXX	1	T16ES	1
	6ES7 321-1BH80-0AA0	16 DI	706-2300/300-XXX	1	T16ES	1
	6ES7 321-1BL00-0AA0	32 DI	706-2300/301-XXX	1	T16ES	2
	6ES7 321-1BL80-0AA0	32 DI	706-2300/301-XXX	1	T16ES	2
	6ES7 321-1BP00-0AA0	64 DI	706-2300/100-XXX	2	T16ES	4
	6ES7 321-7BH01-0AA0	16 DI	706-2300/101-XXX	1	T16ES	1
	6ES7 321-7BH80-0AA0	16 DI	706-2300/101-XXX	1	T16ES	1
DO	6ES7 322-1BH01-0AA0	16 DO	706-2300/300-XXX	1	T16ES /T16S	1
	6ES7 322-1BH10-0AA0	16 DO	706-2300/300-XXX	1	T16ES /T16S	1
	6ES7 322-1BH80-0AA0	16 DO	706-2300/300-XXX	1	T16ES /T16S	1
	6ES7 322-1BL00-0AA0	32 DO	706-2300/301-XXX	1	T16ES /T16S	2
	6ES7 322-1BP00-0AA0	64 DO	706-2300/200-XXX	2	T16ES /T16S	4
	6ES7 322-1EH01-0AA0	16 DO	706-2300/300-XXX	1	T16ES /T16S	1
	6ES7 322-8BF00-0AB0	8 DO	706-2300/201-XXX	1	T8ES /T8S	1
AI	6ES7 331-7HF01-0AB0	8 AI	706-2300/400-XXX	1	A8ES	1
	6ES7 331-7KF02-0AB0	8 AI	706-2300/400-XXX	1	A8ES	1
	6ES7 331-7NF00-0AB0	8 AI	706-2300/404-XXX	1	A8ES	1
	6ES7 331-7NF10-0AB0	8 AI	706-2300/406-XXX	1	A8ES	1
	6ES7 331-7SF00-0AB0	8 AI	706-2300/400-XXX	1	A8ES	1
	6ES7 331-7TF00-0AB0	8 AI	706-2300/400-XXX	1	A8ES	1
AO	6ES7 332-5HB01-0AB0	2 AO	706-2300/500-XXX	1	A4ES	1
	6ES7 332-5HB81-0AB0	2 AO	706-2300/500-XXX	1	A4ES	1
	6ES7 332-5HD01-0AB0	4 AO	706-2300/500-XXX	1	A4ES	1
	6ES7 332-5HF00-0AB0	8 AO	706-2300/502-XXX	1	A8ES	1
	6ES7 332-7ND02-0AB0	4 AO	706-2300/500-XXX	1	A4ES	1
	6ES7 332-8TF00-0AB0	8 AO	706-2300/400-XXX	1	A8ES	1

### System Wiring for

- GEFANUC 90-30 / ALSPA 80-35
  - SCHNEIDER M340
  - SCHNEIDER QUANTUM
  - SCHNEIDER TSX 37 (Micro)
  - SCHNEIDER TSX 57 (Premium)
  - ROCKWELL COMPACT LOGIX (1769)
  - ROCKWELL CONTROL LOGIX (1756)
- contact factory

WAGO Interface Modules			
	Type	Item No.	
DI/DO	T8ES	289-611	See page 448
		704-2003	See page 471
	T8S	704-5003	See page 472
		704-5013	See page 472
	T16ES	289-614	See page 448
		704-2004	See page 473
		704-2024	See page 473
		704-2044	See page 474
		704-2054	See page 474
	T16S	704-5004	See page 476
		704-5014	See page 476
		704-5024	See page 475
		704-5034	See page 476
		704-5044	See page 475
		704-5054	See page 477
704-5064		See page 478	
704-5074		See page 477	
AI/AO	A4ES	704-8012	See page 479
	A8ES	704-8013	See page 479

WAGO Interface Cables			
	Type	Item No.	
DI/DO	WAGO-753 T8ES	706-7753/300-XXX	See www.wago.com
	WAGO-753 T16ES	706-7753/301-XXX	See www.wago.com
	WAGO-750 HE T8E8S	706-7753/302-XXX	See page 482
	TSX T16ES	706-3057/300-XXX	See page 482
	S7-300 T16E	706-2300/101-XXX	See page 484
	S7-300 2 x T16E	706-2300/100-XXX	See page 484
	S7-300 T8S	706-2300/201-XXX	See page 484
	S7-300 2 x T16S	706-2300/200-XXX	See page 484
	S7-300 T16ES	706-2300/300-XXX	See page 485
	S7-300 2 x T16ES	706-2300/301-XXX	See page 485
AI/AO	S7-300 A8E	706-2300/400-XXX	See page 485
	S7-300 A8E1	706-2300/404-XXX	See page 486
	S7-300 A8E2	706-2300/406-XXX	See page 486
	S7-300 A4SI	706-2300/500-XXX	See page 486
	S7-300 A8SI	706-2300/502-XXX	See page 486

Cable Length Overview			
Item No.	-XXX	Length	Example
706-2300/201-XXX	-100	1 m	706-2300/201-100
	-200	2 m	706-2300/201-200
	-300	3 m	706-2300/201-300

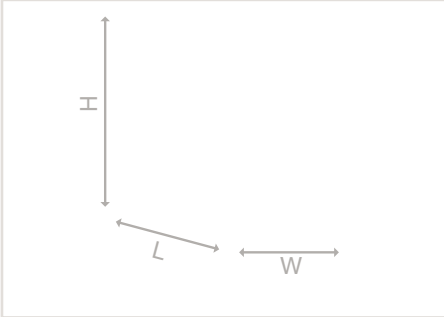
## Interface Modules for System Wiring

### 704 Series

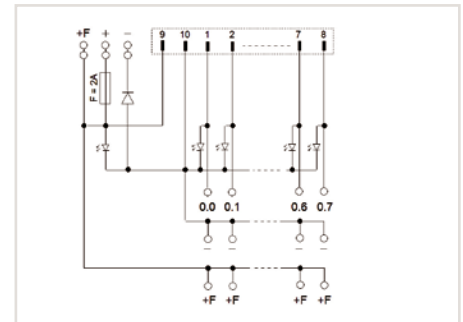


#### Technical Data

Storage temperature	-40 ... +70 °C
Relative humidity	max. 85 % (no condensation)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch







Interface module, for direct wiring (3 conductors)  
8 channels, with integrated status indication,  
10-pole connector acc. to DIN 41651

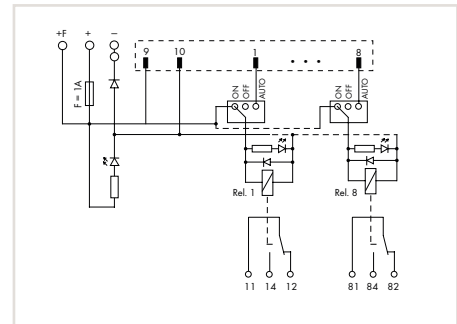
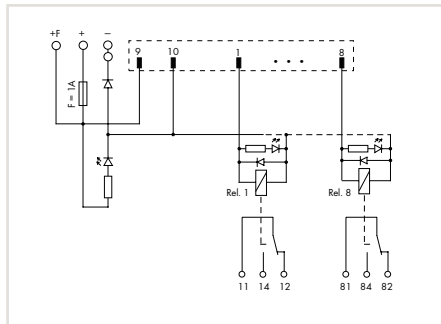
Item No.	Pack. Unit
704-2003	1

#### Technical Data

Operating voltage	24 VDC (±10 %)
Max. continuous current (per channel)	1 A
Max. total current	2 A
Fuse	2 A
Status indication	LED green : channel LED yellow: Power supply
Power consumption LED	5 mA
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	56 x 63 x 85, height from upper-edge of DIN-rail
Connection technology	Input: 10-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

# Interface Modules for System Wiring

## 704 Series



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

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

Item No.	Pack. Unit
704-5003	1

Item No.	Pack. Unit
704-5013	1

### Technical Data

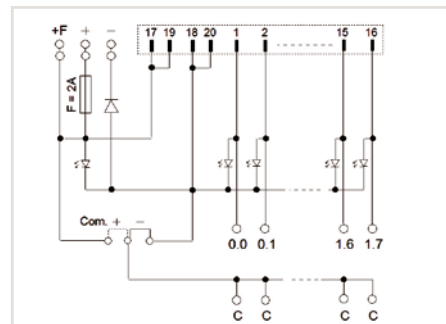
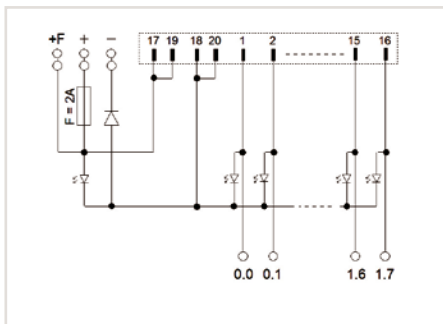
Contact material	AgNi 90/10
Contact type	1 changeover contact
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	5 A
Max. switching power (resistive)	1250 VA / 50 W
Status indication	LED green : Channel LED yellow: Power supply
Mechanical life	10 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output:
Pollution degree	2
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	70 x 65 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 10-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

Contact material	AgNi 90/10
Contact type	1 changeover contact
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	5 A
Max. switching power (resistive)	1250 VA / 50 W
Status indication	LED green : channel LED yellow: Power supply
Mechanical life	10 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output:
Pollution degree	2
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	75 x 65 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 10-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

### Accessories (Selection)

Accessories (Selection)	Item No.	Pack. Unit
Spare relay	857-152	1

Accessories (Selection)	Item No.	Pack. Unit
Spare relay	857-152	1



Interface module,  
for direct wiring (1 conductor)  
16 channels, with integrated status indication,  
20-pole connector acc. to DIN 41651

Interface module,  
for direct wiring (2 conductors)  
16 channels, with integrated status indication,  
20-pole connector acc. to DIN 41651

Item No.	Pack. Unit
704-2004	1

Item No.	Pack. Unit
704-2024	1

**Technical Data**

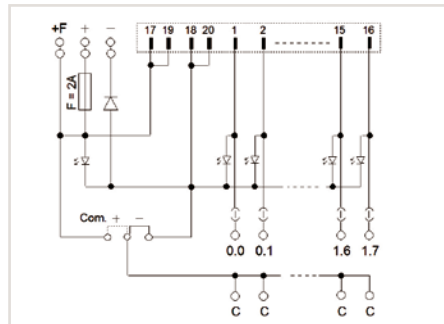
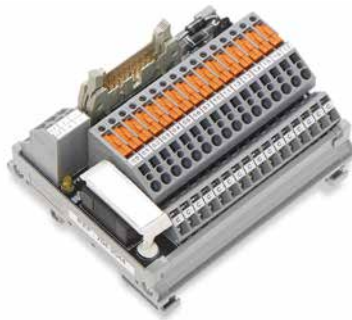
Operating voltage	24 VDC (±10 %)
Max. continuous current (per channel)	1 A
Max. total current	2 A
Fuse	2 A
Status indication	LED green : channel LED yellow: Power supply
Power consumption LED	5 mA
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	55 x 50 x 85, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

Operating voltage	24 VDC (±10 %)
Max. continuous current (per channel)	1 A
Max. total current	2 A
Fuse	2 A
Status indication	LED green : channel LED yellow: Power supply
Power consumption LED	5 mA
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	85 x 50 x 85, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

Operating voltage	24 VDC (±10 %)
Max. continuous current (per channel)	1 A
Max. total current	2 A
Fuse	2 A
Status indication	LED green : channel LED yellow: Power supply
Power consumption LED	5 mA
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	85 x 50 x 85, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

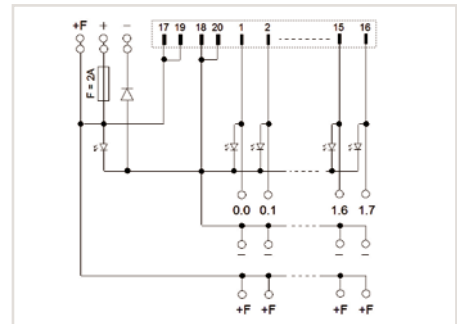
## Interface Modules for System Wiring

## 704 Series



Interface module,  
for direct wiring (2 conductors)  
16 channels, with integrated status indication,  
and disconnection  
20-pole connector acc. to DIN 41651

Item No.	Pack. Unit
704-2044	1



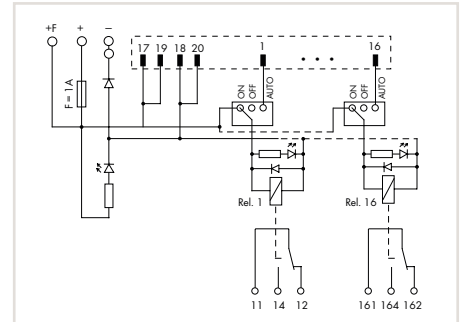
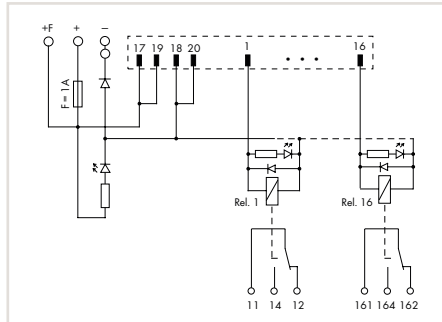
Interface module,  
for direct wiring (3 conductors)  
16 channels, with integrated status indication,  
20-pole connector acc. to DIN 41651

Item No.	Pack. Unit
704-2054	1

## Technical Data

Operating voltage	24 VDC ( $\pm 10\%$ )
Max. continuous current (per channel)	1 A
Max. total current	2 A
Fuse	2 A
Status indication	LED green : channel LED yellow: Power supply
Power consumption LED	5 mA
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	99 x 50 x 85, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

Operating voltage	24 VDC ( $\pm 10\%$ )
Max. continuous current (per channel)	1 A
Max. total current	2 A
Fuse	2 A
Status indication	LED green : channel LED yellow: Power supply
Power consumption LED	5 mA
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	85 x 50 x 85, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®



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

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

Item No.	Pack. Unit
704-5024	1

Item No.	Pack. Unit
704-5044	1

**Technical Data**

Contact material	AgNi 90/10
Contact type	1 changeover contact
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	5 A
Max. switching power (resistive)	1250 VA / 50 W
Status indication	LED green : channel LED yellow: Power supply
Mechanical life	10 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output:
Pollution degree	2
0.8 kV	-25 ... +40 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	111 x 65 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

Contact material	AgNi 90/10
Contact type	1 changeover contact
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	5 A
Max. switching power (resistive)	1250 VA / 50 W
Status indication	LED green : channel LED yellow: Power supply
Mechanical life	10 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output:
Pollution degree	2
0.8 kV	-25 ... +40 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	121 x 65 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

**Accessories (Selection)**

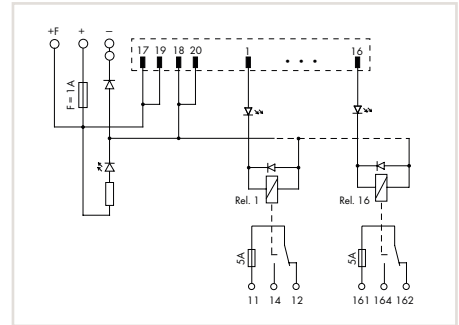
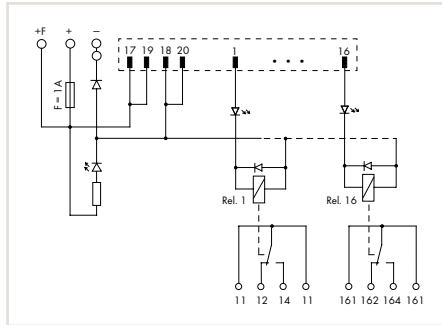
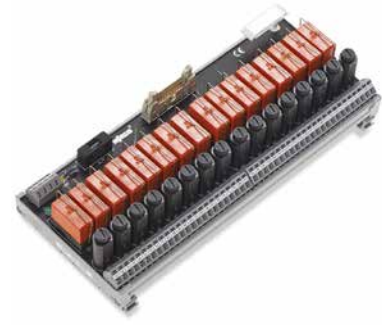
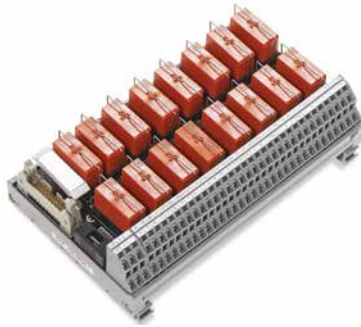
Spare relay	Item No.	Pack. Unit
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Spare relay	857-152	1
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Spare relay	857-152	1
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# Interface Modules for System Wiring

## 704 Series



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

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

	Item No.	Pack. Unit
with miniature switching relay	704-5004	1
without miniature switching relay	704-5014	

	Item No.	Pack. Unit
with miniature switching relay	704-5034	1

7

### Technical Data

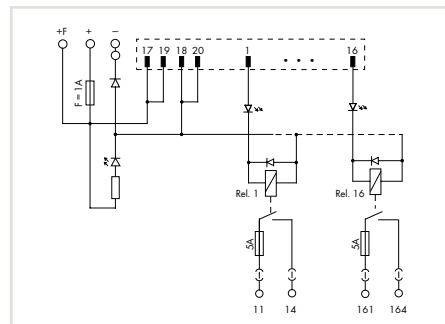
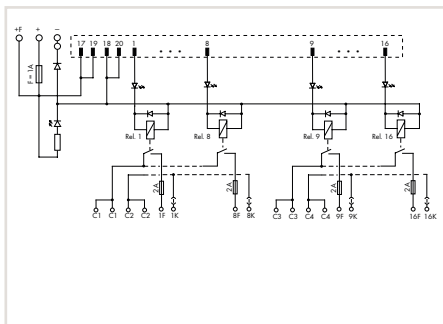
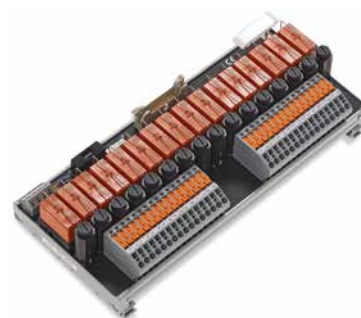
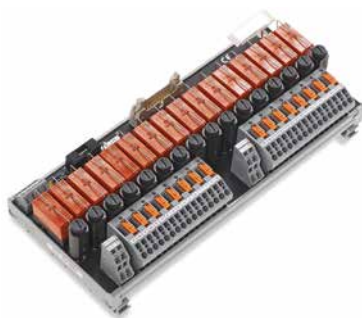
Contact material	AgNi 90/10
Contact type	1 changeover contact
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	5 A
Make current	2 s 16 A
Max. switching power (resistive)	1250 VA / 50 W
Status indication	LED green : channel LED yellow: Power supply
Mechanical life	30 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	3 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output:
Pollution degree	2
Ambient operating temperature	-25 ... +50 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	180 x 50 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

Contact material	AgNi 90/10
Contact type	1 changeover contact
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	5 A
Make current	2 s 16 A
Max. switching power (resistive)	1250 VA / 50 W
Status indication	LED green : channel LED yellow: Power supply
Mechanical life	30 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output: 5 A
Pollution degree	2
Ambient operating temperature	-25 ... +50 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	247 x 55 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

### Accessories (Selection)

	Item No.	Pack. Unit
Spare relay	857-154	1

	Item No.	Pack. Unit
Spare relay	857-154	1



Relay output module with miniature switching relay for 16 channels, 1 make contact each (1 a) with integrated status indication, disconnect terminal block and output fuse, 20-pole connector acc. to DIN 41651

Relay output module with miniature switching relay for 16 channels, 1 make contact each (1 a) with integrated status indication, double disconnect terminal block and output fuse, 20-pole connector acc. to DIN 41651

Item No.	Pack. Unit
704-5054	1

Item No.	Pack. Unit
704-5074	1

7

**Technical Data**

Contact material	AgNi 90/10
Contact type	1 make contact
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	2 A
Max. switching power (resistive)	500 VA / 50 W
Status indication	LED green : channel LED yellow: Power supply
Mechanical life	30 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output: 2 A
Pollution degree	2
Ambient operating temperature	-25 ... +50 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	240 x 55 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

Contact material	AgNi 90/10
Contact type	1 make contact
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	5 A
Max. switching power (resistive)	1250 VA / 50 W
Status indication	LED green : channel LED yellow: Power supply
Mechanical life	30 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output: 5 A
Pollution degree	2
Ambient operating temperature	-25 ... +50 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	240 x 55 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

**Accessories (Selection)**

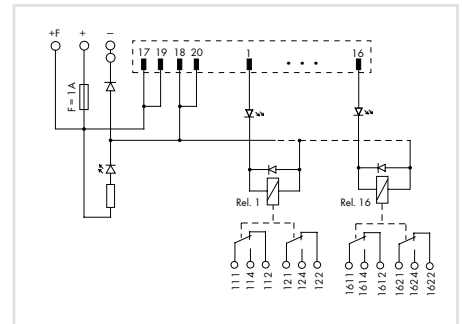
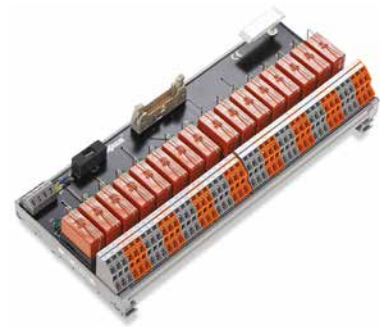
Spare relay	
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Item No.	Pack. Unit
857-154	1

Item No.	Pack. Unit
857-154	1

# Interface Modules for System Wiring

## 704 Series



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

Item No.	Pack. Unit
704-5064	1

### Technical Data

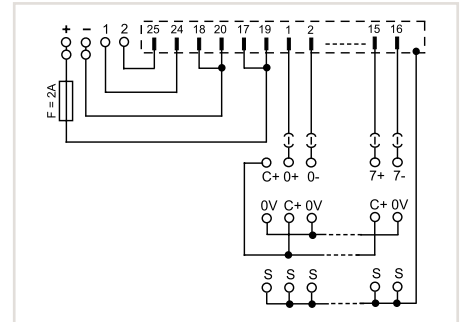
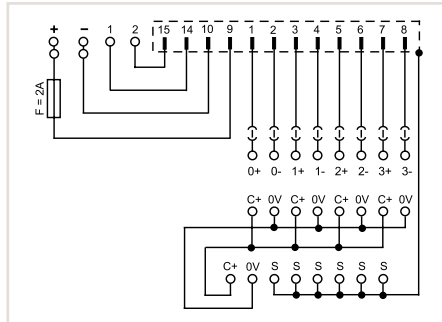
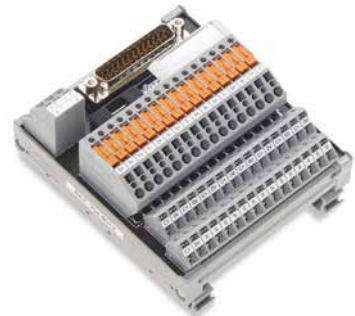
Contact material	AgNi 90/10
Contact type	2 changeover contacts
Operating voltage	24 VDC (±10 %)
Max. switching voltage	250 VAC/48 VDC
Max. continuous current	5 A
Make current	2 s 8 A
Max. switching power (resistive)	1000 VA / 50 W
Status indication	LED green : channel LED yellow: Power supply
Mechanical life	30 x 10 <sup>6</sup> switching operations
Dielectric strength contact-coil (AC, 1 min)	4 kV
Dielectric strength contact-contact	1 kV
Fuse	Supply: 1 A Relay output:
Pollution degree	2
Ambient operating temperature	-25 ... +50 °C
Dimensions incl. mounting carrier and relay (mm) W x H x D	247 x 50 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 20-pole connector acc. to DIN 41651 Output: CAGE CLAMP®

### Accessories (Selection)

Item No.	Pack. Unit
788-156	1

7





Interface module for analog sensors  
2 and 4 conductors)  
4 channels with integrated disconnection,  
15-pole D-sub male connector

Interface module,  
for analog sensors (2 and 4 conductors)  
8 channels, with integrated disconnection  
25-pole D-sub male connector

Item No.	Pack. Unit
704-8012	1

Item No.	Pack. Unit
704-8013	1

**Technical Data**

Operating voltage	48 VDC (max.)
Max. output current (per channel)	1 A
Fuse	2 A (supply)
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	66 x 50 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 15-pole D-Sub male connector Output: CAGE CLAMP®

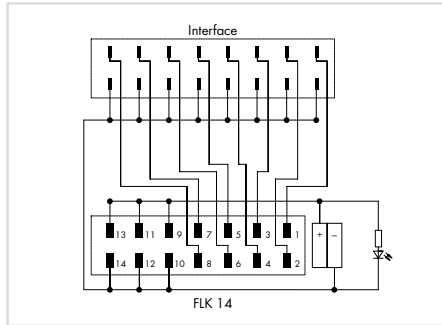
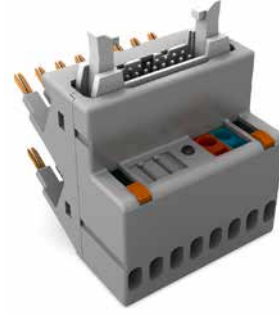
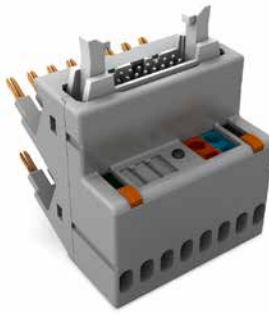
Operating voltage	48 VDC (max.)
Max. output current (per channel)	1 A
Fuse	2 A (supply)
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	92 x 50 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 25-pole D-Sub male connector Output: CAGE CLAMP®

Operating voltage	48 VDC (max.)
Max. output current (per channel)	1 A
Fuse	2 A (supply)
Nominal voltage	50 V
Rated surge voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Dimensions incl. mounting carrier (mm) W x H x D	92 x 50 x 105, height from upper-edge of DIN-rail
Connection technology	Input: 25-pole D-Sub male connector Output: CAGE CLAMP®

# Interface Modules for System Wiring

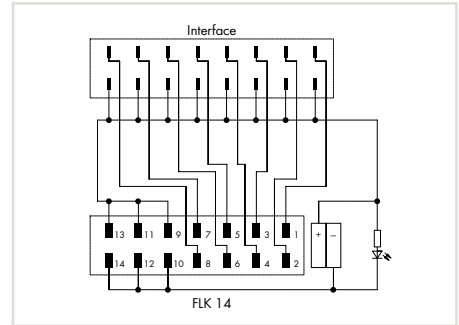
## Interface Adapter

### 857 Series



8-channel adapter with 14-pole connector acc. to DIN 41651, high-side switching input

	Item No.	Pack. Unit
	857-981	1



8-channel adapter with 14-pole connector acc. to DIN 41651, high-side switching output

	Item No.	Pack. Unit
	857-982	1

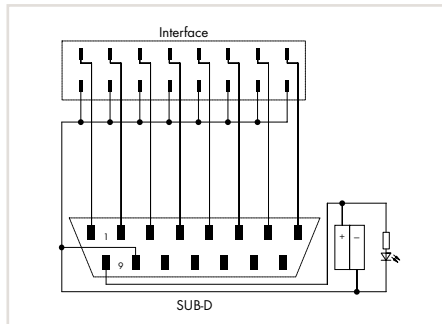
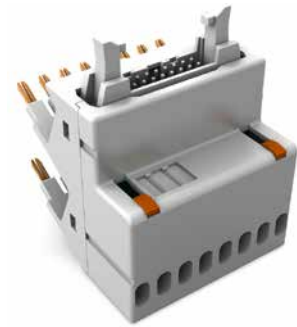
7

#### Technical Data

Connection type, signal level	14-pole connector acc. to DIN 41651
Performance level	3
Contact resistance	≤ 20 mΩ
Current carrying capacity	1 A
Test voltage	500 V / 50 Hz / 1 min.
Nominal supply voltage U <sub>N</sub>	24 VDC
Supply voltage range	16.8 ... 31.2 V
Max. total current	3 A
Status indication	LED, green
Connection type, supply	CAGE CLAMP® (231 Series)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch

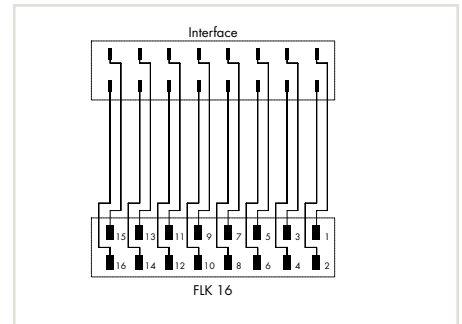
Connection type, signal level	14-pole connector acc. to DIN 41651
Performance level	3
Contact resistance	≤ 20 mΩ
Current carrying capacity	1 A
Test voltage	500 V / 50 Hz / 1 min.
Nominal supply voltage U <sub>N</sub>	24 VDC
Supply voltage range	16.8 ... 31.2 V
Max. total current	3 A
Status indication	LED, green
Connection type, supply	CAGE CLAMP® (231 Series)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch

Connection type, signal level	14-pole connector acc. to DIN 41651
Performance level	3
Contact resistance	≤ 20 mΩ
Current carrying capacity	1 A
Test voltage	500 V / 50 Hz / 1 min.
Nominal supply voltage U <sub>N</sub>	24 VDC
Supply voltage range	16.8 ... 31.2 V
Max. total current	3 A
Status indication	LED, green
Connection type, supply	CAGE CLAMP® (231 Series)
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



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

Item No.	Pack. Unit
857-986	1



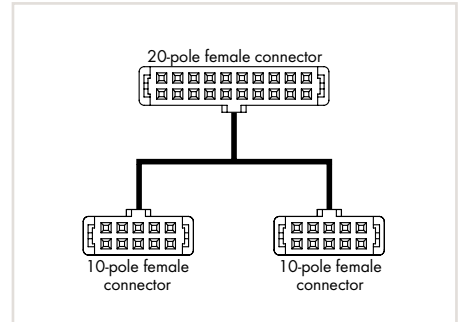
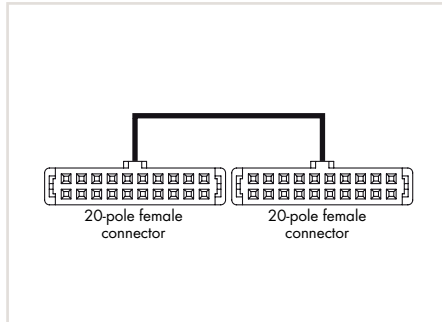
8-channel adapter with 16-pole connector acc. to DIN 41651, analog

Item No.	Pack. Unit
857-980	1

**Technical Data**

Connection type, signal level	15-pole D-sub male connector	16-pole connector acc. to DIN 41651
Performance level	2	3
Contact resistance	≤ 10 mΩ	≤ 20 mΩ
Current carrying capacity	1 A	1 A
Test voltage	500 V / 50 Hz / 1 min.	500 V / 50 Hz / 1 min.
Nominal supply voltage U <sub>N</sub>	24 VDC	
Supply voltage range	16.8 ... 31.2 V	
Max. total current	3 A	
Status indication	LED, green	
Connection type, supply	CAGE CLAMP® (231 Series)	
Cross sections	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG	
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch	
Overvoltage category		III
Pollution degree		2

# WAGO Interface Cables for 289, 704 Series, in Connection with WAGO-I/O-SYSTEM 750 706 Series



WAGO Interface Cable,  
20/20

Length	Item No.	Pack. Unit
1 m	706-3057/300-100	1
2 m	706-3057/300-200	1
3 m	706-3057/300-300	1

WAGO's Interface Cables provide fast and easy connection of WAGO I/O Modules equipped with a HE 10 pluggable connector (750-1400, -1402, -1500, -1501, -1502) to appropriate interface or relay modules (16-channel) featuring a 20-pole HE 10 pluggable connector.

WAGO Interface Cable,  
20/2x10

Length	Item No.	Pack. Unit
1 m	706-7753/302-100	1
2 m	706-7753/302-200	1

WAGO's Interface Cables provide fast and easy connection of WAGO I/O Modules equipped with a HE 10 pluggable connector (750-1400, -1402, -1500, -1501, -1502) to appropriate interface or relay modules featuring a 10-pole HE 10 pluggable connector. For example, this cable connects two relay modules (8-channel) to a WAGO I/O Module.

### Technical Data

Ports	2 x 20-pole connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

Ports	1 x 20-pole / 2 x 10-pole connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

Ports	1 x 20-pole / 2 x 10-pole connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

7



# WAGO Interface Cables for 289, 704 Series, in Connection with Siemens S7-300 706 Series



WAGO Interface Cable, 2 x T16E		
Length	Item No.	Pack. Unit
1 m	706-2300/100-100	1
2 m	706-2300/100-200	1
3 m	706-2300/100-300	1

WAGO Interface Cable, T16E		
Length	Item No.	Pack. Unit
1 m	706-2300/101-100	1
2 m	706-2300/101-200	1
3 m	706-2300/101-300	1

**Technical Data**

Ports	1 x Fujitsu FCN-367-J40 2 x 20-pole pluggable connector per DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Operating voltage	60 V
Current per channel	1 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20

Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 20-pole pluggable connector per DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Operating voltage	60 V
Current per channel	1 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20

7



Similar to pictured cable

WAGO Interface Cable, 2 x T16S		
Length	Item No.	Pack. Unit
1 m	706-2300/200-100	1
2 m	706-2300/200-200	1
3 m	706-2300/200-300	1

WAGO Interface Cable, T8S		
Length	Item No.	Pack. Unit
1 m	706-2300/201-100	1
2 m	706-2300/201-200	1
3 m	706-2300/201-300	1

**Technical Data**

Ports	1 x Fujitsu FCN-367-J40 2 x 20-pole pluggable connector per DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Operating voltage	60 V
Current per channel	1 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20

Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 10-pole pluggable connector per DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Operating voltage	60 V
Current per channel	1 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20



WAGO Interface Cable, T16ES		
Length	Item No.	Pack. Unit
1 m	706-2300/300-100	1
2 m	706-2300/300-200	1
3 m	706-2300/300-300	1



WAGO Interface Cable, 2 x T16ES		
Length	Item No.	Pack. Unit
1 m	706-2300/301-100	1
2 m	706-2300/301-200	1
3 m	706-2300/301-300	1

#### Technical Data

Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 20-pole pluggable connector per DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Operating voltage	60 V
Current per channel	1 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20

Ports	1 x Siemens 6ES7-392-1BM00-0AA0 2 x 20-pole pluggable connector per DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Operating voltage	60 V
Current per channel	1 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20



WAGO Interface Cable, A8E		
Length	Item No.	Pack. Unit
1 m	706-2300/400-100	1
2 m	706-2300/400-200	1
3 m	706-2300/400-300	1

#### Technical Data

Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 25-pole D-subminiature female connector
Wire cross-section	0.25 mm <sup>2</sup> Li YCY
Color code	Per DIN VDE 47100
Operating voltage	35 V
Current per channel	2 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20

# WAGO Interface Cables for 289, 704 Series, in Connection with Siemens S7-300 706 Series



WAGO Interface Cable, A8E1		
Length	Item No.	Pack. Unit
1 m	706-2300/404-100	1
2 m	706-2300/404-200	1
3 m	706-2300/404-300	1

WAGO Interface Cable, A8E2		
Length	Item No.	Pack. Unit
1 m	706-2300/406-100	1
2 m	706-2300/406-200	1
3 m	706-2300/406-300	1

**Technical Data**

Ports	1 x Siemens 6ES7-392-1BM00-0AA0 1 x 25-pole D-subminiature female connector
Wire cross-section	0.25 mm <sup>2</sup> Li YCY
Color code	Per DIN VDE 47100
Operating voltage	35 V
Current per channel	2 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20

Ports	1 x Siemens 6ES7-392-1BM00-0AA0 1 x 25-pole D-subminiature female connector
Wire cross-section	0.25 mm <sup>2</sup> Li YCY
Color code	Per DIN VDE 47100
Operating voltage	35 V
Current per channel	2 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20

7



WAGO Interface Cable, A4SI		
Length	Item No.	Pack. Unit
1 m	706-2300/500-100	1
2 m	706-2300/500-200	1
3 m	706-2300/500-300	1

WAGO Interface Cable, A8SI		
Length	Item No.	Pack. Unit
1 m	706-2300/502-100	1
2 m	706-2300/502-200	1
3 m	706-2300/502-300	1

**Technical Data**

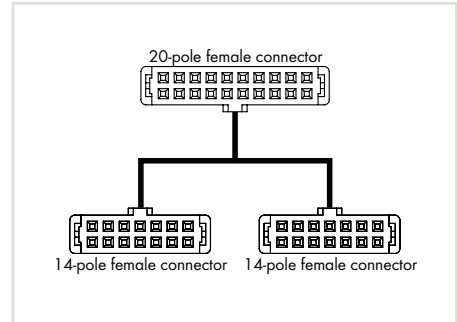
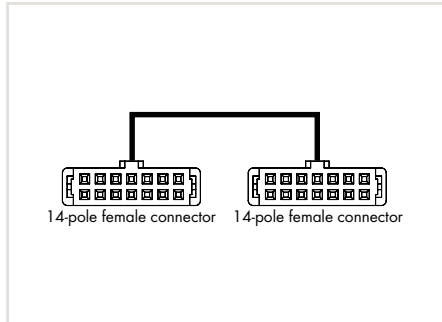
Ports	1 x Siemens 6ES7-392-1BJ00-0AA0 1 x 15-pole D-subminiature female connector
Wire cross-section	0.25 mm <sup>2</sup> Li YCY
Color code	Per DIN VDE 47100
Operating voltage	35 V
Current per channel	2 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20

Ports	1 x Siemens 6ES7-392-1BM00-0AA0 1 x 25-pole D-subminiature female connector
Wire cross-section	0.25 mm <sup>2</sup> Li YCY
Color code	Per DIN VDE 47100
Operating voltage	35 V
Current per channel	2 A (max.)
Operating temperature	-20 ... +50 °C
Protection type	IP20





# WAGO Interface Cables for Interface Adapters, 857 Series 706 Series



WAGO Interface Cable, 14/14		
Length	Item No.	Pack. Unit
1 m	706-753/300-100	1
2 m	706-753/300-200	1
3 m	706-753/300-300	1

WAGO Interface Cable, 20/2x14		
Length	Item No.	Pack. Unit
1 m	706-7753/304-100	1
2 m	706-7753/304-200	1
3 m	706-7753/304-300	1

WAGO's Interface Cables provide fast and easy connection of WAGO I/O Modules equipped with pluggable 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)

Suitable for system wiring when combined with WAGO's Interface Adapter (Item No. 857-981 and 857-982)

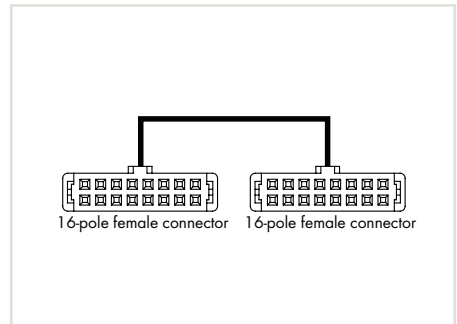
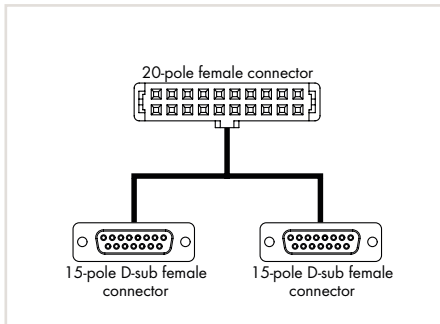
Suitable for system wiring when combined with WAGO's Interface Adapter (Item No. 857-981 and 857-982)

**Technical Data**

Ports	2 x 14-pole pluggable connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

Ports	1 x 20-pole pluggable connector / 2 x 14-pole pluggable connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

7



**WAGO Interface Cable, 20/2x15**

Length	Item No.	Pack. Unit
1 m	706-7753/306-100	1
2 m	706-7753/306-200	1
3 m	706-7753/306-300	1

**WAGO Interface Cable, 16/16**

Length	Item No.	Pack. Unit
1 m	706-753/301-100	1
2 m	706-753/301-200	1
3 m	706-753/301-300	1

WAGO's Interface Cables provide fast and easy connection of WAGO I/O Modules equipped with pluggable connectors. The following WAGO I/O Modules and D-sub Adapters are compatible:  
750-1500 (16 DO) --> 857-986 (DO)

Suitable for system wiring when combined with WAGO's Interface Adapter (Item No. 857-986)

Suitable for system wiring when combined with WAGO's Interface Adapter (Item No. 857-980)

**Technical Data**

Ports	1 x 20-pole pluggable connector per DIN 41651 / 2 x 15-pole D-sub female connector per DIN 41652
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

Ports	2 x 16-pole pluggable connector acc. to DIN 41651
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

## WAGO Interface Cables for Interface Adapters, 857 Series 706 Series



Color coding acc. to DIN VDE 47100		HE 10 14-pole
		Contact number
white		1
brown		2
green		3
yellow		4
grey		5
pink		6
blue		7
red		8
black		9
violet		10

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

WAGO Interface Cable, 10-pole/free open end		
Length	Item No.	Pack. Unit
2 m	706-100/1301-200	1

WAGO Interface Cable, 14-pole/one free cable end		
Length	Item No.	Pack. Unit
2 m	706-100/1303-200	1

### Technical Data

Ports	10-pole HE 10 pluggable connector/open end
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

Ports	14-pole HE 10 pluggable connector/open end
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20



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

Color coding acc. to DIN VDE 47100		HE 10 20-pole Contact number
white		1
brown		2
green		3
yellow		4
grey		5
pink		6
blue		7
red		8
black		9
violet		10
grey/pink		11
red/blue		12
white/green		13
brown/green		14
white/yellow		15
yellow/brown		16
white/grey		17
grey/brown		18
white/pink		19
pink/brown		20

**WAGO Interface Cable,  
16-pole/one free open end**

Length	Item No.	Pack. Unit
2 m	706-100/1602-200	1

**WAGO Interface Cable,  
20-pole/free open end**

Length	Item No.	Pack. Unit
2 m	706-100/1300-200	1

**Technical Data**







Ports	16-pole HE 10 pluggable connector/open end
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20

Ports	20-pole HE 10 pluggable connector/open end
Wire cross-section	0.14 mm <sup>2</sup> LiYY
Color code	Per DIN VDE 47100
Current per channel	1 A (max.)
Operating temperature	-25 ... +70 °C
Protection type	IP20



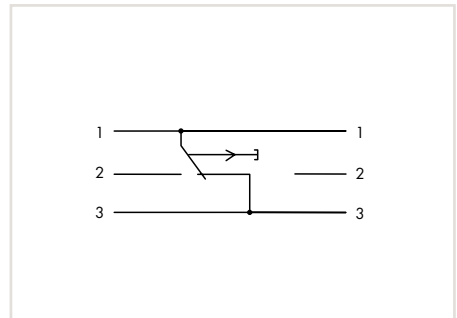
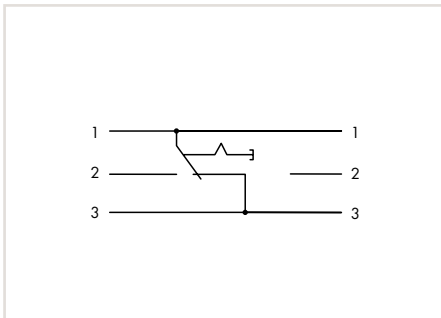
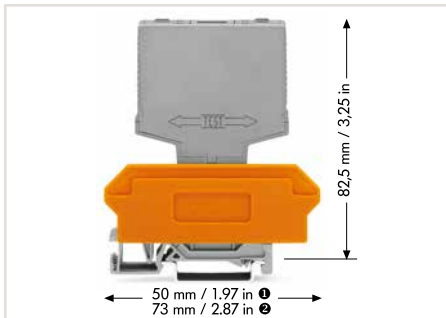
## Interface Modules with Specialty Functions

## Interface Modules with Specialty Functions

		Page
	<b>Switching Modules</b>	
	Pluggable Modules – Switches, 286 Series	494
	Switching Modules in a DIN-Rail Mount Enclosure, 789 Series	496
	Manual Operation Modules in a DIN-Rail Mount Enclosure, 789 Series	500
	<b>Component Modules</b>	
	Pluggable Modules – Diode Gates, 286 Series	502
	DIN-Rail-Mount Modules – Diode Gates, 289 Series	504
	DIN-Rail-Mount Modules – Resistors, 289 Series	511
	DIN-Rail-Mount Modules for Building Custom Circuits, 289 Series	512
	<b>Potential Multiplication Modules</b>	
	DIN-Rail-Mount Potential Multiplication Modules, 288 Series	514
	<b>Modules with Additional Specialty Functions</b>	
	Pluggable Modules – Current Flow Monitoring, 286 Series	518
	Pluggable Modules – Fuses, 286 Series	520
	Pluggable Modules – AND Gate, 286 Series	522
	Pluggable Modules – Flip-Flop, 286 Series	523
	<b>Indicator Modules</b>	
	DIN-Rail-Mount Modules – LED Gate, 289 Series	521
	<b>Rectifier Modules</b>	
	Pluggable Modules – Bridge Rectifiers, 286 Series	523

# Pluggable Modules – Switches

## 286 Series



Switching module, with changeover rocker switch, switching voltage: 250 VAC, switching current: 6 A

	Item No.	Pack. Unit
	286-895	1

Switching module, with momentary switch, switching voltage: 250 VAC, switching current: 6 A

	Item No.	Pack. Unit
	286-896	1

### Technical Data

Max. switching voltage	24 VDC / 250 VAC
Switching current, resistive	6 AAC
Switching current, inductive	4 AAC
Electrical life	≥ 50,000 switching operations
Contact gap	≥ 3 mm
Isolation voltage	1250 V
Ambient operating temperature	-20 ... +40 °C
Standards/approvals	Switch tested per EN 61058-1

Max. switching voltage	24 VDC / 250 VAC
Switching current, resistive	6 AAC
Switching current, inductive	4 AAC
Electrical life	≥ 50,000 switching operations
Contact gap	≥ 3 mm
Isolation voltage	1250 V
Ambient operating temperature	-20 ... +40 °C
Standards/approvals	Switch tested per EN 61058-1

Max. switching voltage	24 VDC / 250 VAC
Switching current, resistive	6 AAC
Switching current, inductive	4 AAC
Electrical life	≥ 50,000 switching operations
Contact gap	≥ 3 mm
Isolation voltage	1250 V
Ambient operating temperature	-20 ... +40 °C
Standards/approvals	Switch tested per EN 61058-1

### Accessories (Selection)

#### Terminal Block for Pluggable Modules

with 2-conductor terminal blocks, orange separator ①	17 mm	280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm	280-609	1
with 4-conductor terminal blocks, marking plate ②	20 mm	280-763	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			

Width	Item No.	Pack. Unit
17 mm	280-619	1
17 mm	280-609	1
20 mm	280-763	1

Width	Item No.	Pack. Unit
17 mm	280-619	1
17 mm	280-609	1
20 mm	280-763	1

#### WSB marker card

5 cards, 10 strips with 10 markers each	S	209-682	
	1 ... 10	209-702	

Marking	Item No.	Pack. Unit
S	209-682	
1 ... 10	209-702	

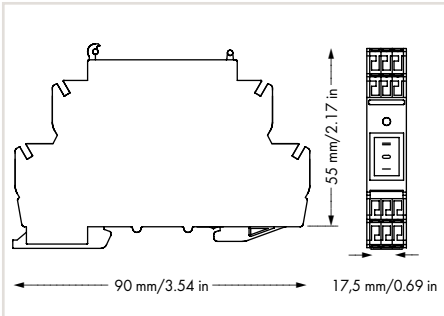
Marking	Item No.	Pack. Unit
S	209-682	
1 ... 10	209-702	





## Switching Modules in a DIN-Rail-Mount Enclosure

### 789 Series



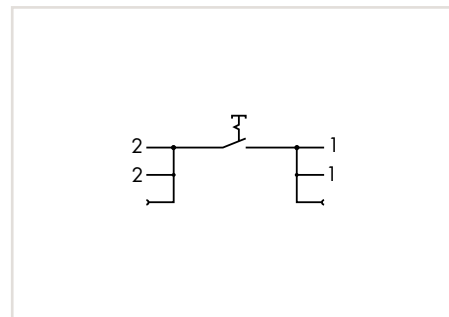
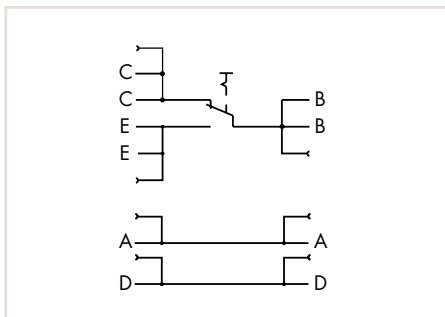
#### Technical Data

##### Contacts

Contact material	Ag alloy
Operating voltage	250 VAC
Max. switching power (resistive)	10 A
Peak inrush current	100 A, capacitive
Contact resistance	< 100 mΩ (12 V / 1 ADC, new condition)
Insulation resistance	> 100 MΩ (500 VDC, new condition)
Contact gap	≥ 3 mm

##### General Specifications

Dielectric strength, open contact	1.25 kV <sub>rms</sub>
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	2
Permissible ambient operating temperature at UN	-20 ... +55 °C
Storage temperature	-40 ... +80 °C
Dimensions (mm) W x H x D	17.5 x 55 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Standards/approvals	EN 50178; EN 60664-1; EN 61058-1



Switching module,  
with changeover rocker switch,  
switching voltage: 250 VAC,  
switching current: 10 A

Item No.	Pack. Unit
789-800	1

Switching module,  
with off switch,  
switching voltage: 250 VAC,  
switching current: 16 A

Item No.	Pack. Unit
789-801	1

**Specific Electrical Data**

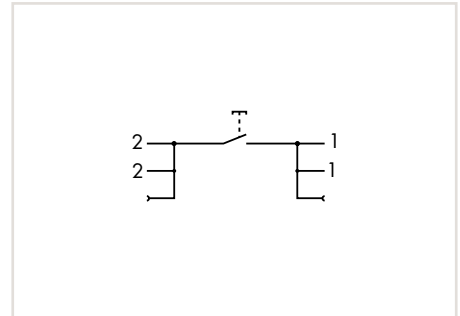
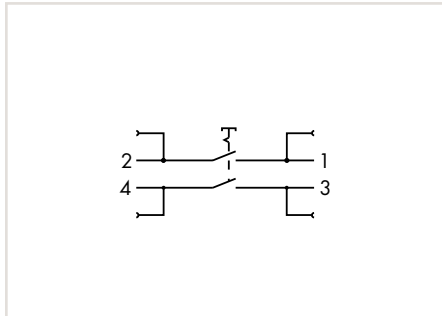
Max. switching power (resistive)	10 A
Mechanical life	1 x 10 <sup>5</sup> switching operations
Electrical life	1 x 10 <sup>4</sup> switching operations

Max. switching power (resistive)	16 A
Mechanical life	5 x 10 <sup>4</sup> switching operations
Electrical life	1 x 10 <sup>4</sup> switching operations

Max. switching power (resistive)	16 A
Mechanical life	5 x 10 <sup>4</sup> switching operations
Electrical life	1 x 10 <sup>4</sup> switching operations

## Switching Modules in a DIN-Rail-Mount Enclosure

### 789 Series



Switching module,  
with 2-pole off switch,  
switching voltage: 250 VAC,  
switching current: 16 A

Item No.	Pack. Unit
789-802	1

Switching module,  
with off button,  
switching voltage: 250 VAC,  
switching current: 16 A

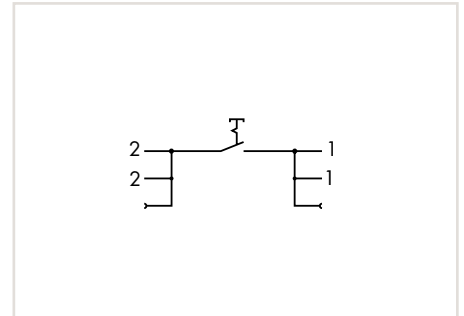
Item No.	Pack. Unit
789-803	1

#### Specific Electrical Data

Max. switching power (resistive)	16 A
Mechanical life	5 x 10 <sup>4</sup> switching operations
Electrical life	1 x 10 <sup>4</sup> switching operations

Max. switching power (resistive)	16 A
Mechanical life	5 x 10 <sup>4</sup> switching operations
Electrical life	1 x 10 <sup>4</sup> switching operations

Max. switching power (resistive)	16 A
Mechanical life	5 x 10 <sup>4</sup> switching operations
Electrical life	1 x 10 <sup>4</sup> switching operations



Switching module,  
with off button,  
switching voltage: 250 VAC,  
switching current: 16 A

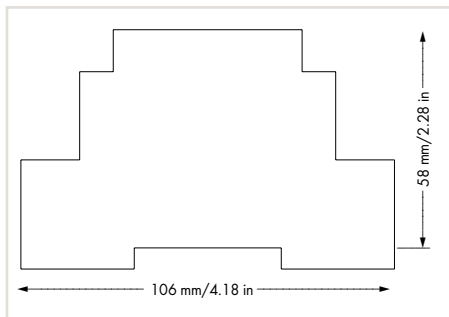
	Item No.	Pack. Unit
	789-804	1

**Specific Electrical Data**

Max. switching power (resistive)	16 A
Mechanical life	5 x 10 <sup>4</sup> switching operations
Electrical life	1 x 10 <sup>4</sup> switching operations

## Manual Operation Modules in a DIN-Rail Mount Enclosure

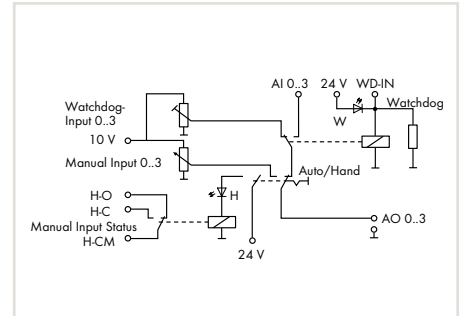
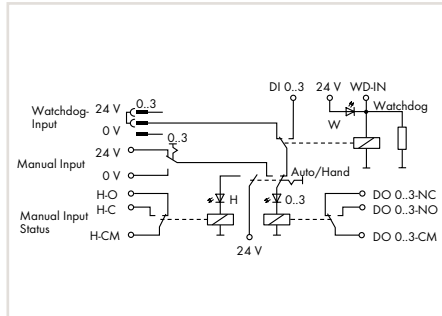
### 789 Series



The 789-810 Digital Manual Operation Module monitors 0 ... 3 inputs and indicates their status via green LED and power relay's changeover contact. Depending on both the manual/automatic switch and watchdog input, the states 0 or 1 are transmitted (electrically isolated) via relay to the output. The 789-811 Analog Manual Operation Module monitors 0 ... 3 analog inputs. Depending on both the manual/automatic switch and watchdog input, the voltages set between 0 ... 10 V are transmitted to the output.

#### Technical Data

Power supply	24 VDC ±20 %
Ambient operating temperature	0 ... +50 °C
Storage temperature	-25 ... +70 °C
Dimensions (mm) W x H x D	106 x 58 x 90, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 734 and 231 Series)
Conductor range	0.08 ... 1.5 mm <sup>2</sup> / 28 ... 14 AWG 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	7 mm / 0.28 inch 8 ... 9 mm / 0.31 ... 0.35 inch
Inputs	
No. 1/10	24 V power supply
No. 2	GND (ground)
No. 11	WD-IN (watchdog input); 24 V / 20 mA (max.)
Outputs	
No. 7	H-C (manual operation "closed")
No. 8	H-CM (manual operation "common")
No. 9	H-O (manual operation "open")



Manual operation module, 4 digital outputs		
	Item No.	Pack. Unit
	789-810	1

Manual operation module, 4 analog outputs		
	Item No.	Pack. Unit
	789-811	1

**Technical Data**

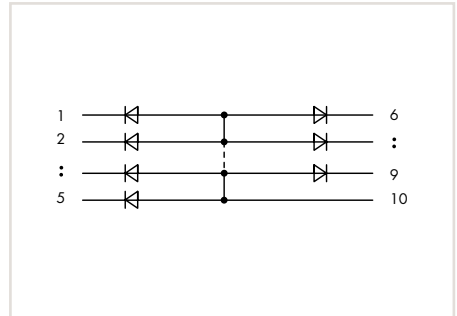
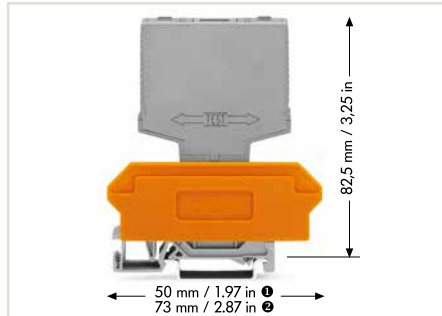
Dielectric strength, input/output	4 kV
Inputs	DI-0 ... 3; input 0 ... 3; 24 V / 20 mA (max.)
No. 3 ... 6	
Outputs	DO-0 ... 3-NC; break contact; channel 0 ... 3
No. 12/15/18/21	
No. 13/16/19/22	DO-0 ... 3-CM; common; channel 0 ... 3
No. 14/17/20/23	DO-0 ... 3-NO; make contact; channel 0 ... 3
Max. switching voltage (channel nos.: 12–23)	250 VAC / 30 VDC
Max. switching current (channel nos. 12–23)	8 AAC / 8 ADC

AI-0 ... 3; input 0 ... 3; 0 ... 10 V / 20 mA (max.)	
GND	
AO-0 ... 3; output 0 ... 3; 0 ... 10 V / 20 mA (max.)	
GND	

AI-0 ... 3; input 0 ... 3; 0 ... 10 V / 20 mA (max.)	
GND	
AO-0 ... 3; output 0 ... 3; 0 ... 10 V / 20 mA (max.)	
GND	

# Pluggable Modules – Diode Gates

## 286 Series



\* Max. admissible current per the manufacturer's data sheet. With all diodes loaded, the continuous current must be reduced.

Component module, with 1N4007 diode, with common anode, pluggable on rail-mount terminal block

Module Width	Diodes	Item No.	Pack. Unit
10 mm/0.394 inch	3	286-803	1
15 mm/0.591 inch	5	286-805	1
20 mm/0.787 inch	7	286-807	1
25 mm/0.984 inch	9	286-809	1

### Technical Data

Operating voltage	250 VAC/DC
Peak reverse voltage, periodic	1000 V
Rectified current for each diode, resistive*	1 A
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	2
Ambient operating temperature	-25 ... +40 °C

### Accessories (Selection)

#### WSB marker card

5 cards, 10 strips with 10 markers each

Marking	Item No.	Pack. Unit
V	209-784	5
1 ... 10	209-702	5
+/-	209-652	5

### Terminal Block for Pluggable Modules

	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	12 mm	280-618	1
with 4-conductor terminal blocks, orange separator ②	12 mm	280-608	1
with 4-conductor terminal blocks, marking plate ②	15 mm	280-762	1
with 2-conductor terminal blocks, orange separator ①	17 mm	280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm	280-609	1
with 4-conductor terminal blocks, marking plate ②	20 mm	280-763	1
with 2-conductor terminal blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminal blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminal blocks, marking plate ②	25 mm	280-764	1
with 2-conductor terminal blocks, orange separator ①	27 mm	280-639	1
with 4-conductor terminal blocks, orange separator ②	27 mm	280-629	1
with 4-conductor terminal blocks, marking plate ②	30 mm	280-765	1

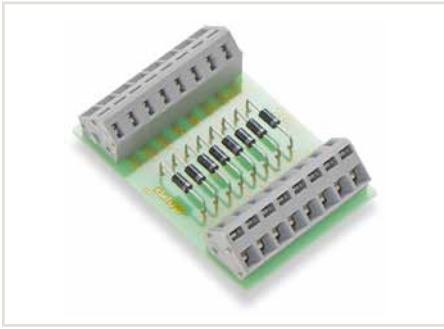
Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch





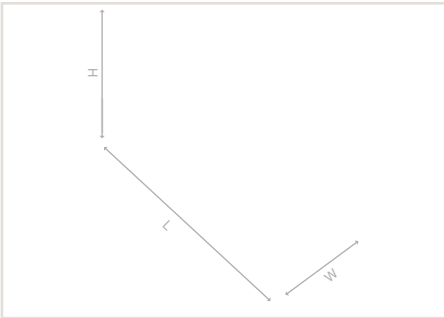
## DIN-Rail-Mount Modules – Diode Gates

### 289 Series



#### Technical Data

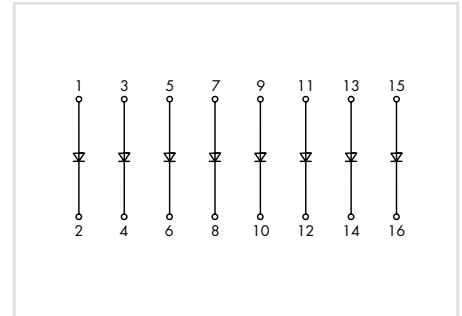
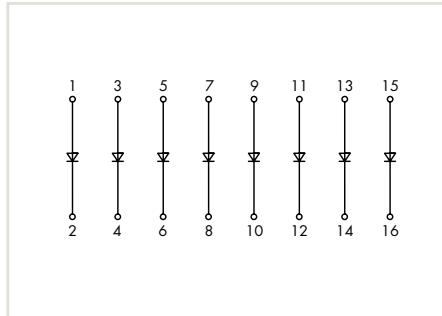
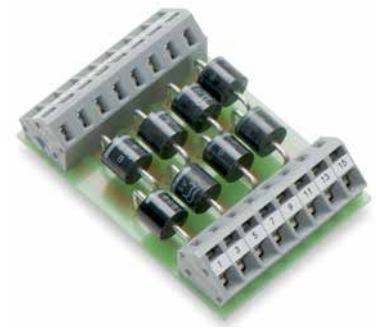
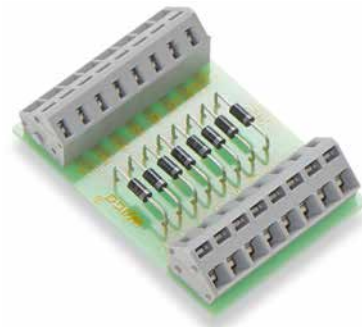
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	2
Protection type	IP00
Connection technology	CAGE CLAMP® (WAGO 236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch



#### Notice:

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment manufacturer, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation regulations must be observed for each individual application.

\* Max. admissible current per the manufacturer's data sheet. With all diodes loaded, the continuous current must be reduced.



\* Max. admissible current per the manufacturer's data sheet. With all diodes loaded, the continuous current must be reduced.

Component module, with 8 1N4007 diodes		
	Item No.	Pack. Unit
	289-101	1

Component module, with 8 P600B diodes		
	Item No.	Pack. Unit
	289-103	1

**Specific Technical Data**

	250 VAC/DC	100 VAC/DC
Operating voltage	250 VAC/DC	100 VAC/DC
Peak reverse voltage, periodic	1000 V	100 V
Rectified current for each diode, resistive*	1 A	6 A
Reverse current per diode	50 µA	5 µA
Forward voltage per diode	1.1 V	1 V
Forward current per diode (resistive)	1 A	6 A
Ambient operating temperature	-25 ... +40 °C	-25 ... +30 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	47 x 31.5 x 65.5, height from upper-edge of DIN-rail	47 x 31.5 x 65.5, height from upper-edge of DIN-rail

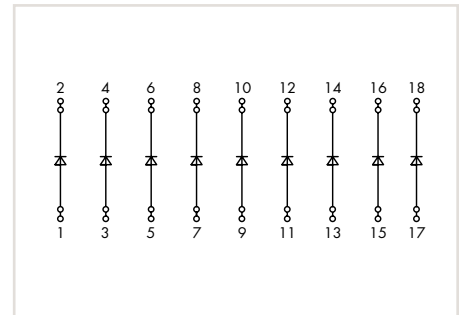
**Accessories**

	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
Mounting carrier, for screw or DIN-rail mounting (with universal snap-on type mounting feet), to be ordered separately	white	288-001	1	white	288-001	1
Universal mounting foot, snap-on type; suitable for DIN-15, DIN-32 and DIN-35 rails		288-002	10		288-002	10
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10		709-153	10

\*\*CR = Carrier rail

## DIN-Rail-Mount Modules – Diode Gates

### 289 Series



\* Max. admissible current per the manufacturer's data sheet. With all diodes loaded, the continuous current must be reduced.

Component module,  
with 9 1N5408 diodes

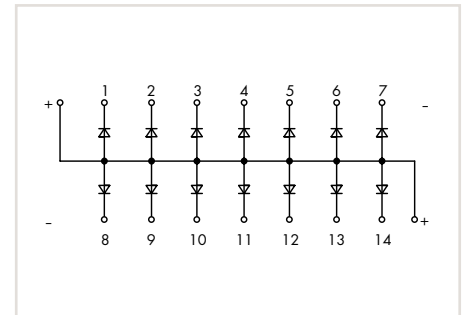
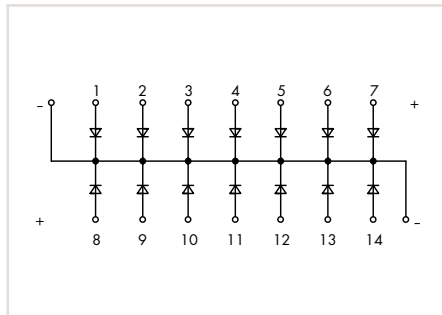
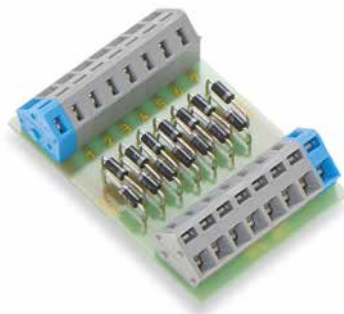
Item No.	Pack. Unit
289-105	1

#### Specific Technical Data

Operating voltage	250 VAC/DC
Peak reverse voltage, periodic	1000 V
Rectified current for each diode, resistive*	3 A
Reverse current per diode	10 $\mu$ A
Forward voltage per diode	1.3 V
Forward current per diode (resistive)	3 A
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	51 x 48 x 85, height from upper-edge of DIN-rail

#### Accessories

	Color	Item No.	Pack. Unit
Marking strip, for mounting carrier	white	709-198	1
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10



\* Max. admissible current per the manufacturer's data sheet. With all diodes loaded, the continuous current must be reduced.

Component module, with 14 1N4007 diodes, with common cathode

Item No.	Pack. Unit
289-111	1

Component module, with 14 1N4007 diodes, with common anode

Item No.	Pack. Unit
289-121	1

**Specific Technical Data**

Operating voltage	250 VAC/DC
Peak reverse voltage, periodic	1000 V
Rectified current for each diode, resistive*	1 A
Reverse current per diode	50 µA
Forward voltage per diode	1.1 V
Forward current per diode (resistive)	1 A
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	45.5 x 32 x 65.5, height from upper-edge of DIN-rail

Operating voltage	250 VAC/DC
Peak reverse voltage, periodic	1000 V
Rectified current for each diode, resistive*	1 A
Reverse current per diode	50 µA
Forward voltage per diode	1.1 V
Forward current per diode (resistive)	1 A
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	45.5 x 32 x 65.5, height from upper-edge of DIN-rail

Operating voltage	250 VAC/DC
Peak reverse voltage, periodic	1000 V
Rectified current for each diode, resistive*	1 A
Reverse current per diode	50 µA
Forward voltage per diode	1.1 V
Forward current per diode (resistive)	1 A
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	45.5 x 32 x 65.5, height from upper-edge of DIN-rail

**Accessories**

Mounting carrier, for screw or DIN-rail mounting (with universal snap-on type mounting feet), to be ordered separately	white	288-001	1
Universal mounting foot, snap-on type; suitable for DIN-15, DIN-32 and DIN-35 rails		288-002	10
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10
Cover, transparent, type 1, 1 m long		709-153	10

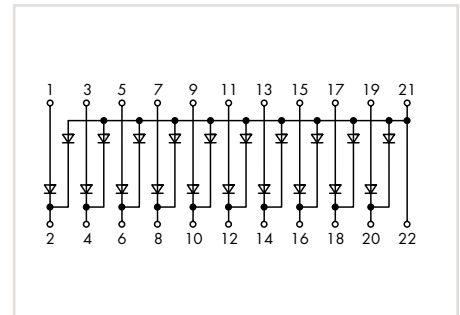
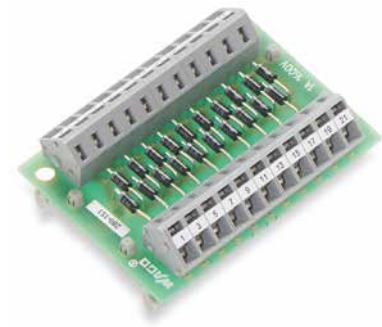
Color	Item No.	Pack. Unit
white	288-001	1
	288-002	10
	709-167	10
	709-153	10

Color	Item No.	Pack. Unit
white	288-001	1
	288-002	10
	709-167	10
	709-153	10

\*\*CR = Carrier rail

## DIN-Rail-Mount Modules – Diode Gates

## 289 Series



\* Max. admissible current per the manufacturer's data sheet. With all diodes loaded, the continuous current must be reduced.

Component module,  
with 20 EM 513 diodes

Item No.	Pack. Unit
289-151	1

#### Technical Data

Operating voltage	250 VAC/DC
Peak reverse voltage, periodic	1600 V
Rectified current for each diode, resistive*	1 A
Reverse current per diode	< 50 $\mu$ A
Forward voltage per diode	1.1 V
Forward current per diode (resistive)	1 A
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and feet (mm) W x H x D	69 x 21 x 50, height from upper-edge of DIN-rail

#### Accessories

Color	Item No.	Pack. Unit
white	709-198	1
	709-167	10
	709-153	10

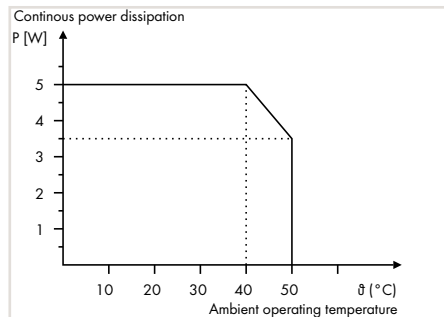


## DIN-Rail-Mount Modules – Resistors

## 289 Series



Picture of 289-128/003-000



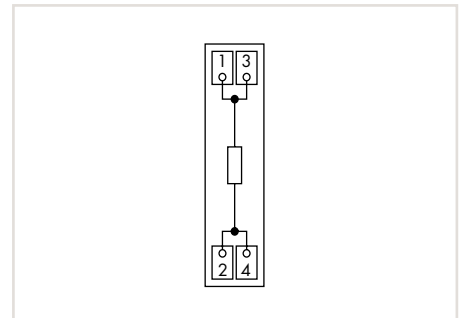
## Derating

**\*Notice:**

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment manufacturer, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation regulations must be observed for each individual application.

Depending on operating conditions, the components' temperature may exceed the limit temperature for accessible parts.

For other resistors, please contact factory!



Component module,  
with 1 resistor, 5 Watt,  
in mounting carrier

Resistor	Item No.	Pack. Unit
100R	289-128/005-000	1
270R	289-128/006-000	1
2K4	289-128/001-000	1
4K7	289-128/002-000	1
6K8	289-128/003-000	1
9K1	289-128	1

**Technical Data**

Temperature coefficient	50 ppm
Tolerance	±10 %
Capacity	5 W
Protection type	IP00*
Ambient operating temperature	-20 ... +50 °C (Derating must be observed)
Storage temperature	-40 ... +70 °C
Dimensions (mm) W x H x D incl. mounting carrier or feet	13 x 34 x 85, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch

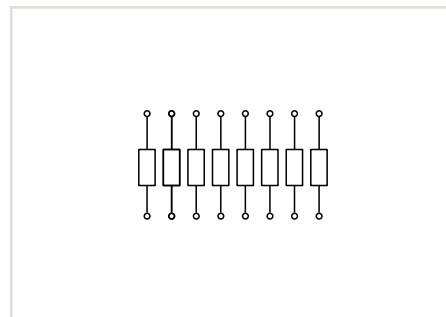
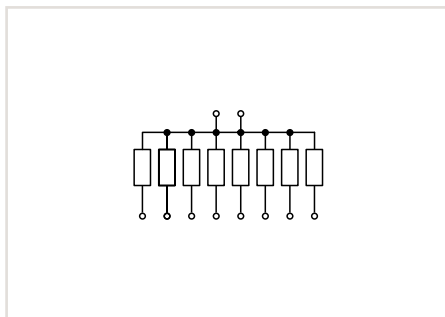
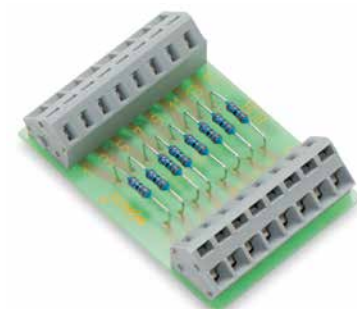
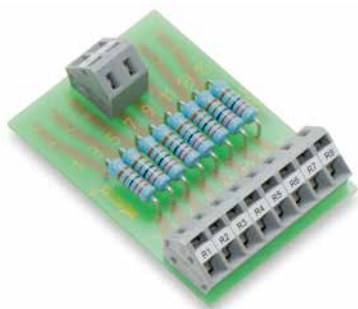
**Accessories**

Color	Item No.	Pack. Unit
Cover carrier, type 1 (57.5 x 128 mm)	709-167	10
Cover, transparent, type 1, 1 m long	709-153	10



## DIN-Rail-Mount Modules – Resistors

## 289 Series



\* Max. admissible capacity of a single resistor. With all resistors loaded, the max. admissible power dissipation must be reduced.

For other resistors, please contact factory!

Component module,  
with 8 2K2 resistors,  
1 Watt, commoned

Item No.	Pack. Unit
289-113	1

Component module,  
with 8 2K7 resistors,  
0.6 Watt

Item No.	Pack. Unit
289-114	1

#### Technical Data

Operating voltage	40 VAC/DC
Resistor type	DIN 0414
Temperature coefficient	50 ppm
Tolerance	±1 %
Capacity*	1 W
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	45.5 x 32 x 65.5, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch

Operating voltage	40 VAC/DC
Resistor type	DIN 0207
Temperature coefficient	50 ppm
Tolerance	±1 %
Capacity*	0,6 W
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	45.5 x 32 x 65.5, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch

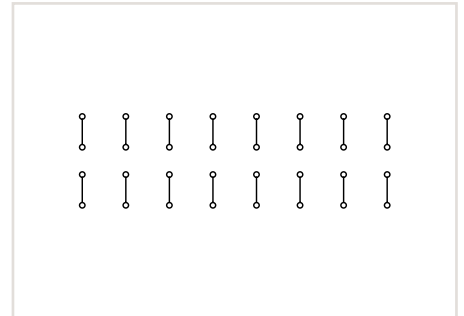
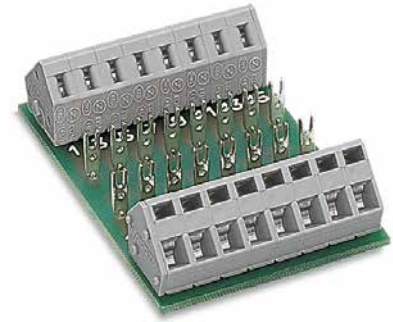
#### Accessories (Selection)

	Color	Item No.	Pack. Unit	Color	Item No.	Pack. Unit
Mounting carrier, for screw or DIN-rail mounting (with universal snap-on type mounting feet), to be ordered separately	white	288-001	1	white	288-001	1
Universal mounting foot, snap-on type; suitable for DIN-15, DIN-32 and DIN-35 rails		288-002	10		288-002	10

\*\*CR = Carrier rail

# DIN-Rail-Mount Modules for Building Custom Circuits

## 289 Series



**\*Notice:**

Live parts are likely to be touched! Protection against direct contact must be provided by the equipment manufacturer, e.g., using a 709 Series WAGO Cover (see Accessories) or a similar cover. The installation regulations must be observed for each individual application.

PCB, for building custom circuits, with 8 assembly slots

	Item No.	Pack. Unit
	289-102	1
with solder pins	289-131	1

**Technical Data**

Operating voltage	250 VAC/DC
Nominal current	3 A
Protection type	IP00*
Ambient operating temperature	-25 ... +40 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	45.5 x 32 x 62.5, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 236 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch

**Accessories**

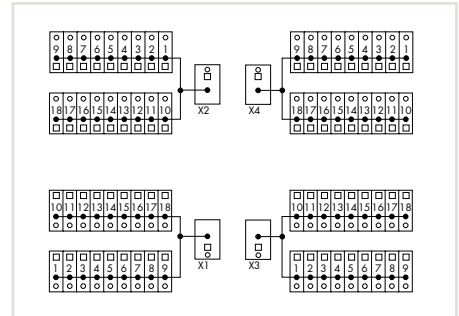
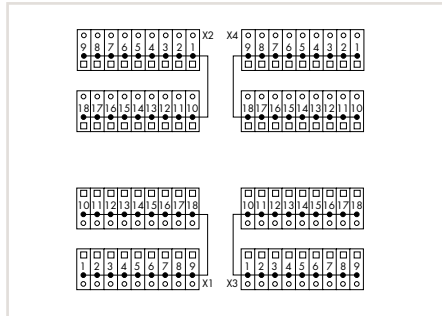
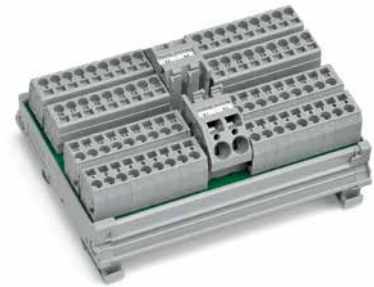
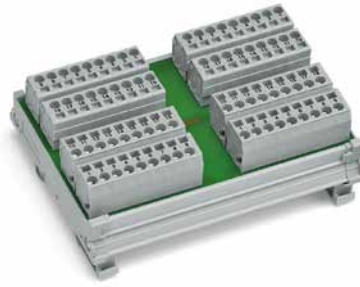
	Color	Item No.	Pack. Unit
Mounting carrier, for screw or DIN-rail mounting (with universal snap-on type mounting feet), to be ordered separately	white	288-001	1
Universal mounting foot, snap-on type; suitable for DIN-15, DIN-32 and DIN-35 rails		288-002	10
Cover carrier, type 1 (57.5 x 128 mm)		709-167	10
Cover, transparent, type 1, 1 mm long		709-153	10

\*CR = Carrier rail



# DIN-Rail Mount Modules – Potential Multiplication

## 288 Series



Potential multiplication module, 4 potentials, with each 18 connection points		
	<b>Item No.</b>	<b>Pack. Unit</b>
	288-825	1

Potential multiplication module, 4 potentials, with each 19 connection points		
	<b>Item No.</b>	<b>Pack. Unit</b>
	288-837	1

### Technical Data

Max. operating voltage per potential	250 VAC/DC
Max. total current per potential	12 A
Max. current per connection	12 A
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Storage temperature	-40 ... +80 °C
Dimensions (mm) W x H x D incl. mounting carrier or feet	85 x 45 x 115, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP® (WAGO 739 Series)
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch

Max. operating voltage per potential	250 VAC/DC
Max. total current per potential	32 A
Max. current per connection	12 A
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Storage temperature	-40 ... +80 °C
Dimensions (mm) W x H x D incl. mounting carrier or feet	85 x 45 x 115, height from upper-edge of DIN-rail
Connection technology	Power supply: CAGE CLAMP® (WAGO 745 Series) Connection points: CAGE CLAMP® (WAGO 739 Series)
Conductor range	Power supply: 0.2 ... 6 mm <sup>2</sup> / 24 ... 10 AWG Connection points: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	Power supply: 11 ... 12 mm / 0.43 ... 0.47 inch Connection points: 8 ... 9 mm / 0.31 ... 0.35 inch

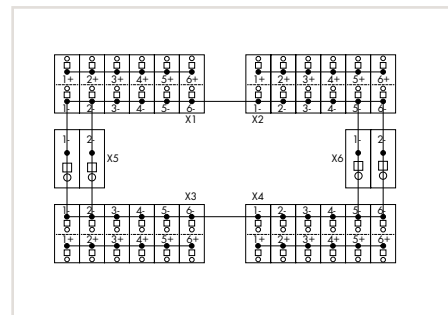
### Accessories (Selection)

	<b>Item No.</b>	<b>Pack. Unit</b>
Comb-style jumper bar, 2-way	745-382	250

	<b>Item No.</b>	<b>Pack. Unit</b>
Comb-style jumper bar, 2-way	745-382	250



- May be used with electronic circuit breakers for 24 and 0 VDC power distribution, as a substitute for rail-mount terminal blocks
- Four potential groups for four output circuits
- Six connection points per potential group for positive and negative potentials
- On-unit commoned negative potential with commoning option to adjacent modules via 745-682 comb-style jumper bar
- Marker carrier is available



Potential multiplication module,  
4 potentials,  
with each 6 connection points

	Item No.	Pack. Unit
	288-867	1

#### Technical Data

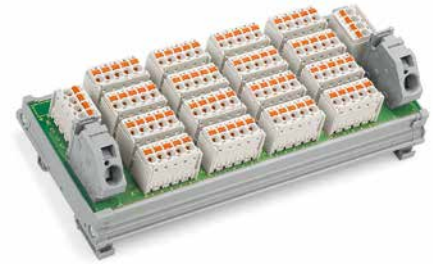
Operating voltage	24 VDC
Number of potentials	4
Max. total current per potential	10 A
Max. current per connection	10 A
Max. total current (0 V)	40 A
Nominal voltage	50 V
Rated impulse voltage	0.8 kV
Pollution degree	2
Ambient operating temperature	-20 ... +50 °C
Storage temperature	-40 ... +70 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	70 x 50 x 105, height from upper-edge of DIN-rail
Mounting type	DIN-rail mount (EN 60715)
Connection technology	Connection points: CAGE CLAMP® (WAGO 736Series) Negative potential: CAGE CLAMP® (WAGO 745 Series)
Conductor range	Connection points: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN) Negative potential: 0.2 ... 16 mm <sup>2</sup> / 24 ... 6 AWG
Strip length	Connection points: 5 ... 6 mm / 0.2 ... 0.24 inch Negative potential: 12 ... 13 mm / 0.47 ... 0.51 inch

#### Accessories (Selection)

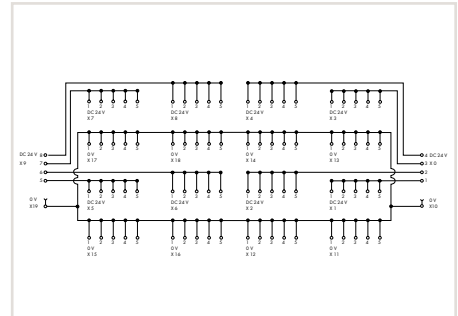
	Item No.	Pack. Unit
Comb-style jumper bar, 2-way	745-682	250

## DIN-Rail Mount Modules – Potential Multiplication

### 288 Series



- May be used with electronic circuit breakers for 24 and 0 VDC power distribution, as a substitute for rail-mount terminal blocks
- Pluggable *picoMAX*® Female Headers enable pre-wiring and electrically isolate current paths
- Optional coding pins (2092-1610) protect against any inadvertent mixing of female headers
- Optional gripping plates with sliding connector release (2092-1601/002-000 or 2092-1602/002-000) provide conductor strain relief
- Optional 0 V power supply commoning to adjacent modules via 745-682 Comb-Style Jumper Bar (derating with jumper bar: -1 A / K > 60 °C ambient operating temperature)



Potential multiplication module,  
8 potentials,  
with each 6 connection points,  
with 42 ground connection points

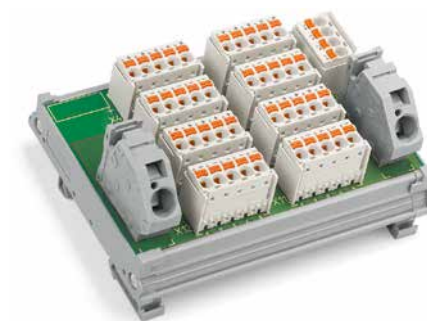
	Item No.	Pack. Unit
	288-870/000-040	1

#### Technical Data

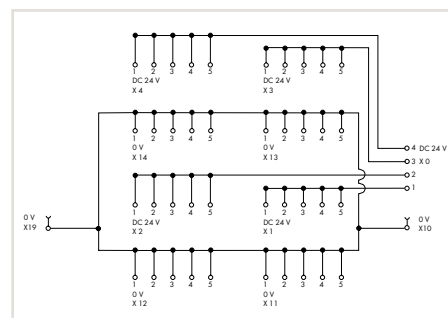
Max. operating voltage per potential	24 VDC
Number of potentials	8
Max. total current per potential	10 A
Max. current per connection	10 A
Max. total current (0 V)	76 A
Ambient operating temperature	-25 ... +70 °C (no condensation)
Storage temperature	-40 ... +85 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	85 x 49 x 154, height from upper-edge of DIN-rail
Mounting type	DIN-rail mount (EN 60715)
Connection technology	Power supply (0 V): CAGE CLAMP® (WAGO 745 Series) Power supply (24 V), connection points: Push-in CAGE CLAMP® ( <i>picoMAX</i> ® 5.0, WAGO 2092 Series)
Conductor range	Power supply (0 V): 0.2 ... 16 mm <sup>2</sup> / 24 ... 6 AWG Power supply (24 V), connection points: 0.2 ... 2.5 mm <sup>2</sup> / 24 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	Power supply (0 V): 12 ... 13 mm / 0.47 ... 0.51 inch Power supply (24 V), connection points: 9 ... 10 mm / 0.35 ... 0.39 inch
Mating direction	Power supply (0 V): 45° Power supply (24 V), connection points: vertical

#### Accessories (Selection)

	Item No.	Pack. Unit
Comb-style jumper bar, 2-way	745-682	400
Coding pin carrier	2092-1610	100
Gripping plate, with sliding connector release, 3- to 4-pole	2092-1601/002-000	100
Gripping plate, with sliding connector release, 5- to 8-pole	2092-1602/002-000	100



- May be used with electronic circuit breakers for 24 and 0 VDC power distribution, as a substitute for rail-mount terminal blocks
- Pluggable *picoMAX*® Female Headers enable pre-wiring and electrically isolate current paths
- Optional coding pins (2092-1610) protect against any inadvertent mixing of female headers
- Optional gripping plates with sliding connector release (2092-1601/002-000 or 2092-1602/002-000) provide conductor strain relief
- Optional 0 V power supply commoning to adjacent modules via 745-682 Comb-Style Jumper Bar



Potential multiplication module,  
4 potentials,  
with each 6 connection points,  
with 22 ground connection points

	Item No.	Pack. Unit
	288-870/000-030	1

#### Technical Data

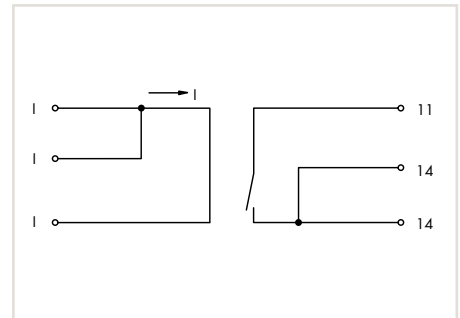
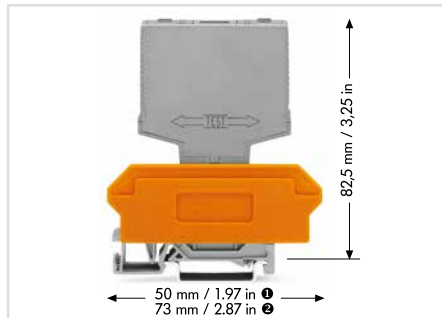
Max. operating voltage per potential	24 VDC
Number of potentials	4
Max. total current per potential	10 A
Max. current per connection	10 A
Max. total current (0 V)	40 A
Ambient operating temperature	-25 ... +70 °C (no condensation)
Storage temperature	-40 ... +85 °C
Dimensions incl. mounting carrier and universal mounting feet (mm) W x H x D	85 x 49 x 100, height from upper-edge of DIN-rail
Mounting type	DIN-rail mount (EN 60715)
Connection technology	Power supply (0 V): CAGE CLAMP® (WAGO 745 Series) Power supply (24 V), connection points: Push-in CAGE CLAMP® ( <i>picoMAX</i> ® 5.0, WAGO 2092 Series)
Conductor range	Power supply (0 V): 0.2 ... 16 mm <sup>2</sup> / 24 ... 6 AWG Power supply (24 V), connection points: 0.2 ... 2.5 mm <sup>2</sup> / 24 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	Power supply (0 V): 12 ... 13 mm / 0.47 ... 0.51 inch Power supply (24 V), connection points: 9 ... 10 mm / 0.35 ... 0.39 inch
Mating direction	Power supply (0 V): 45° Power supply (24 V), connection points: vertical

#### Accessories (Selection)

	Item No.	Pack. Unit
Comb-style jumper bar, 2-way	745-682	400
Coding pin carrier	2092-1610	100
Gripping plate, with sliding connector release , 3- to 4-pole	2092-1601/002-000	100
Gripping plate, with sliding connector release , 5- to 8-pole	2092-1602/002-000	100

# Pluggable Modules – Current Flow Monitoring

## 286 Series



DC current flow monitoring module,  
0.4 ... 3.5 A,  
1 make contact (1 a),  
module width: 15 mm / 0.591 inch

	Item No.	Pack. Unit
	286-662	1

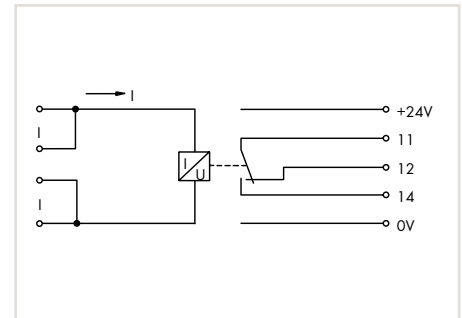
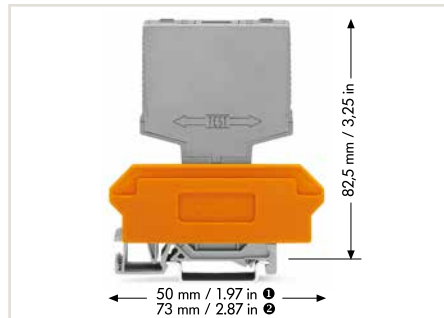
### Technical Data

Current monitoring range	0.4 ... 3.5 ADC (-20 ... +40 °C); 0.4 ... 3 ADC (-20 ... +60 °C); 0.4 ... 2 ADC (-20 ... +70 °C)
Voltage range	12 ... 28 VDC
Nominal power consumption (min./max.)	45 mW / 630 mW
Turn on/off point	0.35 A / 0.07 A
Voltage drop	24 ... 210 mV
Reaction time	0.5 ms
Output	1 make contact
Switching current	0.5 A
Switching voltage	200 VDC
Switching power	10 W (max.)
Dielectric strength, input/output	1.5 kV
Ambient operating temperature	-25 ... +40 °C

### Accessories (Selection)

WSB marker card		Marking	Item No.	Pack. Unit
5 cards, 10 strips with 10 markers each		U	209-789	5
		1 ... 10	209-702	5
		Lin, Lin, Lout, 11, 14, 14, Lin, Lin, Lout	249-654	5
		Lin, Lin, Lout, Lout, 24V, 11, 12, 14, 0V	209-997	5
Terminal Block for Pluggable Modules		Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①		17 mm	280-619	1
with 4-conductor terminal blocks, orange separator ②		17 mm	280-609	1
with 4-conductor terminal blocks, marking plate ②		20 mm	280-763	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch				





AC current flow monitoring module,  
1 ... 10 A, adjustable,  
1 changeover contact (1 u),  
module width: 25 mm/0.984 inch

	Item No.	Pack. Unit
	286-665	1

**Technical Data**

Current monitoring range	1 ... 10 AAC
Nominal power consumption (min./max.)	23 mVA / 8.5 VA
Switching threshold	Min. 1 A (adjustable)
Voltage drop	23 ... 850 mV
Reaction time	200 ms
Output	1 changeover contact
Operating voltage	24 VDC
Power consumption	28 mA
Switching current	5 A
Switching voltage	250 VAC
Switching power	1250 VA
Dielectric strength, input/output	1.5 kV
Nominal voltage	250 V
Rated impulse voltage	2.5 kV
Pollution degree	2
Ambient operating temperature	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Indication	Current < switching threshold (red LED), energized relay

**Accessories (Selection)**

WSB marker card		Marking	Item No.	Pack. Unit
5 cards, 10 strips with 10 markers each		U	209-789	5
		1 ... 10	209-702	5
		Lin, Lin, Lout, 11, 14, 14, Lin, Lin, Lout	249-654	5
		Lin, Lin, Lout, Lout, 24V, 11, 12, 14, 0V	209-997	5

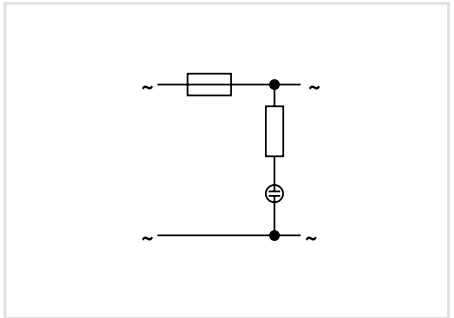
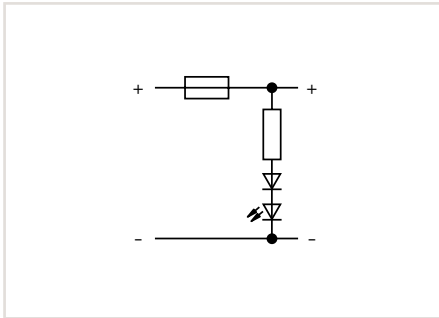
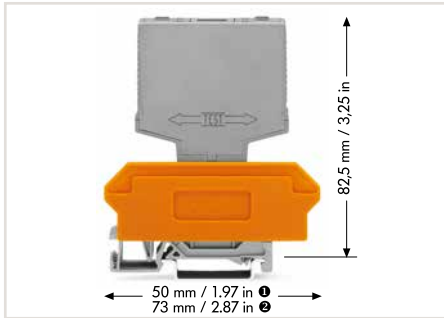
**Terminal Block for Pluggable Modules**

	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	27 mm	280-639	1
with 4-conductor terminal blocks, orange separator ②	27 mm	280-629	1
with 4-conductor terminal blocks, marking plate ②	30 mm	280-765	1

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

# Pluggable Modules – Fuses

## 286 Series



Component module, with fuse, for (5 x 20) mm microfuse, nominal voltage: 24 VAC/DC, green LED

Item No.	Pack. Unit
286-890	1

Component module, with fuse, for (5 x 20) mm microfuse, nominal voltage: 230 VAC/DC, green neon lamp

Item No.	Pack. Unit
286-891	1

### Technical Data

Operating voltage	24 VAC/DC
Max. fuse capacity	6.3 A
Operating power	100 mW
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	3
Ambient operating temperature	-25 ... +40 °C
Leakage current in case of a blown fuse	5 mA
Test voltage	2.5 kV

Operating voltage	230 VAC/DC
Max. fuse capacity	6.3 A
Operating power	100 mW
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	3
Ambient operating temperature	-25 ... +40 °C
Leakage current in case of a blown fuse	0.5 mA
Test voltage	2.5 kV

Operating voltage	230 VAC/DC
Max. fuse capacity	6.3 A
Operating power	100 mW
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	3
Ambient operating temperature	-25 ... +40 °C
Leakage current in case of a blown fuse	0.5 mA
Test voltage	2.5 kV

### Accessories (Selection)

WSB marker card
5 cards, 10 strips with 10 markers each

Marking	Item No.	Pack. Unit
F1 ... F10	209-787	5
1 ... 10	209-702	5
+/-	209-652	5

Marking	Item No.	Pack. Unit
F1 ... F10	209-787	5
1 ... 10	209-702	5
+/-	209-652	5

Terminal Block for Pluggable Modules
with 2-conductor terminal blocks, orange separator ①
with 4-conductor terminal blocks, orange separator ②
with 4-conductor terminal blocks, marking plate ②
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

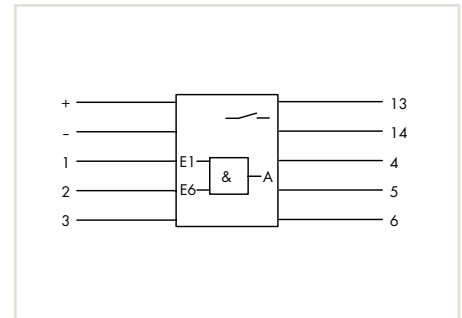
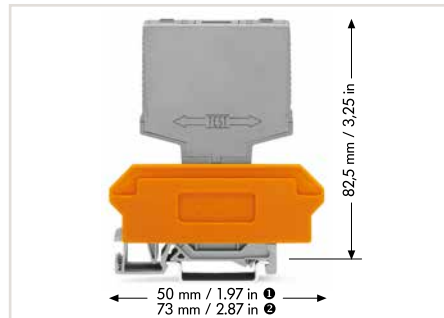
Width	Item No.	Pack. Unit
12 mm	280-618	1
12 mm	280-608	1
15 mm	280-762	1

Width	Item No.	Pack. Unit
12 mm	280-618	1
12 mm	280-608	1
15 mm	280-762	1



## Pluggable Modules – AND Gate

### 286 Series



AND gate module,  
with 6 inputs

Item No.	Pack. Unit
286-826	1

#### Technical Data

Operating voltage	24 VDC
Operating voltage range	24 ... 27.5 VDC
Input voltage (gate)	24 VDC
Power consumption at $U_N$	max. 34.6 mA
Relay output	1 make contact
Max. switching voltage	250 VAC/120 VDC
Max. continuous current	3 A
Max. switching power (resistive)	120 W / 750 VA
Dielectric strength, input/output	2.5 kV
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	2
Ambient operating temperature	-25 ... +40 °C

#### Accessories (Selection)

##### WSB marker card

Marking	Item No.	Pack. Unit
D	209-783	5
1 ... 10	209-702	5
+, -, 1, 2, 3, 13, 14, 4, 5, 6	249-608	5

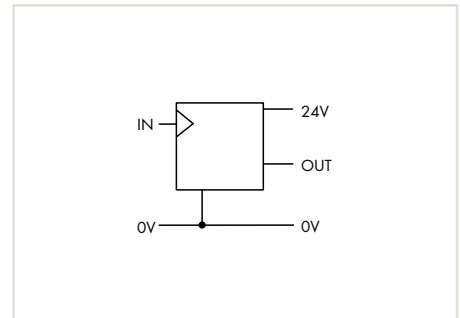
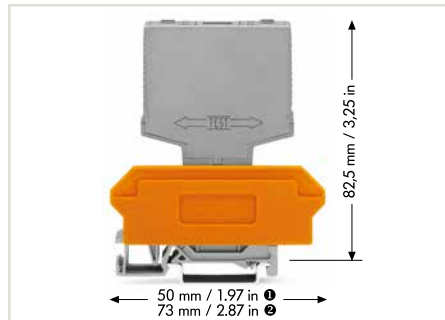
##### Terminal Block for Pluggable Modules

Width	Item No.	Pack. Unit	
with 2-conductor terminal blocks, orange separator ①	27 mm	280-639	1
with 4-conductor terminal blocks, orange separator ②	27 mm	280-629	1
with 4-conductor terminal blocks, marking plate ②	30 mm	280-765	1

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch

## Pluggable Modules – Flip-Flop

### 286 Series



Flip-Flop module,  
nominal voltage: 24 VDC

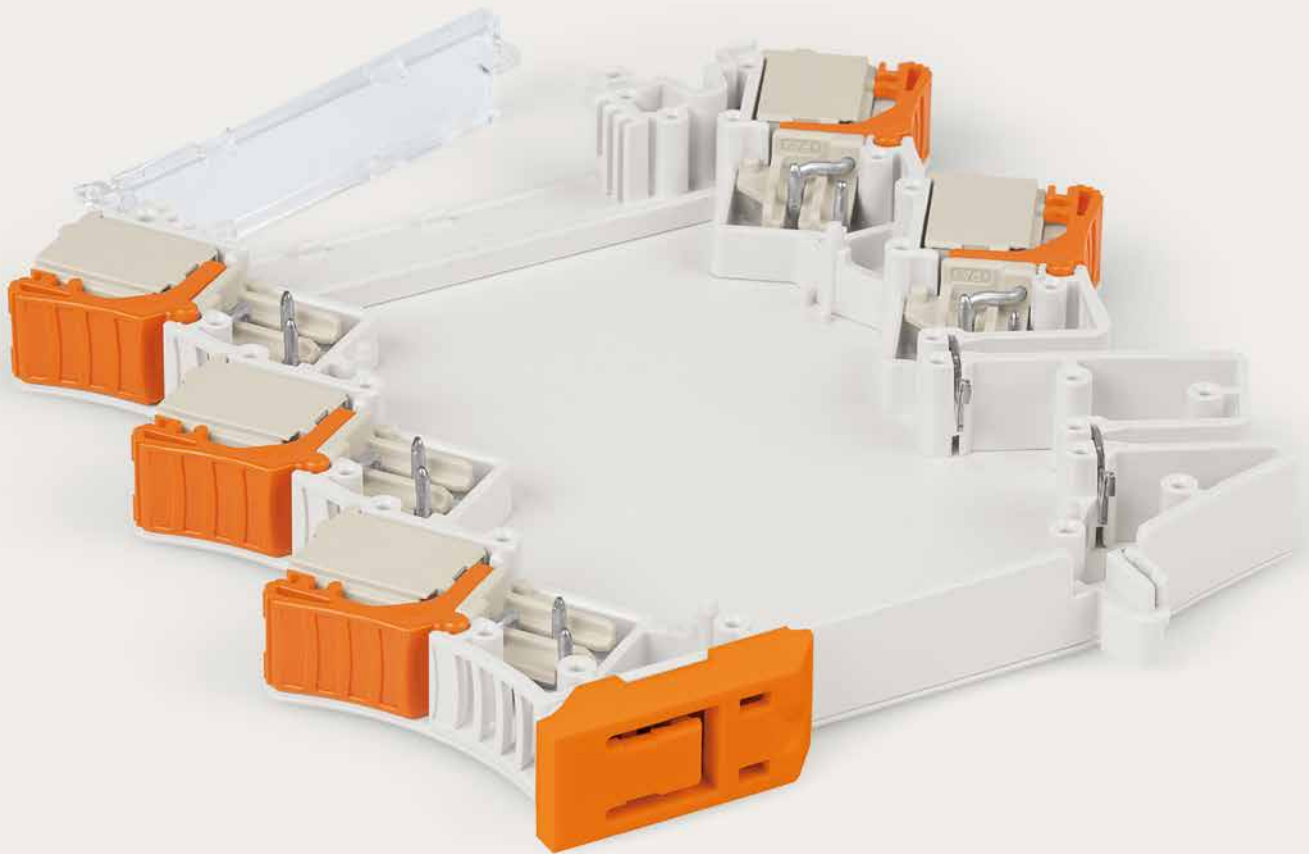
Item No.	Pack. Unit
286-825	1

#### Technical Data

Input voltage	24 VDC ( $\pm 10\%$ )
Input current	0.25 mA
Input voltage ("high" signal)	$> 7\text{ V}$
Input voltage ("low" signal)	$< 3\text{ V}$
Pulse frequency	5 kHz
Min. output voltage	$U_b - 1.5\text{ V}$
Max. output current	0.5 A
Operating voltage	24 VDC
Operating voltage range	20 ... 30 VDC
Power consumption	7.5 mA
Reverse voltage (transistor)	80 V
Test voltage (input/output)	2.5 kV
Nominal voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	2
Ambient operating temperature	0 ... $+55\text{ }^\circ\text{C}$





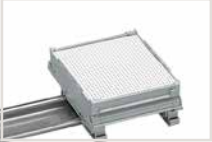
#### Accessories (Selection)

Terminal Block for Pluggable Modules	Width	Item No.	Pack. Unit
with 2-conductor terminal blocks, orange separator ①	17 mm	280-619	1
with 4-conductor terminal blocks, orange separator ②	17 mm	280-609	1
with 4-conductor terminal blocks, marking plate ②	20 mm	280-763	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			



## Empty Housings

## Empty housings

		Page
	<b>Empty Housings, 2857 Series</b>	
	Overview and Configuration	526
	Modular Empty Housings	528
	Stripboards	530
	<b>Empty Component Plug Housings 280, 286, 786 Series</b>	
	Empty Component Plug Housings for Building Custom Circuits	532
	Empty Component Plug Housings for Building Custom Circuits	534
	<b>Empty Housings, 859 Series</b>	
	Empty Electronic Terminal Block Housings	536
	Accessories, 859 Series	537
	<b>Empty Housings, 789 Series</b>	
	DIN-Rail-Mount Enclosures	538
	Accessories, 789 Series	539
	<b>Mounting Carriers, 209, 210, 288 Series</b>	
	DIN-Rail Mount PCB Carriers	540
	DIN-Rail-Mount PCB Carriers and Feet	542

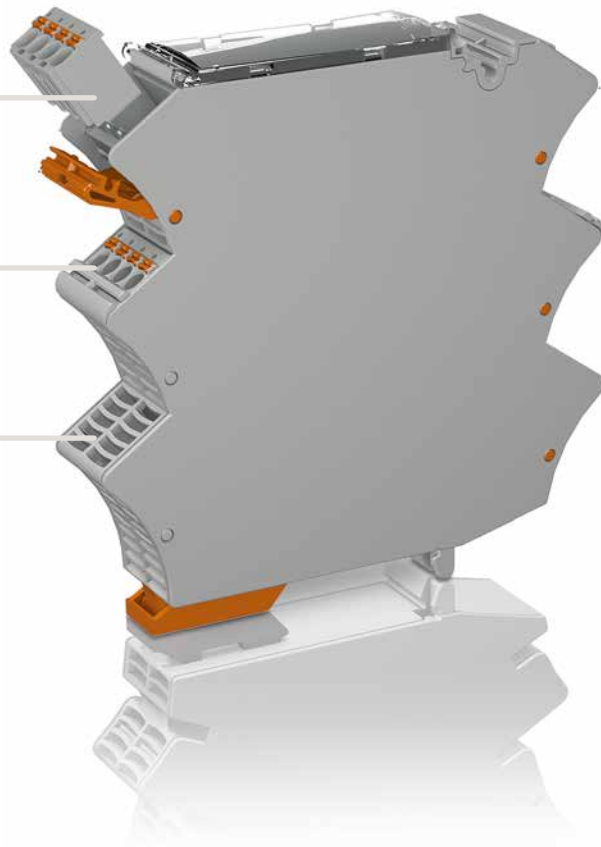
## Modular Empty Housings Overview and Configuration 2857 Series

Pluggable *picoMAX*®  
Connectors

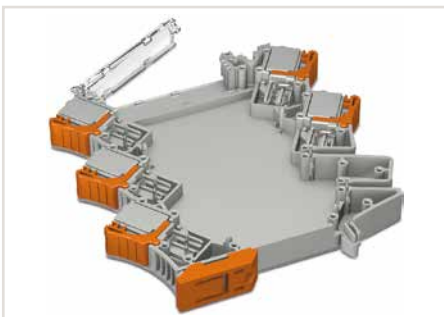
Fixed *picoMAX*®  
Connectors

Connector-free slot

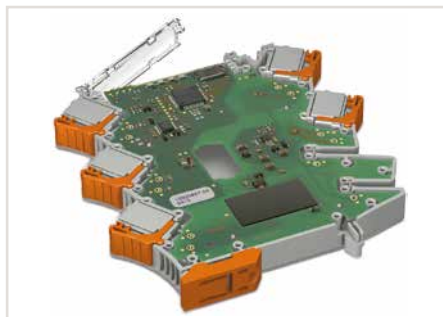
All are freely selectable for  
each connection point



### 9 Supplied as a Pre-Assembled Unit:



1. Pre-Assembled Unit:










2. Insert and solder the PCB.



3. Snap on the side wall.

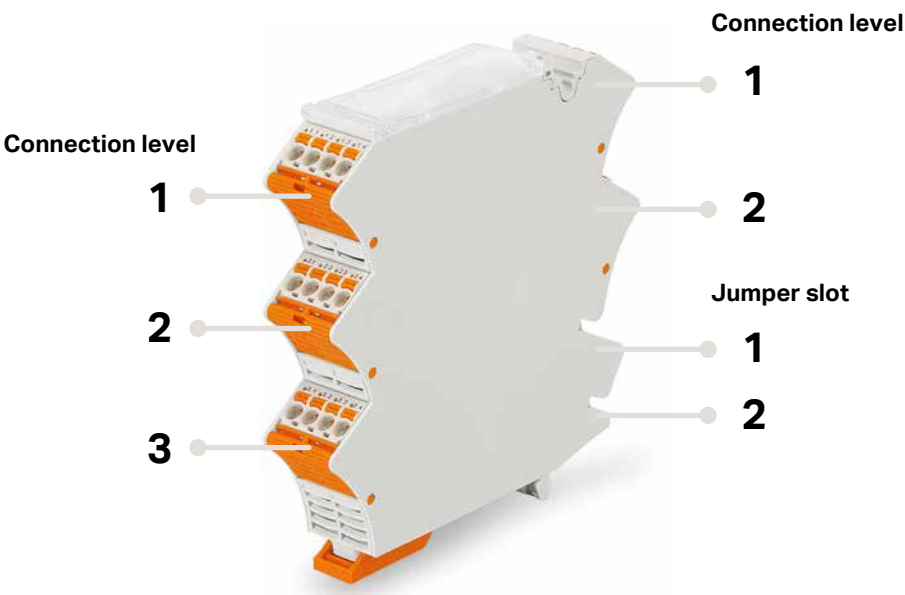


### Housing Configuration:

Housing width: 12.5 mm	 2857-101	 2857-102	 2857-103	-
Housing width: 22.5 mm	 2857-121	 2857-122	 2857-123	 2857-124
Connection levels	2-2	3-2	3-3	1-1
Jumper slots	2-2	0-2	0-0	2-2

Mixed configuration (fixed/removable/empty slot) upon request.

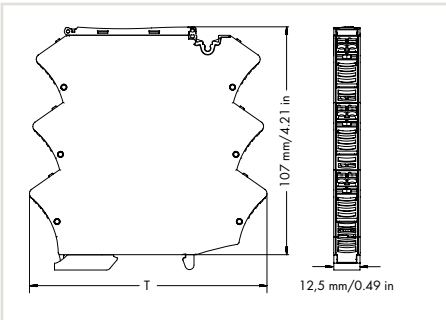
### Example of Connection Level and Jumper Slot Assignment:



Connection levels	3-2
Jumper slots	0-2

# Modular Empty Housings

## 2857 Series



### Features:


- *picoMAX*® female connectors, with coding keys, 4-pole
- Pre-Assembled Unit
- Flexible conductor termination
- Customizable connection levels
- Various marking options available
- Sealable, transparent cover
- Commoning via jumpers (859-402)


### *picoMAX*® 5.0 Female Connectors

Technical Data	
Pin spacing	5 mm / 0.197 inch
Ratings per	IEC/EN 60664-1
Nominal voltage (III / 3)	250 V
Nominal surge voltage (III / 3)	4 kV
Rated voltage (III / 2)	320 V
Nominal surge voltage (III / 2)	4 kV
Nominal voltage (II / 2)	630 V
Nominal surge voltage (II / 2)	4 kV
Nominal current	16 A
Approvals per	UL 1059
Rated voltage UL (Use Group B)	300 V
Nominal current UL (Use Group B)	15 A
Rated voltage UL (Use Group D)	300 V
Nominal current UL (Use Group D)	10 A
Approvals per	CSA
Rated voltage CSA (Use Group B)	300 V
Nominal current CSA (Use Group B)	15 A
Rated voltage CSA (Use Group D)	300 V
Nominal current CSA (Use Group D)	10 A
Conductor Data	
Connection technology	Push-in CAGE CLAMP®
Solid conductors, tool-operated termination	0.2 ... 2.5 mm <sup>2</sup> / 24 ... 12 AWG
Fine-stranded conductors, tool-operated termination	0.2 ... 2.5 mm <sup>2</sup> / 24 ... 12 AWG
Fine-stranded conductors with insulated ferrules	0.2 ... 1.5 mm <sup>2</sup> / 24 ... 16 AWG
Fine-stranded conductors with uninsulated ferrules	0.2 ... 2.5 mm <sup>2</sup> / 24 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch
Material Data	
Clamping spring material	Chrome nickel spring steel (CrNi)
Contact material	Electrolytic copper (Ecu)
Contact plating	Tin-plated
Insulating material	Polyphthalamide (PPA GF)
Flammability rating	V0

### Technical Data: Empty Housing

Material Data	
Housing material	PC
Flammability rating	V0
Environmental Requirements	
Ambient operating temperature	-40 ... +70 °C
Storage temperature	-40 ... +85 °C

 Additional technical data, see *picoMAX*® Catalog

 Marking strips, WMB and WMB Inline, see page 608



Modular empty housing, for DIN-35 rail, 12.5 mm wide housing		
Description	Item No.	Pack. Unit
2-2 connection levels, 2-2 jumper slots	2857-101	10
3-2 connection levels, 0-2 jumper slots	2857-102	10
3-3 connection levels, 0-0 jumper slots	2857-103	10
Technical Data: Empty Housing		
Dimensions (mm) W x H x D	12.5 x 107 x 108 (2857-101) 12.5 x 107 x 110 (2857-102) 12.5 x 107 x 112 (2857-103) Height from upper-edge of DIN-rail	
Power loss	2 W	

#### Accessories

Description	Item No.	Pack. Unit
Coding pin carrier	2092-1610	1
Jumpers	859-402	1

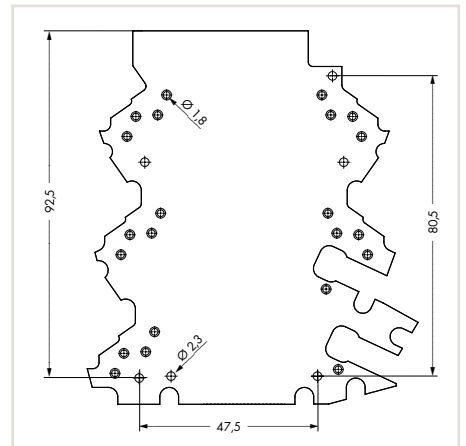
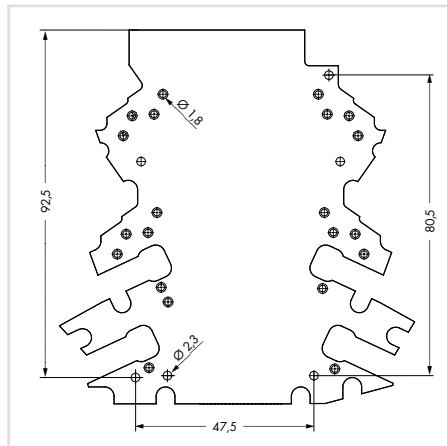
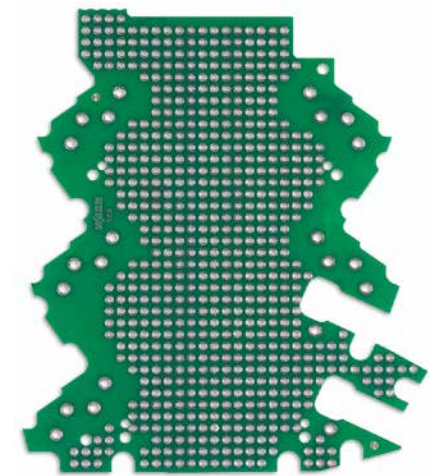
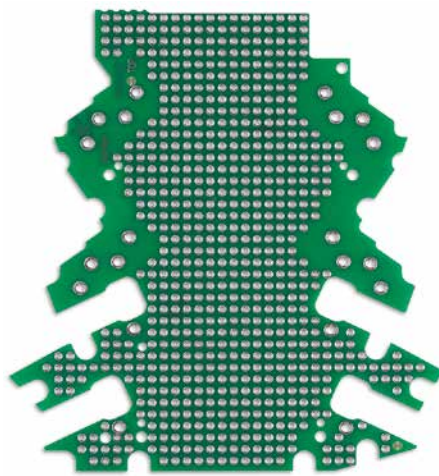


Modular empty housing, for DIN-35 rail, 22.5 mm wide housing		
Description	Item No.	Pack. Unit
2-2 connection levels, 2-2 jumper slots	2857-121	5
3-2 connection levels, 0-2 jumper slots	2857-122	5
3-3 connection levels, 0-0 jumper slots	2857-123	5
1-1 connection levels, 2-2 jumper slots	2857-124	5
Technical Data: Empty Housing		
Dimensions (mm) W x H x D	22.5 x 107 x 108 (2857-121) 22.5 x 107 x 110 (2857-122) 22.5 x 107 x 112 (2857-123) 22.5 x 107 x 105 (2857-124) Height from upper-edge of DIN-rail	
Power loss	3 W	

#### Accessories

Description	Item No.	Pack. Unit
Coding pin carrier	2092-1610	1
Jumpers	859-402	1

# Stripboards for Modular Empty Housings 2857 Series



Stripboard, for installation in 12.5 mm and 22.5 mm empty housings

Item No.	Pack. Unit
2857-191/3140-000	5 (5 x 1)

Stripboard, for installation in 12.5 mm and 22.5 mm empty housings

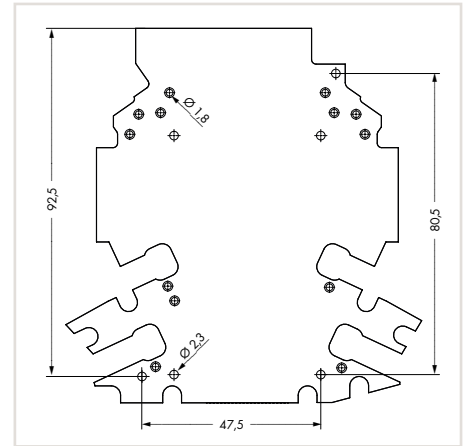
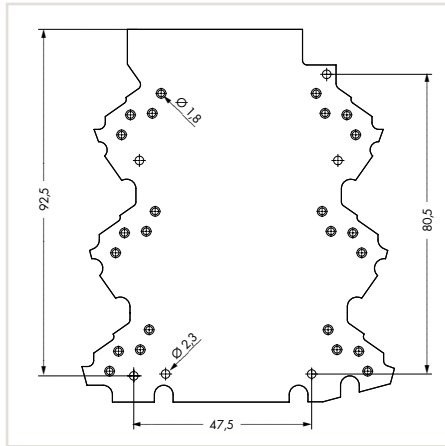
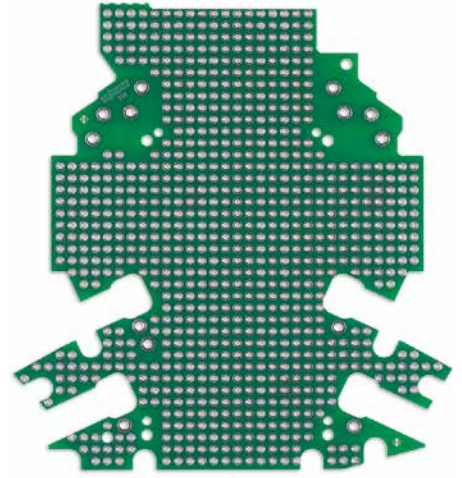
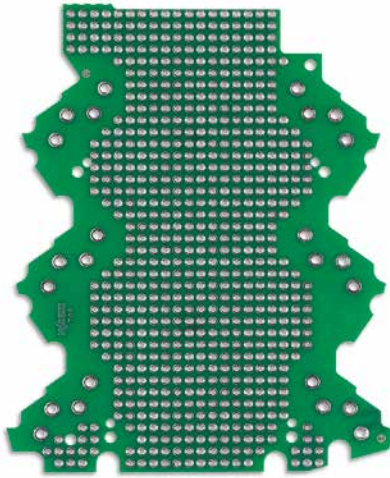
Item No.	Pack. Unit
2857-192/3140-000	5 (5 x 1)

9

**Technical Data**

Connection levels	2-2
Jumper slots	2-2

Connection levels	3-2
Jumper slots	0-2



Stripboard, for installation in 12.5 mm and 22.5 mm empty housings		
	Item No.	Pack. Unit
	2857-193/3140-000	5 (5 x 1)

Stripboard, for installation in 12.5 mm and 22.5 mm empty housings		
	Item No.	Pack. Unit
	2857-194/3140-000	5 (5 x 1)

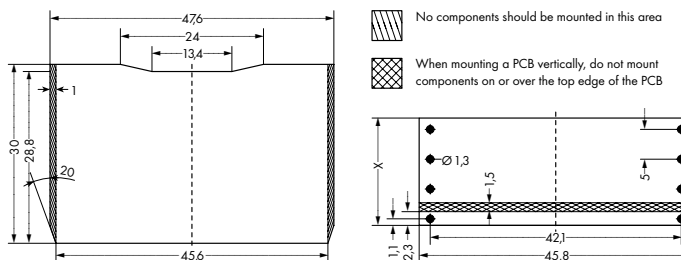
**Technical Data**

Connection levels	3-3
Jumper slots	0-0

1-1	
2-2	

# Empty Component Plug Housings for Building Custom Circuits

## 286/786 Series



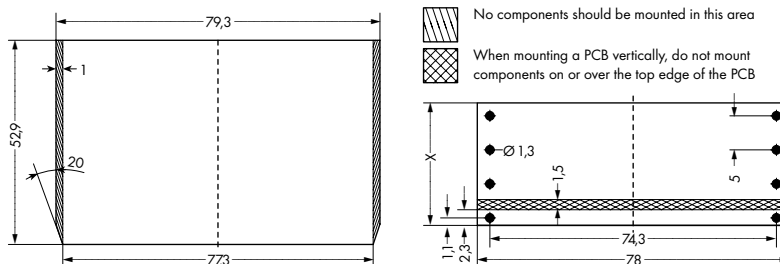
Module width	10	15	20	25
Component height	4.2	9.2	14.2	19.2
X = total height of PCB	8	13	18	23

### Empty component plug housing, 286 Series

Type	Pole	Width	Item No.	Pack. Unit
9	4	10 mm wide / 0.394 inch	286-110	1
10	6	15 mm / 0.591 inch	286-111	1
11	8	20 mm / 0.787 inch	286-112	1
12	10	25 mm / 0.984 inch	286-113	1

#### Technical Data

Rated voltage	250 V
Rated impulse voltage	4 KV
Pollution degree	3
per contact	6 A
Module height	82.5 mm (from upper-edge of DIN-rail)



Module width	15	20	25
Component height	9.2	14.2	19.2
X = total height of PCB	13	18	23

### Empty component plug housing, 786 Series

Type	Pole	Width	Item No.	Pack. Unit
14	6	15 mm / 0.591 inch	786-101	1
15	8	20 mm / 0.787 inch	786-102	1
16	10	25 mm / 0.984 inch	786-103	1

#### Technical Data

Rated voltage	250 V
Rated impulse voltage	4 KV
Pollution degree	3
per contact	6 A
Module height	82.5 mm (from upper-edge of DIN-35 rail)

## Accessories

Unlocking pliers for component plug housings



	Item No.	Pack. Unit
	210-492	1

WSB Quick marking system,  
10 strips with 10 markers,  
white with black printing



Marking	Item No.	Pack. Unit
plain	209-501	5 cards
1 ... 10 (10 x)	209-702	5 cards

Terminal block for pluggable modules

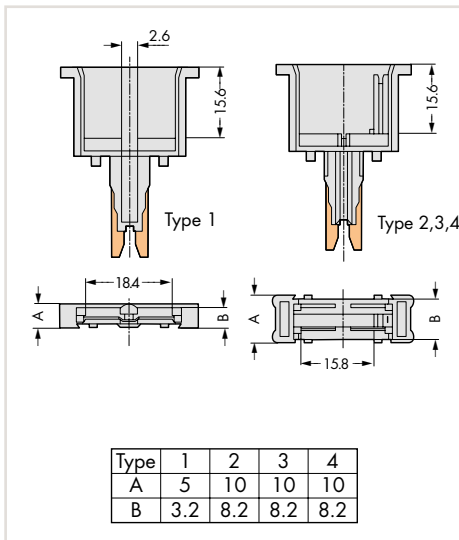


Description	Width	Item No.	Pack. Unit
Terminal block for pluggable modules with 2-conductor terminal blocks, orange separator	12 mm	280-618	1
Terminal block for pluggable modules with 4-conductor terminal blocks, orange separator	12 mm	280-608	1
Terminal block for pluggable modules with 2-conductor terminal blocks, orange separator	17 mm	280-619	1
Terminal block for pluggable modules with 4-conductor terminal blocks, orange separator	17 mm	280-609	1
Terminal block for pluggable modules with 2-conductor terminal blocks, orange separator	22 mm	280-638	1
Terminal block for pluggable modules with 4-conductor terminal blocks, orange separator	22 mm	280-628	1
Terminal block for pluggable modules with 2-conductor terminal blocks, orange separator	27 mm	280-639	1
Terminal block for pluggable modules with 4-conductor terminal blocks, orange separator	27 mm	280-629	1

Conductor range: 0.08 mm<sup>2</sup> ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 in.

# Empty Component Plug Housings for Building Custom Circuits

## 280 Series

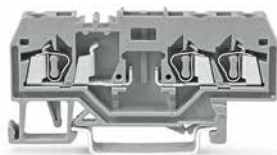


Empty component plug housing			
	Description	Item No.	Pack. Unit
Type 1	2-pole, 5 mm/0.197 inch wide; Plug inside dimensions (W/H/D): 3.2/15/15 mm	280-801	100
Type 2	2-pole, 10 mm/0.394 inch wide; Plug inside dimensions (W/H/D): 8.2/15/15 mm	280-802	50
Type 3	4-pole, 10 mm/0.394 inch wide; Plug inside dimensions (W/H/D): 8.2/15/15 mm	280-804	50

Technical Data	
Rated voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	3
per contact	6 A (max.)



2-conductor carrier terminal block



3-conductor carrier terminal block



4-conductor carrier terminal block

Carrier terminal block			
	Description	Item No.	Pack. Unit
2-conductor carrier terminal block	gray, terminal block width: 5 mm/0.197 inch, marking on both sides	280-616	100
2-conductor carrier terminal block	gray, terminal block width: 5 mm/0.197 inch, marking in center position	280-916	100
3-conductor carrier terminal block	gray, terminal block width: 5 mm/0.197 inch	280-610	100
4-conductor carrier terminal block	gray, terminal block width: 5 mm/0.197 inch, marking on both sides	280-606	100
4-conductor carrier terminal block	gray, terminal block width: 5 mm/0.197 inch, marking in center position	280-686	100

Technical Data	
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch





**Empty component plug housing**

	Description	Item No.	Pack. Unit
Type 4	2-pole, 10 mm/0.394 inch wide; Plug inside dimensions (W/H/D): 8.2/15/15 mm	280-803	50

**Technical Data**

Rated voltage	250 V
Rated impulse voltage	4 KV
Pollution degree	3
per contact	6 A (max.)

Type	1	2	3	4
A	5	10	10	10
B	3.2	8.2	8.2	8.2



2-conductor through terminal block

**Through terminal block**

	Description	Item No.	Pack. Unit
2-conductor, front-entry wiring	gray, terminal block width: 5 mm/0.197 inch, marking on both sides	280-601	100
2-conductor, front-entry wiring	gray, terminal block width: 5 mm/0.197 inch, marking in center position	280-901	100
3-conductor, front-entry wiring	gray, terminal block width: 5 mm/0.197 inch	280-681	100



3-conductor through terminal block

**Technical Data**

Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 12 AWG (12 AWG: THHN, THWN)
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch



4-conductor through terminal block

**Through terminal block**

	Description	Item No.	Pack. Unit
4-conductor, front-entry wiring	gray, terminal block width: 5 mm/0.197 inch, marking on both sides	280-621	100
4-conductor, front-entry wiring	gray, terminal block width: 5 mm/0.197 inch, marking in center position	280-833	100
2-conductor, front-entry wiring	gray, terminal block width: 5 mm/0.197 inch	280-101	100



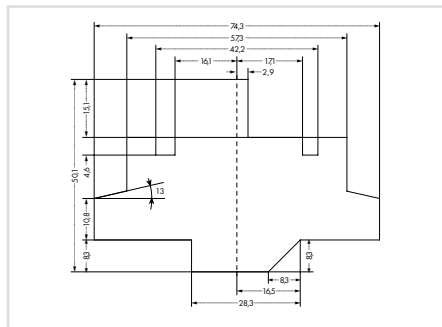
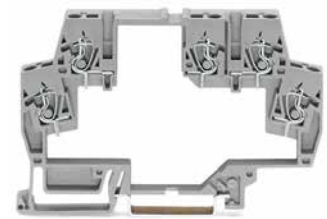
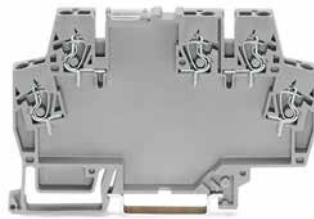
2-conductor through terminal block

**Technical Data**

Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch

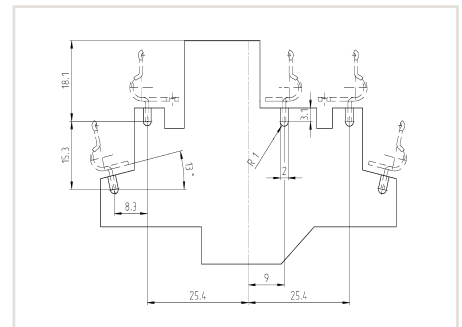
# Empty Electronic Terminal Block Housings

## 859 Series



PCB dimensions

Modular housing for mounting electronic components in a rail-mounted terminal block		
	Item No.	Pack. Unit
	859-110	1



PCB dimensions

Frame to enlarge terminal block width		
	Item No.	Pack. Unit
	859-501	1

### Technical Data

Housing material	PA 66	PA 66
Flammability rating	V0 (UL94)	V0 (UL94)
Color	gray	gray
Protection type	IP20	IP20
Permissible ambient operating temperature	-25 ... +70 °C	-25 ... +70 °C
Storage temperature	-40 ... +85 °C	-40 ... +85 °C
Width	6 mm	8 mm
Mounting position	Any	Any
Dimensions (W x H x D)	6 x 56 x 91 mm, height from upper-edge of DIN-rail	6 x 56 x 91 mm, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch	5 ... 6 mm / 0.2 ... 0.24 inch

## Accessories

### 859 Series

End and intermediate plate



Description	Item No.	Pack. Unit
End and intermediate plate, 1 mm thick, gray	859-525	100 (4x25)

Push-in type jumper bar, light gray, insulated, 18 A



Description	Item No.	Pack. Unit
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. suffixes for colored push-in type jumper bars	yellow	... /000-029
	red	... /000-005
	blue	... /000-006

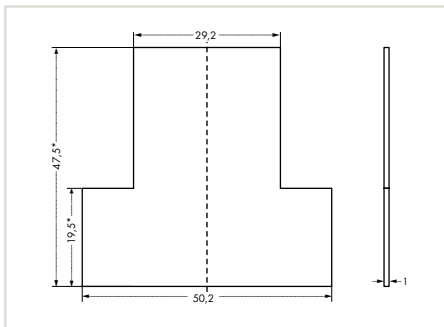
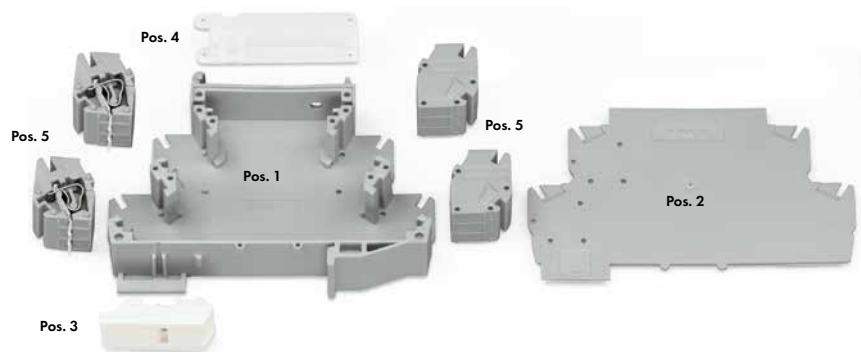
Test pin



Description	Item No.	Pack. Unit
Test pin, 1 mm Ø, with solder connection for test cable	100 (100x1)	1

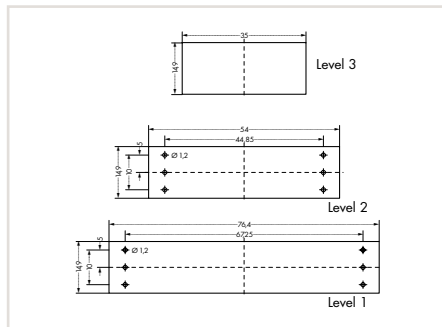
# DIN-Rail-Mount Enclosures

## 789 Series

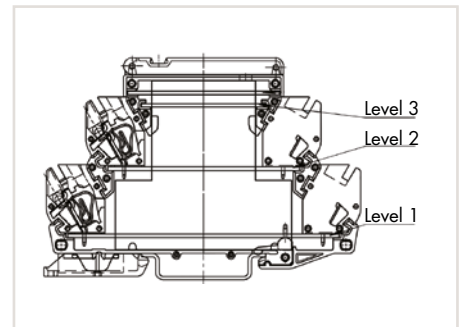


PCB dimensions, horizontal mounting

\*less 4.5 mm when mounting a vertical PCB on level 1



PCB dimensions, vertical mounting: (PCB thickness max. 1.5 mm) in level 1; (PCB thickness max. 1 mm) in level 2 and 3



### Universal modular component plug housing, as rail-mount terminal block

Description	Pos.	Item No.	Pack. Unit
Housing: 55 mm	1	789-120	1
Top cover: 55 mm	2	789-122	1
Transparent cover	4	789-124	1
Release mechanism	3	789-126	1
Terminal block, 3-pole: CCC*	5	789-127	1
Terminal block, 3-pole: COC*	5	789-128	1
Terminal block, 3-pole: CCO*	5	789-129	1
Terminal block, 3-pole: OCC*	5	789-130	1
Terminal block, 3-pole: OCO*	5	789-131	1
Terminal block, 3-pole: OOO*	5	789-132	1
Terminal block, 3-pole: OOC*	5	789-133	1
Terminal block, 3-pole: COO*	5	789-134	1

\*C = with clamping spring, O = without clamping spring, enclosure open on the right side

#### Technical Data

Rated voltage	250 V
Rated impulse voltage	4 kV
Pollution degree	3
Housing material	PA 66
Flammability rating	V0
Color	gray (similar to RAL 7038)
Protection type	IP20
Permissible ambient operating temperature	-25 ... +70 °C
Storage temperature	-40 ... +85 °C
Mounting position	Any
Dimensions (W x H x D)	17.5 x 55 x 90 mm, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	9 ... 10 mm / 0.35 ... 0.39 inch

## Accessories

### 789 Series

Push-in type jumper bar



Description	Item No.	Pack. Unit
I <sub>N</sub> 16 A uninsulated, 12-way, to be cut to the required length	789-112	100 (4x25)

Operating tool, with a partially insulated shaft



Description	Item No.	Pack. Unit
Type 2, (3.5 x 0.5) mm blade	210-620	1

Felt-tip pen



Description	Item No.	Pack. Unit
for permanent marking	210-110	1

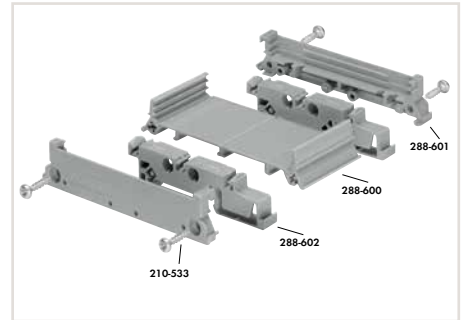
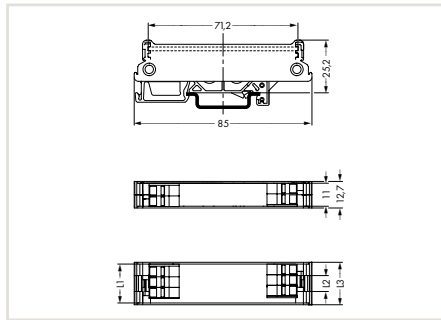
WMB Multi marking system,  
10 strips with 10 markers,  
white with black printing



Description	Item No.	Pack. Unit
plain	248-501	5 cards
Marking		
1 ... 10 (10 x)	248-502	5 cards
11 ... 20 (10 x)	248-503	5 cards
21 ... 30 (10 x)	248-504	5 cards
31 ... 40 (10 x)	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

## DIN-Rail Mount PCB Carriers

### 288 Series



Mounting carrier (size 1)

#### Length calculation for a complete mounting carrier:

PCB length: L1

Base length: L2 = L1 - 11 mm

Mounting carrier length: L3 = L1 + 2 mm

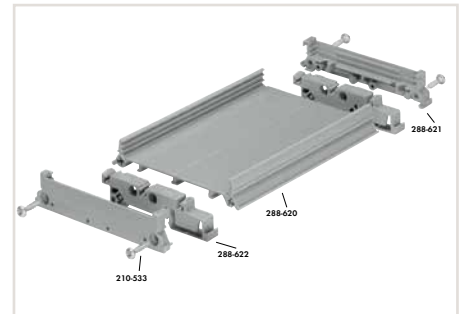
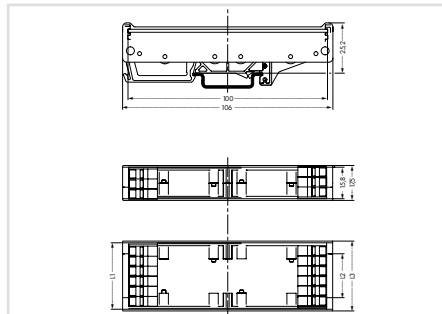
Lateral cover (size 1): 6.35 mm thick

Free space between base and PCB (when using upper PCB groove): 5 mm

PCB tolerances: 1.5 mm ± 0.2 mm (thickness), ± 0.2 mm (length/width); -0.1/+0.3 for milling contours

#### DIN-rail mount PCB carrier, size 1

Description	Item No.	Pack. Unit
Lateral cover, size 1, small, 6.35 mm thick	288-601	1
Mounting foot for DIN-35 rail	288-602	1
Carrier base, size 1, 1 m long	288-600	1



Mounting carrier (size 2)

#### Length calculation for a complete mounting carrier:

PCB length: L1

Base length: L2 = L1 - 15.8 mm

Mounting carrier length: L3 = L1 + 2 mm

Cover length: L4 = L1

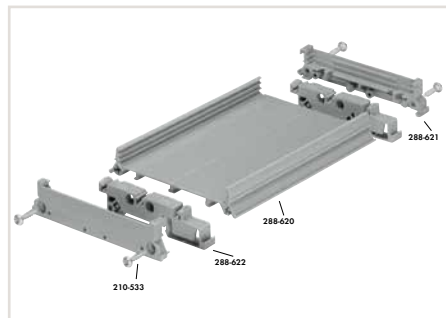
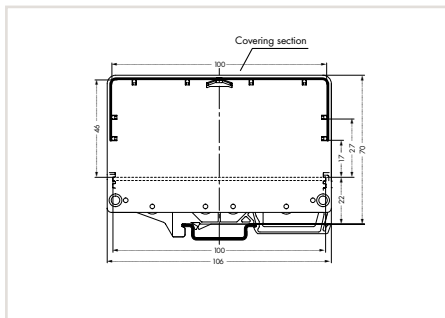
Lateral cover (size 2): 8.75 mm thick

Free space between base and PCB (when using upper PCB groove): 5 mm

PCB tolerances: 1.5 mm ± 0.2 mm (thickness), ± 0.2 mm (length/width); -0.1/+0.3 for milling contours

#### DIN-rail mount PCB carrier, size 2

Description	Item No.	Pack. Unit
Lateral cover, size 2, small, 8.75 mm thick	288-621	1
Mounting foot for DIN-35 rail	288-622	1
Carrier base, size 2, 1 m long	288-620	1



Mounting carrier (size 2)

**Length calculation for a complete mounting carrier:**

- PCB length: L1
- Base length: L2 = L1 - 15.8 mm
- Mounting carrier length: L3 = L1 + 2 mm
- Cover length: L4 = L1
- Lateral cover (size 2): 8.75 mm thick
- Free space between base and PCB (when using upper PCB groove): 5 mm
- PCB tolerances: 1.5 mm ± 0.2 mm (thickness), ± 0.2 mm (length/width); -0.1/+0.3 for milling contours

DIN-rail mount PCB carrier, size 2 with cover		
Description	Item No.	Pack. Unit
Lateral cover, size 2, large, 8.75 mm thick	288-626	1
Cover, size 2, 1 m long	288-627	1

**Accessories**

Marking strips

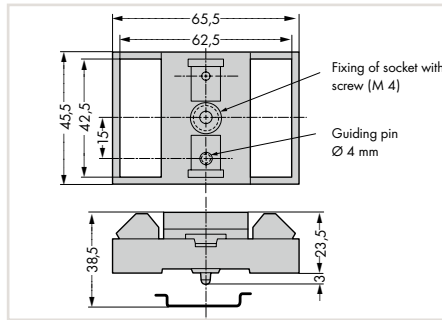
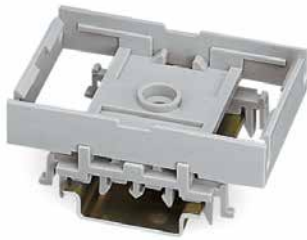


Description	Item No.	Pack. Unit
Phillips screw 2.9 x 13*	210-533	25
Marking strip, (7.5 x 0.5) mm, 1 m long, translucent	709-196	1

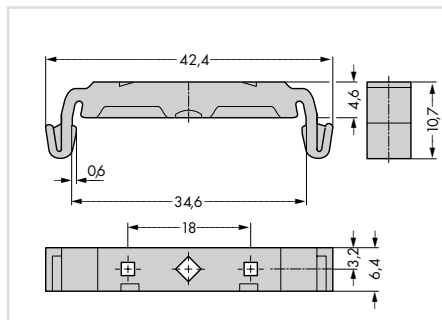
\* Two pieces per lateral cover; for a module length of 35 mm or higher; lateral covers must be riveted for smaller modules. Rivet length depends on module length (rivets are not offered by WAGO).

# DIN-Rail-Mount PCB Carriers and Feet

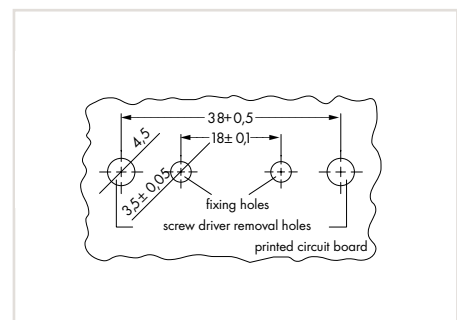
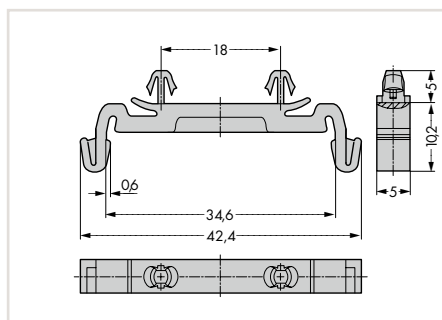
## 288/209 Series



Mounting carrier			
Description	Item No.	Pack. Unit	
Mounting carrier	For screw or DIN-rail mounting via universal snap-on type mounting feet (to be ordered separately)	288-001	1
Universal mounting foot	Snap-on type, for DIN-15, DIN-32 and DIN-35 rails	288-002	10
Mounting carrier for PCBs	Suitable for a "Eurocard" PCB (100 x 160 mm)	288-003	1



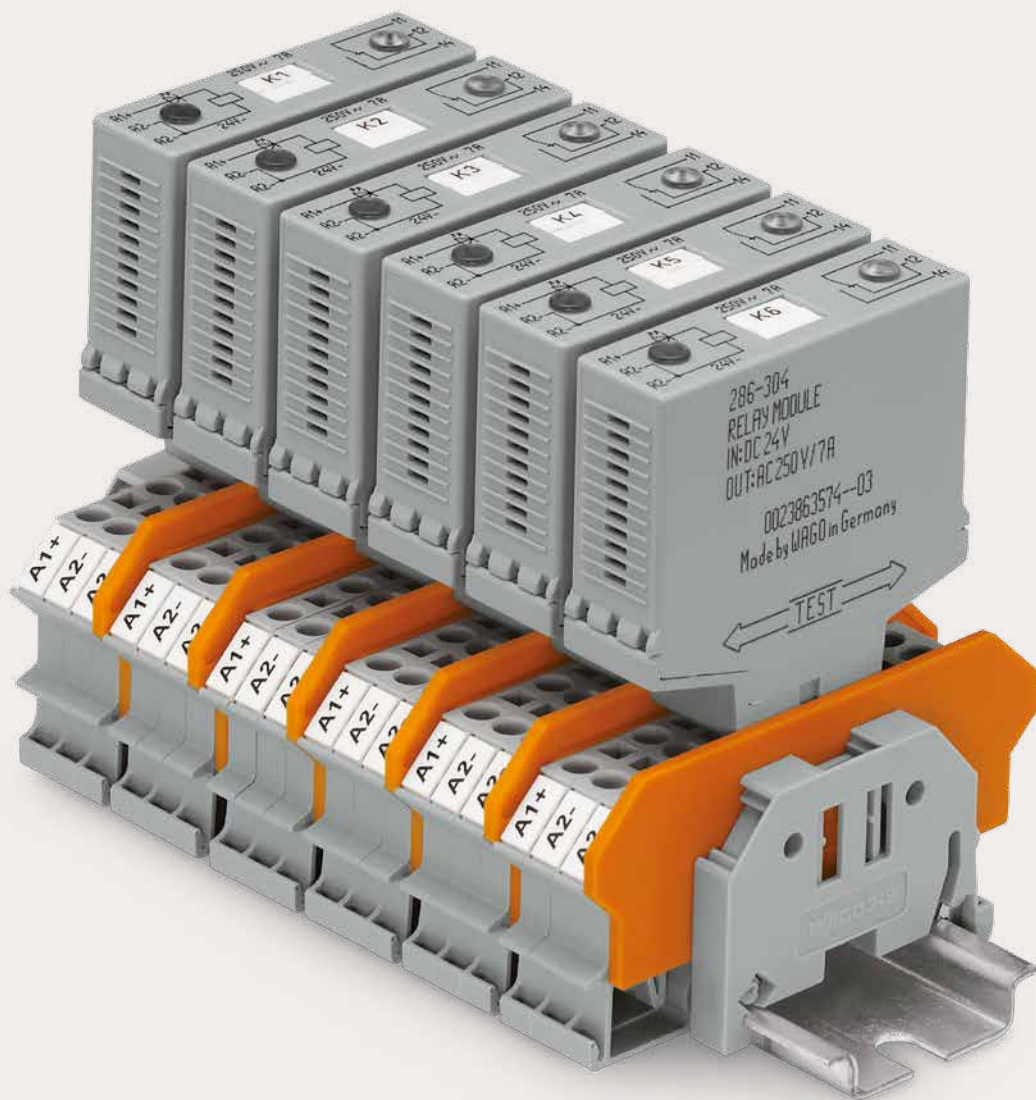
Mounting foot			
Description	Item No.	Pack. Unit	
Mounting foot	For screwing onto relay modules, 2 mm Ø holes for mounting screws, 3.2 mm PCB hole diameter, 18 mm distance, for DIN-35 rail mounting	209-120	25
Mounting screw	For mounting foot (209-1209)	209-119	50



Mounting foot			
Description	Item No.	Pack. Unit	
Mounting foot	Snaps on relay modules, for 3.5 mm mounting hole diameter, 18 mm distance, for DIN-35 rail mounting	209-188	25











# Overvoltage Protection

## Overvoltage Protection

		Page
	<b>Rail-Mount Terminal Blocks, with Overvoltage Protection</b>	
	792 Series	546
	Accessories, 792 Series	550
	<b>Rail-Mount Terminal Blocks, with Overvoltage Protection</b>	
	280 Series	552
	<b>Double-Deck Terminal Blocks with a Surge Suppression Device</b>	
	280 Series	570
	<b>Pluggable Surge Suppression Modules</b>	
	Pluggable Surge Suppression Modules for Carrier Terminal Blocks, 286 Series	580
	Pluggable Surge Suppression Modules for Carrier Terminal Blocks, 286 Series	584

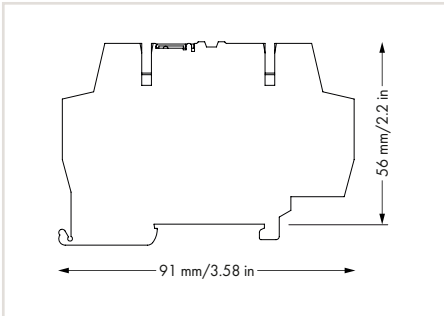
# Rail-Mount Terminal Blocks with Overvoltage Protection, for DIN-35 Rails

## 792 Series



### Technical Data

Coordination characteristics	X / 1
Protection type	IP00
Degree of protection with end and intermediate plate	IP20
Operating temperature	-40 ... +80 °C
Storage temperature	-40 ... +80 °C
Dimensions W x H x D	6 x 56 x 91 mm, height from upper-edge of DIN-rail
Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	5 ... 6 mm / 0.2 ... 0.24 inch
Standards/approvals	IEC 61643-21



### Short description:

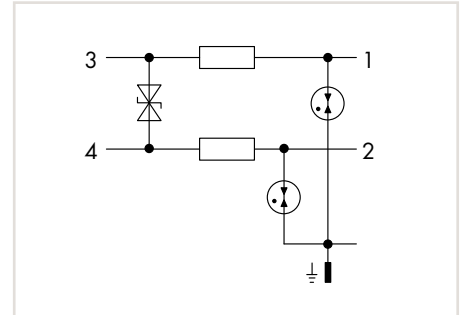
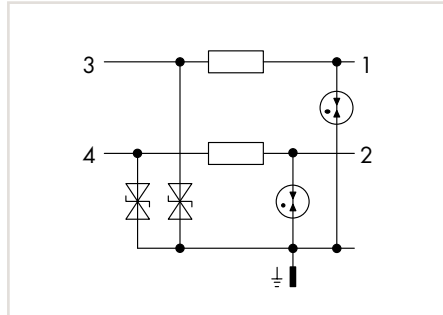
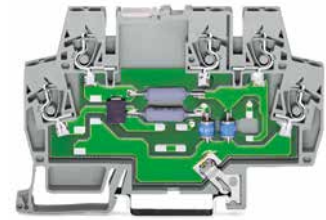
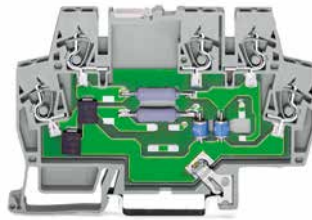
Surge protection devices for IT systems and devices in the voltage range up to 60 V (except special solutions, e.g., telephone systems with call voltage)

Overvoltage protection is also possible for DIN-35 rail-mount terminal blocks. Multi-stage surge suppression devices in rail-mount terminal blocks (792-80x Series) of just 6 mm width ensure cost-effective protection for control and bus technology (e.g., LON® network, PROFIBUS network, binary signals).

### Features:

- Protect your system against overvoltage
- Slim, space-saving design
- Control operational costs by preventing expensive, unplanned downtime
- High operational reliability and system uptime

The coordination characteristics give information about the let-through energy of the overvoltage protector and the protection capacity.



Surge suppression module, for signal circuits, 24 VDC nominal voltage, for two signal paths with common discharge connection, for symmetrical interfaces, 2-stage, 6 mm wide

Nominal voltage	Item No.	Pack. Unit
24 VDC	792-800	1

Surge suppression module, for signal circuits, 24 VDC nominal voltage, for two signal paths with common discharge connection, for asymmetrical interfaces, 2-stage, 6 mm wide

Nominal voltage	Item No.	Pack. Unit
24 VDC	792-801	1

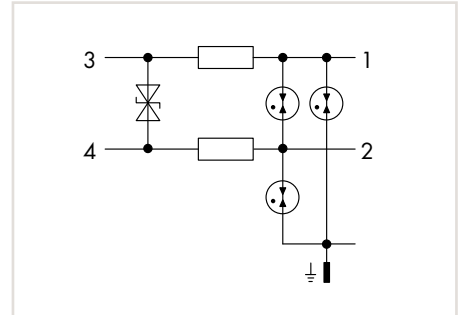
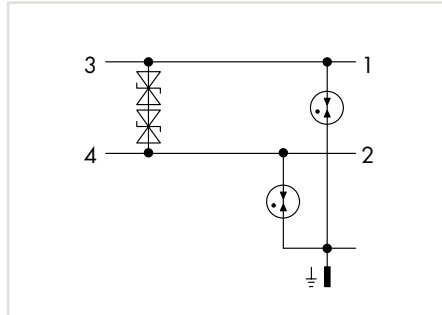
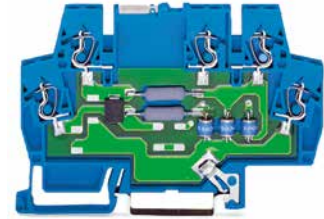
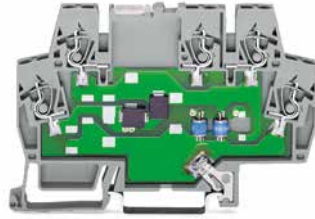
#### Specific Electrical Data

Nominal voltage	24 VDC
Max. continuous operating voltage	33 VDC / 23 VAC
Max. input voltage per EN 50020 Ui	
Max. input current per EN 50020 Ii	
Nominal current	0.5 A
Nominal discharge current $I_{SN}$ (8/20) $\mu$ s	5 kA per line; 10 kA total
Voltage protection level at $I_N$ category C2	$\leq 65$ V (line/PG); $\leq 110$ V (line/line)
Voltage protection level at 1 kV/ $\mu$ s category C3	$\leq 45$ V (line/PG); $\leq 90$ V (line/line)
Series impedance per line	1.8 $\Omega$
Response time $t_a$	$\leq 1$ ns
Limiting frequency	6 MHz (line/PG)
Capacitance C	$\leq 1.0$ nF (line/PG); $\leq 0.5$ nF (line/line)

Nominal voltage	24 VDC
Max. continuous operating voltage	33 VDC / 23 VAC
Max. input voltage per EN 50020 Ui	
Max. input current per EN 50020 Ii	
Nominal current	0.5 A
Nominal discharge current $I_{SN}$ (8/20) $\mu$ s	5 kA per line; 10 kA total
Voltage protection level at $I_N$ category C2	$\leq 50$ V (line/line); $\leq 750$ V (line/PG)
Voltage protection level at 1 kV/ $\mu$ s category C3	$\leq 45$ V (line/line); $\leq 650$ V (line/PG)
Series impedance per line	1.8 $\Omega$
Response time $t_a$	$\leq 100$ ns (line/PG); $\leq 1$ ns (line/line)
Limiting frequency	6 MHz (line/PG)
Capacitance C	$\leq 5$ pF (line/PG); $\leq 1$ nF (line/line)

# Rail-Mount Terminal Blocks with Overvoltage Protection, for DIN-35 Rails

## 792 Series



Surge suppression module, for signal circuits, 24 VDC nominal voltage, for two signal paths with common discharge connection, for supply lines, 1-stage, 6 mm wide

Nominal voltage	Item No.	Pack. Unit
24 VDC	792-802	1

Surge suppression module, for signal circuits, 24 VDC nominal voltage, for two signal paths with common discharge connection, for symmetrical interfaces, 2-stage, for protecting intrinsically safe circuits, 6 mm wide

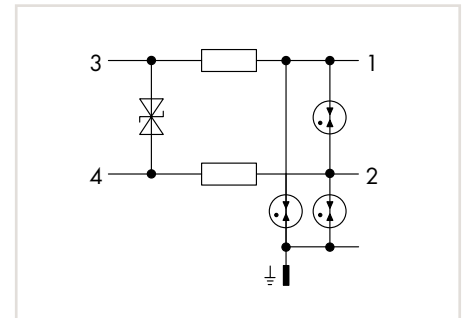
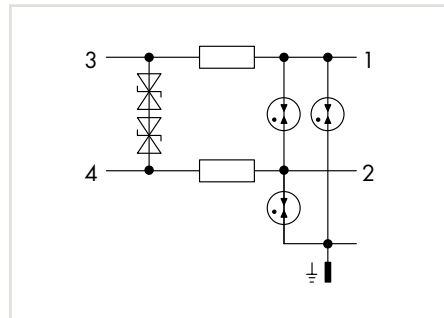
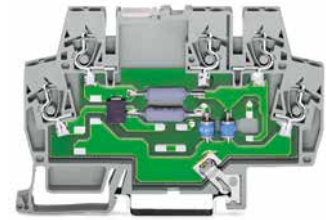
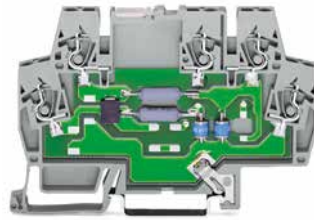
Nominal voltage	Item No.	Pack. Unit
24 VDC	792-803	1

### Specific Electrical Data

Nominal voltage
Max. continuous operating voltage
Max. input voltage per EN 50020 Ui
Max. input current per EN 50020 Ii
Nominal current
Nominal discharge current $I_{SN}$ (8/20) $\mu$ s
Voltage protection level at $I_N$ category C2
Voltage protection level at 1 kV/ $\mu$ s category C3
Series impedance per line
Response time $t_a$
Limiting frequency
Capacitance C

24 VDC
33 VDC / 23 VAC
10 A
5 kA (line/PG); 300 A (line/line)
$\leq 50$ V (line/line); $\leq 750$ V (line/PG)
$\leq 45$ V (line/line); $\leq 650$ V (line/PG)
$\leq 100$ ns (line/PG); $\leq 1$ ns (line/line)
7 MHz
$\leq 12$ pF (line/PG); $\leq 1$ nF (line/line)

24 VDC
33 VDC / 23 VAC
30 V
0.5 A
0.5 A
5 kA per line; 10 kA total
$\leq 1500$ V (line/PG); $\leq 50$ V (line/line)
$\leq 1400$ V (line/PG); $\leq 45$ V (line/line)
1.8 $\Omega$
$\leq 100$ ns (line/PG); $\leq 1$ ns (line/line)
6 MHz
$\leq 6$ pF (line/PG); $\leq 1$ nF (line/line)



Surge suppression module, for signal circuits, 48 VDC nominal voltage, for two signal paths with common discharge connection, for symmetrical interfaces, 2-stage, 6 mm wide

Nominal voltage	Item No.	Pack. Unit
48 VDC	792-804	1

Surge suppression module, for signal circuits, 5 VDC nominal voltage, for two signal paths with common discharge connection, for interfaces with high data rates, 2-stage, 6 mm wide

Nominal voltage	Item No.	Pack. Unit
5 VDC	792-805	1

#### Specific Electrical Data

Nominal voltage	48 VDC	5 VDC
Max. continuous operating voltage	55 VDC / 38.5 VAC	6 VDC / 4.2 VAC
Max. input voltage per EN 50020 Ui		
Max. input current per EN 50020 Ii		
Nominal current	1.7 A	0.1 A
Nominal discharge current $I_{SN}$ (8/20) $\mu$ s	5 kA per line; 10 kA total	5 kA per line; 10 kA total
Voltage protection level at $I_N$ category C2	$\leq 100$ V (line/line); $\leq 750$ V (line/PG)	$\leq 27$ V (line/line); $\leq 50$ V (line/PG)
Voltage protection level at 1 kV/ $\mu$ s category C3	$\leq 70$ V (line/line); $\leq 650$ V (line/PG)	$\leq 14$ V (line/line); $\leq 14$ V (line/PG)
Series impedance per line	0.4 $\Omega$	1 $\Omega$
Response time $t_a$	$\leq 100$ ns (line/line); $\leq 1$ ns (line/PG)	$\leq 1$ ns
Limiting frequency	10 MHz	250 MHz / 180 MHz (line/PG)
Capacitance C	$\leq 0.6$ pF (line/PG); $\leq 10$ pF (line/line)	$\leq 16$ pF (line/PG); $\leq 19$ pF (line/line)

## Accessories

### 792 Series

End and intermediate plate, 1 mm thick



Color	Item No.	Pack. Unit
gray	859-525	100 (4*25)

Push-in type jumper bar, light gray, insulated, 18 A



	Item No.	Pack. Unit
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. suffixes for colored push-in type jumper bars	Item No.	
yellow	... /000-029	
red	... /000-005	
blue	... /000-006	

Miniature WSB Quick marking system, 10 strips with 10 markers each, white with black printing

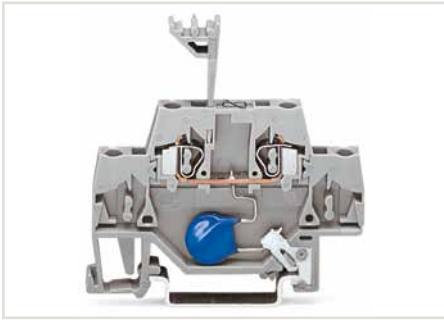


	Item No.	Pack. Unit
plain	248-501	5
Marking		
1 ... 10 (10 x)	248-502	5
11 ... 20 (10 x)	248-503	5
21 ... 30 (10 x)	248-504	5
31 ... 40 (10 x)	248-505	5
41 ... 50 (10 x)	248-506	5
1 ... 50 (2 x)	248-566	5
K 1 ... K 10 (10 x)	248-450	5
K 11 ... K 20 (10 x)	248-451	5
K 100 (10 x)	248-452	5
U 1 ... U 10 (10 x)	248-453	5
U 11 ... U 20 (10 x)	248-454	5
U 100 (10 x)	248-455	5



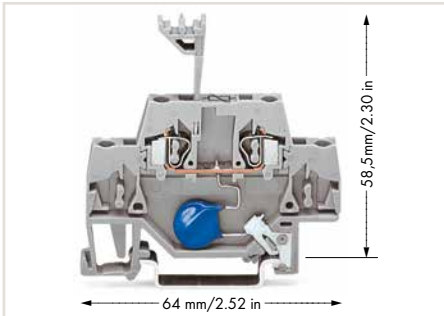


## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



### General Specifications

Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch
Terminal block width	5 mm/0.197 inch

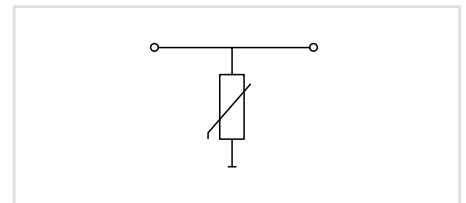
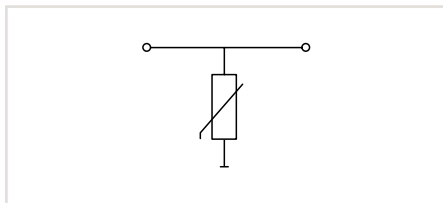
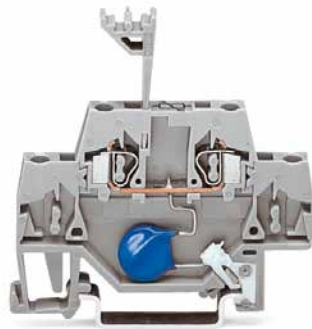


### Short description:

Terminal blocks with surge suppression device and direct connection to the DIN-35 rail; these single-stage surge suppression devices are equipped either with 280 Series gas-filled surge arrester (coarse), varistor (medium) or suppressor diode (fine).

### Features:

- Protect your system against overvoltage
- Slim, space-saving design
- Control operational costs by preventing expensive, unplanned downtime
- High operational reliability and system uptime



Terminal block, with varistor

$U_{BN}$	Item No.	Pack. Unit
24 VDC	280-502/281-609	50

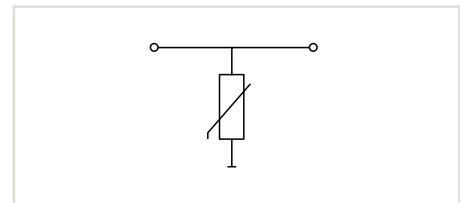
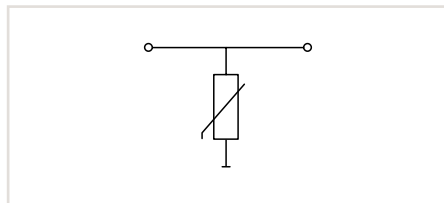
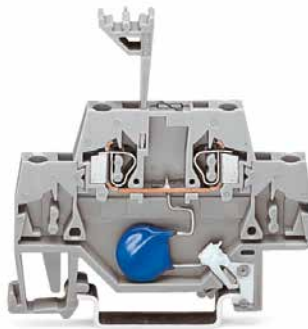
Terminal block, with varistor

$U_{BN}$	Item No.	Pack. Unit
48 VDC	280-502/281-610	50

**Specific Technical Data**

Nominal operating voltage $U_{BN}$	24 VDC	48 VDC
Maximum continuous operating voltage $U_c$	31 VDC	65 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	60 A	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	250 A	1.2 kA
Capacitance	$\leq 1.25$ nF	$\leq 0.5$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	77 VDC	135 VDC

## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



Terminal block, with varistor		
$U_{BN}$	Item No.	Pack. Unit
60 VDC	280-502/281-611	50

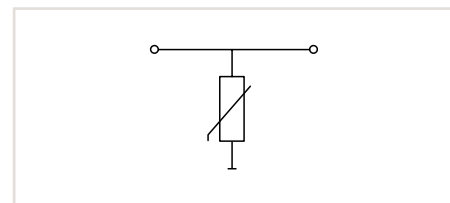
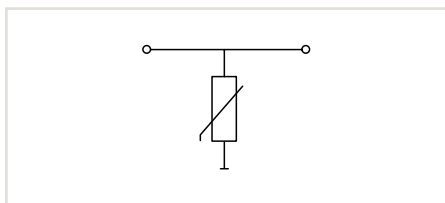
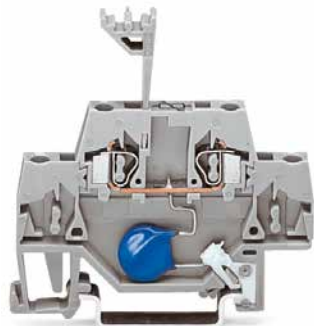
Terminal block, with varistor		
$U_{BN}$	Item No.	Pack. Unit
110 VDC	280-502/281-612	50

### Specific Technical Data

Nominal operating voltage $U_{BN}$	60 VDC
Maximum continuous operating voltage $U_c$	85 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1.2 kA
Capacitance	$\leq 0.48$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	165 VDC

Nominal operating voltage $U_{BN}$	110 VDC
Maximum continuous operating voltage $U_c$	150 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1.2 kA
Capacitance	$\leq 0.22$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	300 VAC

Nominal operating voltage $U_{BN}$	110 VDC
Maximum continuous operating voltage $U_c$	150 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1.2 kA
Capacitance	$\leq 0.22$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	300 VAC



Terminal block, with varistor		
$U_{BN}$	Item No.	Pack. Unit
24 VAC	280-502/281-613	50

Terminal block, with varistor		
$U_{BN}$	Item No.	Pack. Unit
115 VAC	280-502/281-614	50

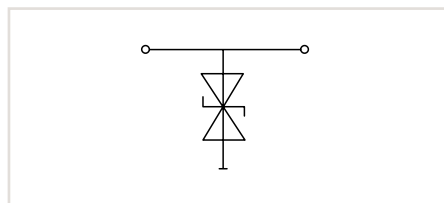
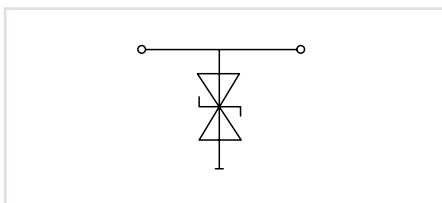
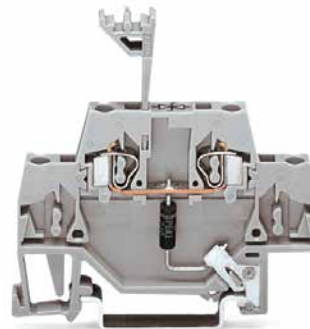
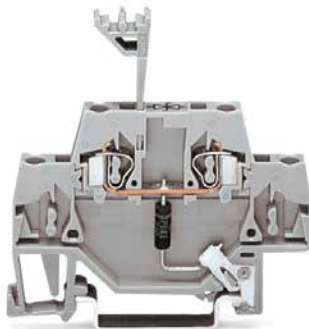
**Specific Technical Data**

Nominal operating voltage $U_{BN}$	24 VAC
Maximum continuous operating voltage $U_c$	30 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	60 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	250 A
Capacitance	$\leq 1.05$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	93 VAC

Nominal operating voltage $U_{BN}$	115 VAC
Maximum continuous operating voltage $U_c$	140 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1.2 kA
Capacitance	$\leq 0.18$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	360 VAC

Nominal operating voltage $U_{BN}$	115 VAC
Maximum continuous operating voltage $U_c$	140 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1.2 kA
Capacitance	$\leq 0.18$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	360 VAC

## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



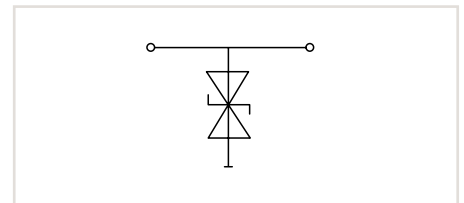
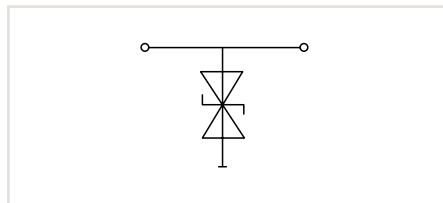
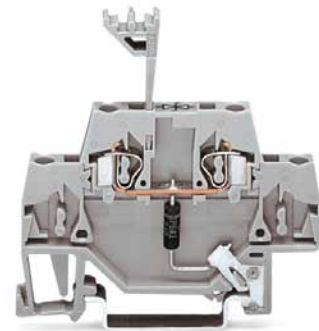
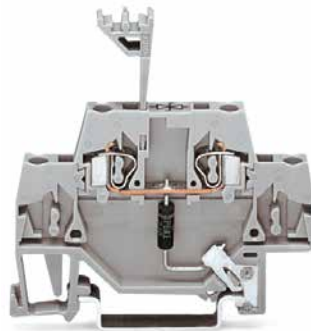
Terminal block, with suppressor		
$U_{BN}$	Item No.	Pack. Unit
24 VDC	280-502/281-602	50

Terminal block, with suppressor		
$U_{BN}$	Item No.	Pack. Unit
48 VDC	280-502/281-603	50

### Specific Technical Data

Nominal operating voltage $U_{BN}$	24 VDC
Maximum continuous operating voltage $U_c$	30.8 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	12 A
Capacitance	$\leq 1$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	50 VDC

Nominal operating voltage $U_{BN}$	48 VDC
Maximum continuous operating voltage $U_c$	58 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	6.5 A
Capacitance	$\leq 0.63$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	92 VDC



Terminal block, with suppressor

$U_{BN}$	Item No.	Pack. Unit
60 VDC	280-502/281-604	50

Terminal block, with suppressor

$U_{BN}$	Item No.	Pack. Unit
110 VDC	280-502/281-605	50

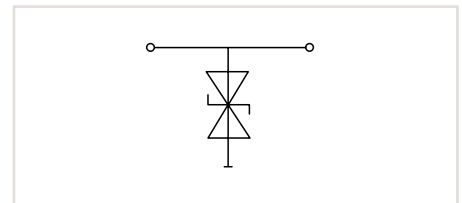
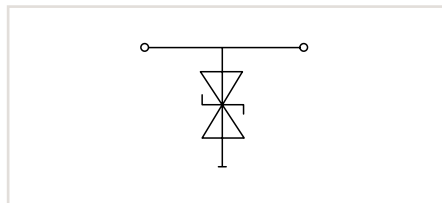
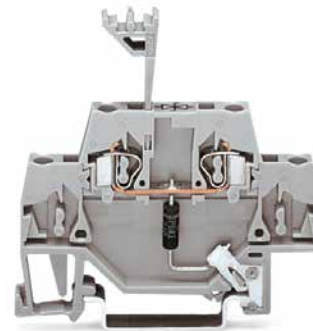
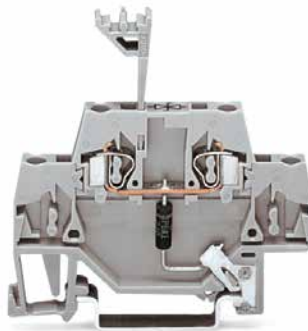
**Specific Technical Data**

Nominal operating voltage $U_{BN}$	60 VDC
Maximum continuous operating voltage $U_c$	77 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	4.8 A
Capacitance	$\leq 0.55$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	125 VDC

Nominal operating voltage $U_{BN}$	110 VDC
Maximum continuous operating voltage $U_c$	136 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	2.7 A
Capacitance	$\leq 0.4$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	219 VDC

Nominal operating voltage $U_{BN}$	110 VDC
Maximum continuous operating voltage $U_c$	136 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	2.7 A
Capacitance	$\leq 0.4$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	219 VDC

## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



Terminal block, with suppressor		
$U_{BN}$	Item No.	Pack. Unit
24 VAC	280-502/281-606	50

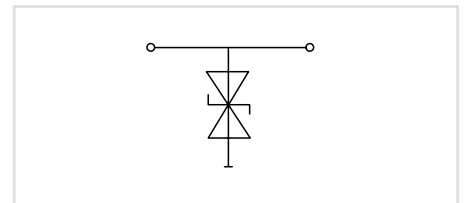
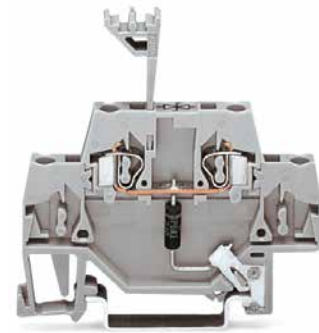
Terminal block, with suppressor		
$U_{BN}$	Item No.	Pack. Unit
115 VAC	280-502/281-607	50

### Specific Technical Data

Nominal operating voltage $U_{BN}$	24 VAC
Maximum continuous operating voltage $U_c$	28 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	9.3 A
Capacitance	$\leq 0.8$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	65 VAC

Nominal operating voltage $U_{BN}$	115 VAC
Maximum continuous operating voltage $U_c$	133 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	1.7 A
Capacitance	$\leq 0.35$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	384 VAC





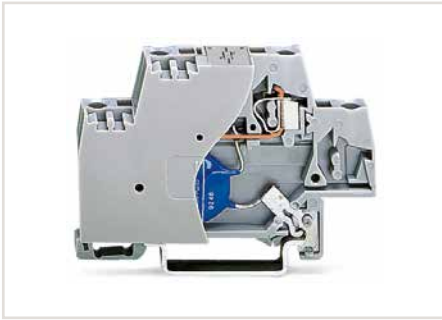
Terminal block, with suppressor

$U_{BN}$	Item No.	Pack. Unit
230 VAC	280-502/281-608	50

**Specific Technical Data**

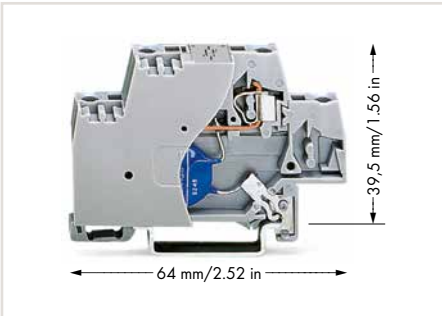
Nominal operating voltage $U_{BN}$	230 VAC
Maximum continuous operating voltage $U_C$	253 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	1.1 A
Capacitance	$\leq 0.36$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	548 VAC

## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



### General Specifications

Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch
Terminal block width	10 mm / 0.394 inch

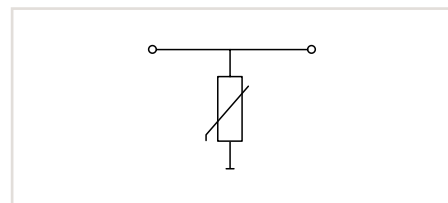
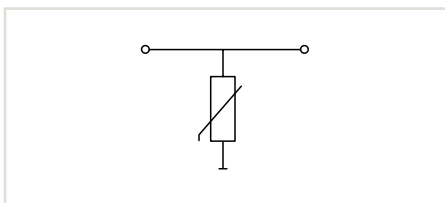
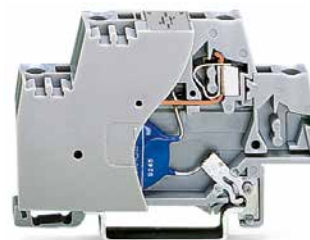
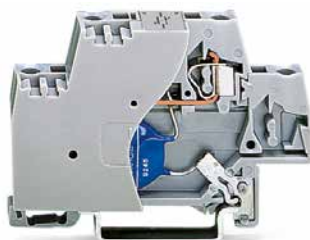


### Short description:

Terminal blocks with surge suppression device and direct connection to the DIN-35 rail; these single-stage surge suppression devices are equipped either with 280 Series gas-filled surge arrester (coarse), varistor (medium) or suppressor diode (fine).

### Features:

- Protect your system against overvoltage
- Slim, space-saving design
- Control operational costs by preventing expensive, unplanned downtime
- High operational reliability and system uptime



Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
24 VDC	280-502/281-582	25

Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
48 VDC	280-502/281-583	25

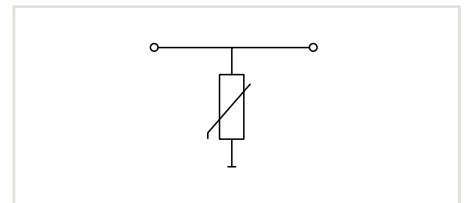
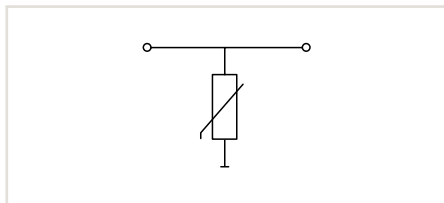
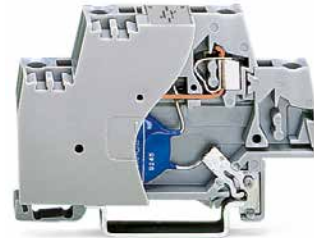
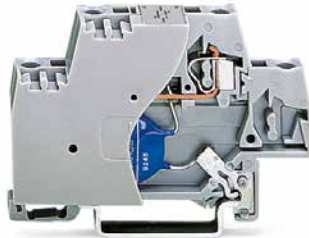
**Specific Technical Data**

Nominal operating voltage $U_{BN}$	24 VDC
Maximum continuous operating voltage $U_c$	31 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1 kA
Capacitance	$\leq 4.6$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	77 VDC

Nominal operating voltage $U_{BN}$	48 VDC
Maximum continuous operating voltage $U_c$	56 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1 kA
Capacitance	$\leq 2.8$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	135 VDC

Nominal operating voltage $U_{BN}$	48 VDC
Maximum continuous operating voltage $U_c$	56 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1 kA
Capacitance	$\leq 2.8$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	135 VDC

## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



Terminal block, with varistor and end plate

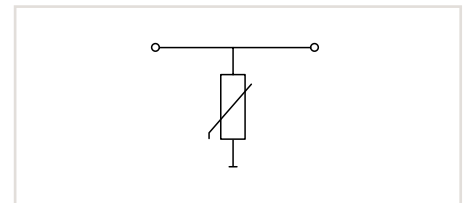
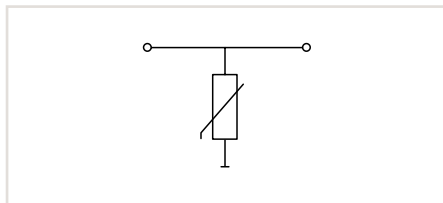
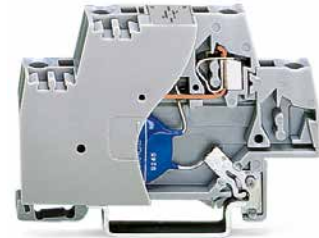
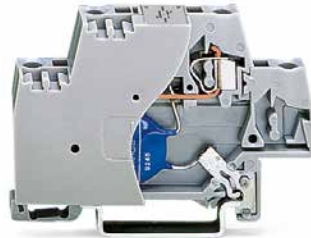
$U_{BN}$	Item No.	Pack. Unit
60 VDC	280-502/281-584	25

Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
110 VDC	280-502/281-585	25

### Specific Technical Data

Nominal operating voltage $U_{BN}$	60 VDC	110 VDC
Maximum continuous operating voltage $U_c$	85 VDC	150 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	1 kA	1 kA
Max. discharge current (8/20 $\mu$ s) $I_{max}$	4.5 kA	4.5 kA
Capacitance	$\leq 1.7$ nF	$\leq 0.8$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	165 VDC	300 VDC



Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
24 VAC	280-502/281-586	25

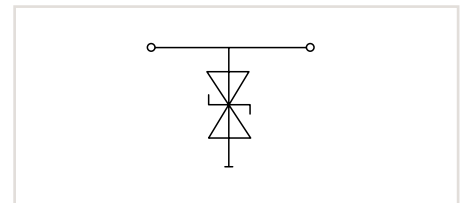
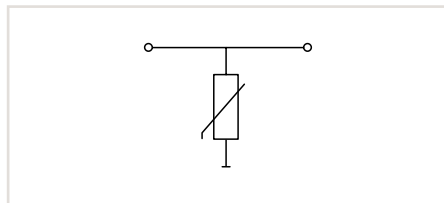
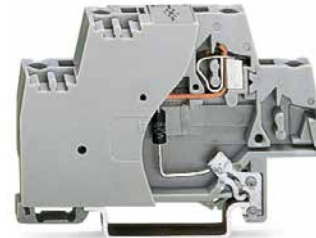
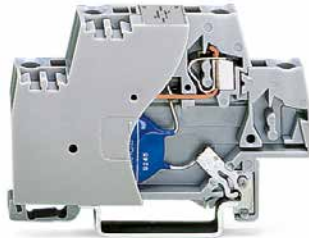
Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
115 VAC	280-502/281-587	25

**Specific Technical Data**

Nominal operating voltage $U_{BN}$	24 VAC	115 VAC
Maximum continuous operating voltage $U_c$	30 VAC	150 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A	1 kA
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1 kA	4.5 kA
Capacitance	$\leq 3.5$ nF	$\leq 0.57$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	93 VAC	395 VAC

## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



Terminal block, with varistor and end plate

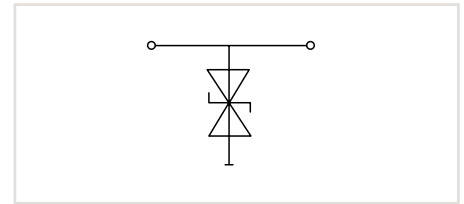
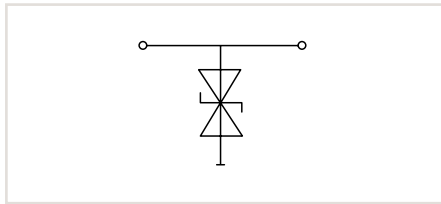
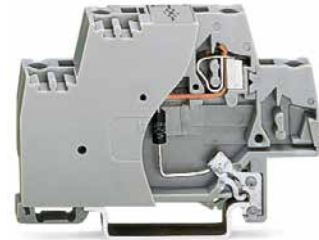
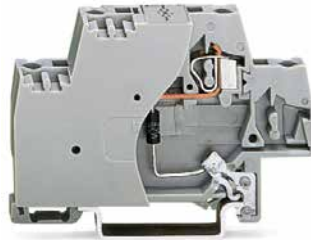
$U_{BN}$	Item No.	Pack. Unit
230 VAC	280-502/281-588	25

Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
24 VDC	280-502/281-589	25

### Specific Technical Data

Nominal operating voltage $U_{BN}$	230 VAC	24 VDC
Maximum continuous operating voltage $U_c$	275 VAC	28 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	1 kA	169 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	4.5 kA	
Capacitance	$\leq 0.32$ nF	$\leq 2.7$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	710 VAC	59 VDC



Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
48 VDC	280-502/281-590	25

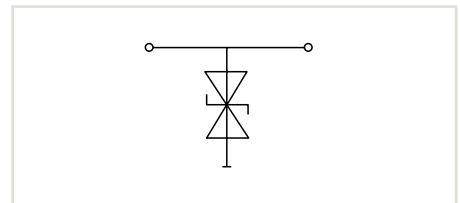
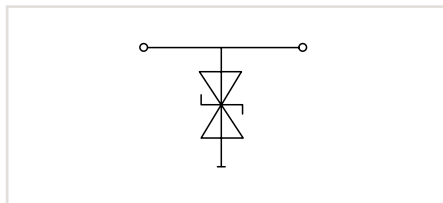
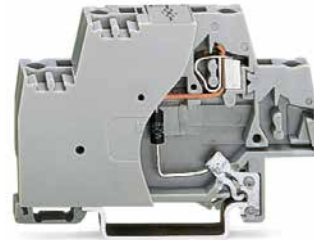
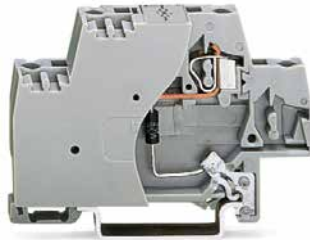
Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
60 VDC	280-502/281-591	25

#### Specific Technical Data

Nominal operating voltage $U_{BN}$	48 VDC	60 VDC
Maximum continuous operating voltage $U_c$	53 VDC	70 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	90 A	69 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$		
Capacitance	$\leq 1.7$ nF	$\leq 1.35$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	111 VDC	146 VDC

## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
110 VDC	280-502/281-592	25

Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
24 VAC	280-502/281-593	25

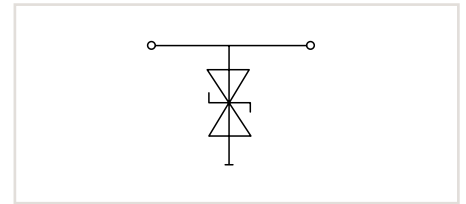
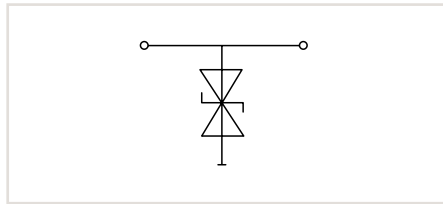
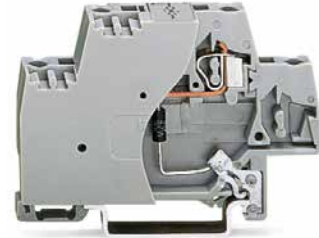
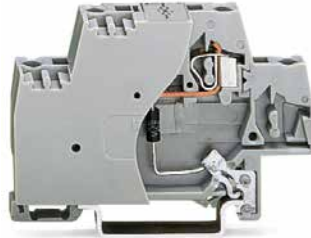
### Specific Technical Data

Nominal operating voltage $U_{BN}$	110 VDC
Maximum continuous operating voltage $U_c$	128 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	38 A
Capacitance	$\leq 0.85$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	265 VDC

24 VAC	24 VAC
26 VAC	26 VAC
143 A	143 A
$\leq 2.4$ nF	$\leq 2.4$ nF
70 VAC	70 VAC

24 VAC	24 VAC
26 VAC	26 VAC
143 A	143 A
$\leq 2.4$ nF	$\leq 2.4$ nF
70 VAC	70 VAC





Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
115 VAC	280-502/281-594	25

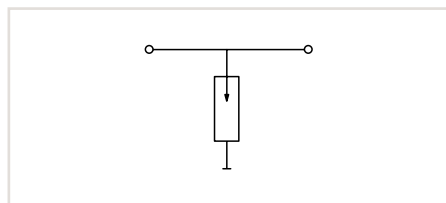
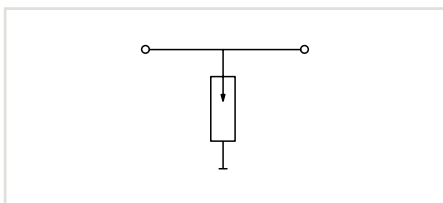
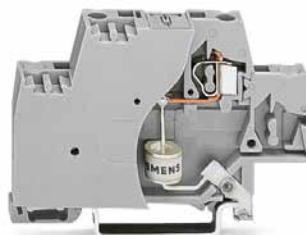
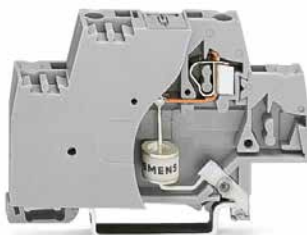
Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
230 VAC	280-502/281-595	25

#### Specific Technical Data

Nominal operating voltage $U_{BN}$	115 VAC	230 VAC
Maximum continuous operating voltage $U_c$	133 VAC	253 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	26 A	14 A
Capacitance	$\leq 0.63$ nF	$\leq 0.4$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	388 VAC	706 VAC

## Terminal Blocks with Surge Suppression Device and Direct Connection to the DIN-35 Rail 280 Series



Terminal block, with gas-filled surge arrester		
$U_{BN}$	Item No.	Pack. Unit
24 VAC/DC	280-503/281-579	25

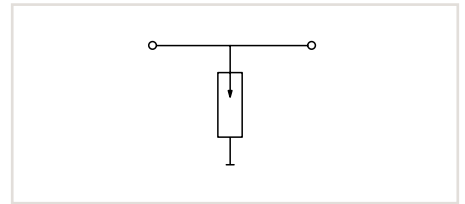
Terminal block, with gas-filled surge arrester		
$U_{BN}$	Item No.	Pack. Unit
115 VAC/DC	280-503/281-580	25

### Specific Technical Data

Maximum continuous operating voltage $U_c$	70 VAC/90 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	5 kA
Capacitance	$\leq 2$ pF
Voltage protection level (8/20 $\mu$ s) $U_p$	600 VAC

Maximum continuous operating voltage $U_c$	180 VAC/230 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	5 kA
Capacitance	$\leq 2$ pF
Voltage protection level (8/20 $\mu$ s) $U_p$	650 VAC

Maximum continuous operating voltage $U_c$	180 VAC/230 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	5 kA
Capacitance	$\leq 2$ pF
Voltage protection level (8/20 $\mu$ s) $U_p$	650 VAC



Terminal block, with gas-filled surge arrester

$U_{BN}$	Item No.	Pack. Unit
230 VAC/DC	280-503/281-581	25

**Specific Technical Data**

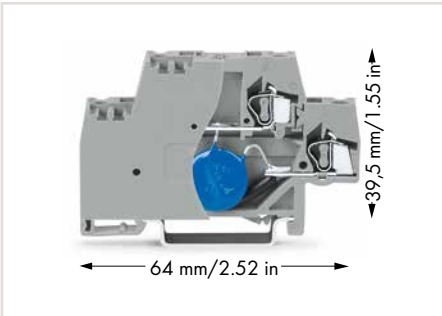
Maximum continuous operating voltage $U_c$	450 VAC/600 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	5 kA
Capacitance	$\leq 2$ pF
Voltage protection level (8/20 $\mu$ s) $U_p$	1100 VAC

## Double-Deck Terminal Blocks with a Surge Suppression Device 280 Series



### General Specifications

Connection technology	CAGE CLAMP®
Conductor range	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip length	8 ... 9 mm / 0.31 ... 0.35 inch
Terminal block width	10 mm / 0.394 inch

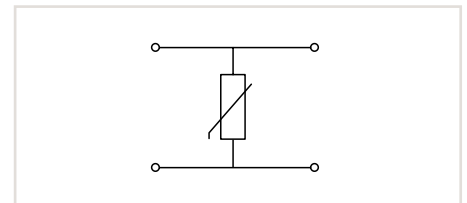
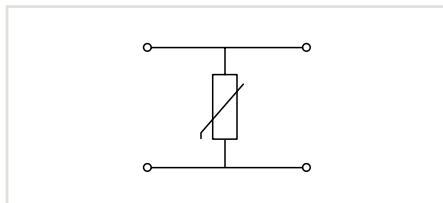
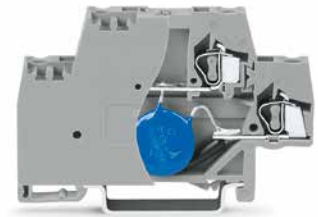
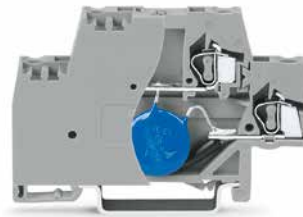


### Short description:

These single-stage surge suppression devices are equipped either with 280 Series gas-filled surge arrester (coarse), varistor (medium) or suppressor diode (fine).

### Features:

- Protect your system against overvoltage
- Slim, space-saving design
- Control operational costs by preventing expensive, unplanned downtime
- High operational reliability and system uptime



Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
24 VDC	280-504/281-582	25

Terminal block, with varistor and end plate

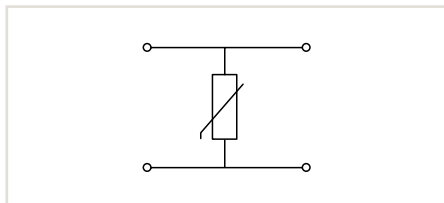
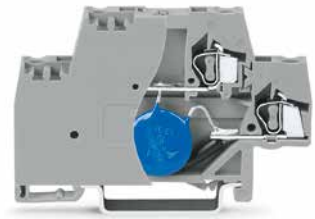
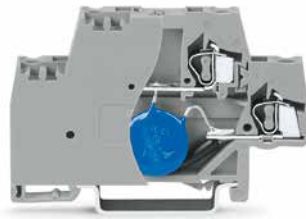
$U_{BN}$	Item No.	Pack. Unit
48 VDC	280-504/281-583	25

**Specific Technical Data**

Nominal operating voltage $U_{BN}$	24 VDC	48 VDC
Maximum continuous operating voltage $U_c$	31 VDC	56 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A	300 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1 kA	1 kA
Capacitance	$\leq 4.6$ nF	$\leq 2.8$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	77 VDC	135 VDC

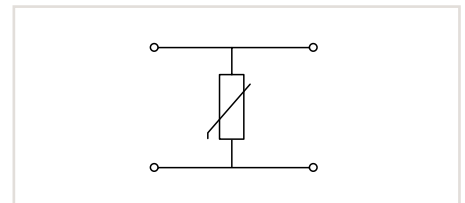
## Double-Deck Terminal Blocks with a Surge Suppression Device

### 280 Series



Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
60 VDC	280-504/281-584	25

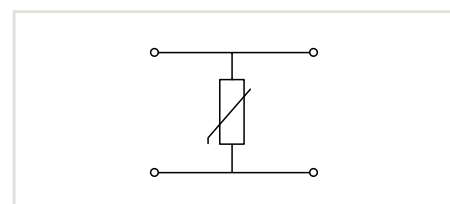
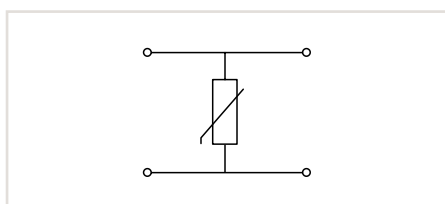
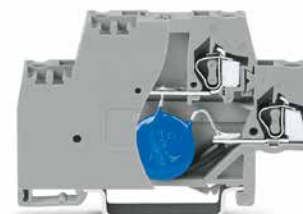
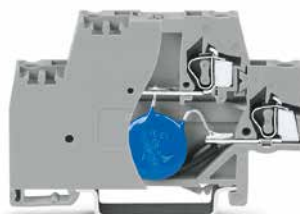


Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
110 VDC	280-504/281-585	25

#### Specific Technical Data

Nominal operating voltage $U_{BN}$	60 VDC	110 VDC
Maximum continuous operating voltage $U_c$	85 VDC	150 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	1 kA	1 kA
Max. discharge current (8/20 $\mu$ s) $I_{max}$	4.5 kA	4.5 kA
Capacitance	$\leq 1.7$ nF	$\leq 0.8$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	165 VDC	300 VDC



Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
24 VAC	280-504/281-586	25

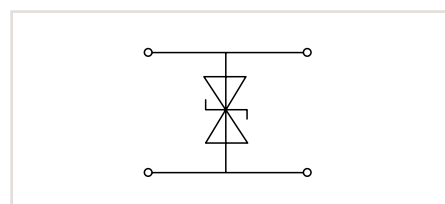
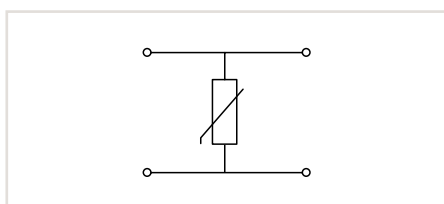
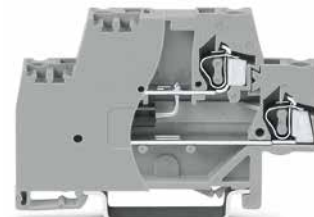
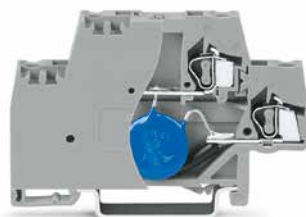
Terminal block, with varistor and end plate

$U_{BN}$	Item No.	Pack. Unit
115 VAC	280-504/281-587	25

**Specific Technical Data**

Nominal operating voltage $U_{BN}$	24 VAC	115 VAC
Maximum continuous operating voltage $U_c$	30 VAC	150 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	300 A	1 kA
Max. discharge current (8/20 $\mu$ s) $I_{max}$	1 kA	4.5 kA
Capacitance	$\leq 3.5$ nF	$\leq 0.57$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	93 VAC	395 VAC

## Double-Deck Terminal Blocks with a Surge Suppression Device 280 Series



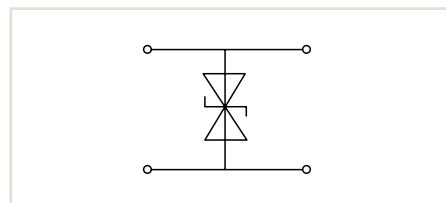
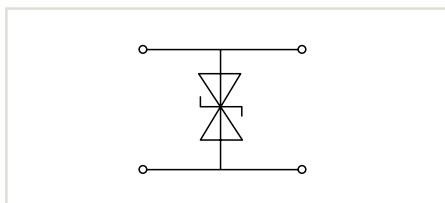
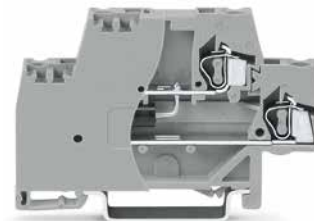
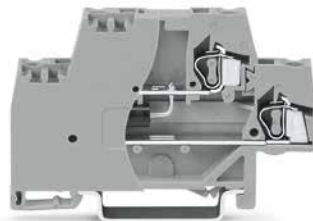
Terminal block, with varistor and end plate		
$U_{BN}$	Item No.	Pack. Unit
230 VAC	280-504/281-588	25

Terminal block, with suppressor diode and end plate		
$U_{BN}$	Item No.	Pack. Unit
24 VDC	280-944/281-589	25

### Specific Technical Data

Nominal operating voltage $U_{BN}$	230 VAC	24 VDC
Maximum continuous operating voltage $U_c$	275 VAC	28 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	1 kA	169 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	4.5 kA	
Capacitance	$\leq 0.32$ nF	$\leq 2.7$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	710 VAC	59 VDC





Terminal block, with suppressor diode and end plate		
$U_{BN}$	Item No.	Pack. Unit
48 VDC	280-944/281-590	25

Terminal block, with suppressor diode and end plate		
$U_{BN}$	Item No.	Pack. Unit
60 VDC	280-944/281-591	25

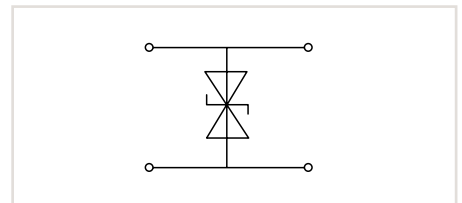
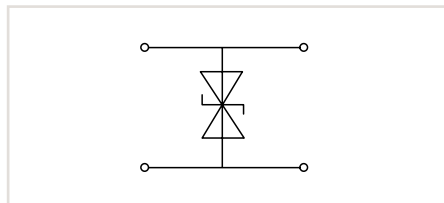
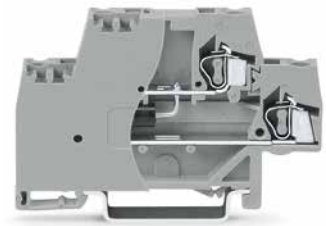
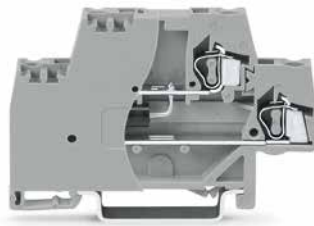
**Specific Technical Data**

Nominal operating voltage $U_{BN}$	48 VDC
Maximum continuous operating voltage $U_c$	53 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	90 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	
Capacitance	$\leq 1.7$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	111 VDC

Nominal operating voltage $U_{BN}$	60 VDC
Maximum continuous operating voltage $U_c$	70 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	69 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	
Capacitance	$\leq 1.35$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	146 VDC

Nominal operating voltage $U_{BN}$	60 VDC
Maximum continuous operating voltage $U_c$	70 VDC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	69 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	
Capacitance	$\leq 1.35$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	146 VDC

## Double-Deck Terminal Blocks with a Surge Suppression Device 280 Series



Terminal block, with suppressor diode and end plate

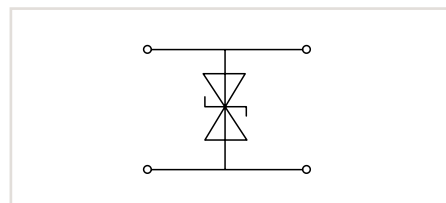
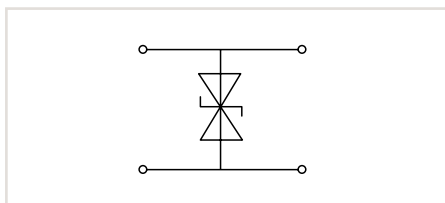
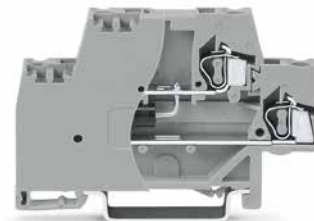
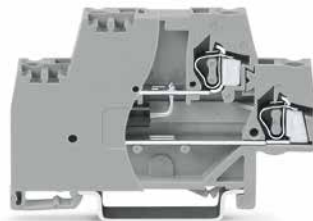
$U_{BN}$	Item No.	Pack. Unit
110 VDC	280-944/281-592	25

Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
24 VAC	280-944/281-593	25

### Specific Technical Data

Nominal operating voltage $U_{BN}$	110 VDC	24 VAC
Maximum continuous operating voltage $U_c$	128 VDC	26 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	38 A	143 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$		
Capacitance	$\leq 0.85$ nF	$\leq 2.4$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	265 VDC	70 VAC



Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
115 VAC	280-944/281-594	25

Terminal block, with suppressor diode and end plate

$U_{BN}$	Item No.	Pack. Unit
230 VAC	280-944/281-595	25

#### Specific Technical Data

Nominal operating voltage $U_{BN}$	115 VAC
Maximum continuous operating voltage $U_c$	133 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	26 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	
Capacitance	$\leq 0.63$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	388 VAC

Nominal operating voltage $U_{BN}$	230 VAC
Maximum continuous operating voltage $U_c$	253 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	14 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	
Capacitance	$\leq 0.4$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	706 VAC

Nominal operating voltage $U_{BN}$	230 VAC
Maximum continuous operating voltage $U_c$	253 VAC
Nominal discharge current (8/20 $\mu$ s) per line $I_N$	14 A
Max. discharge current (8/20 $\mu$ s) $I_{max}$	
Capacitance	$\leq 0.4$ nF
Voltage protection level (8/20 $\mu$ s) $U_p$	706 VAC

## Accessories

### 280 Series

End and intermediate plate, 2.5 mm thick



Color	Item No.	Pack. Unit
orange	280-341	100 (4x25)
gray	280-340	100 (4x25)

Insulation stop, 5 pcs/strip



Color	Diameter	Item No.	Pack. Unit
white	0.08 ... 0.2 mm <sup>2</sup> "s" (0.14 mm <sup>2</sup> "f-st")	280-470	200 (8x25)
light gray	0.25 ... 0.5 mm <sup>2</sup>	280-471	200 (8x25)
dark gray	0.75 ... 1 mm <sup>2</sup>	280-472	200 (8x25)

Comb-style jumper bar, insulated,  $I_N = I_N$  of terminal block



	Item No.	Pack. Unit
2-way	280-482	200 (8x25)
3-way	280-483	200 (8x25)
10-way	280-490	50 (2x25)

Alternate comb-style jumper bar, insulated,  $I_N = I_N$  of terminal block



	Item No.	Pack. Unit
2-way	280-492	200 (8x25)



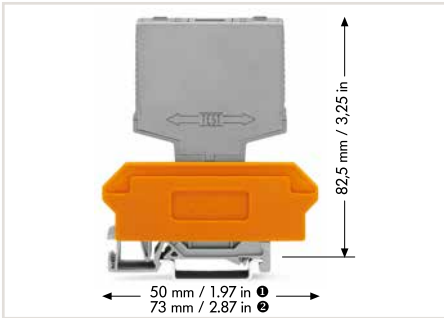
## Pluggable Surge Suppression Modules for Carrier Terminal Blocks

### 286 Series



#### General Specifications

Nominal current	10 A
Response time between L/N and PE	1 $\mu$ s
Response time between L and N	25 ns
Rated nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Permissible ambient operating temperature	-25 ... +85 °C
Dimensions (mm) W x H x D incl. terminal block for pluggable modules	17 x 82.5 x 73 mm
Module width	15 mm / 0.591 inch



#### Short description:

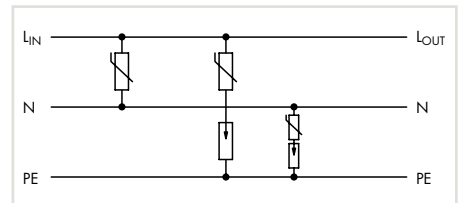
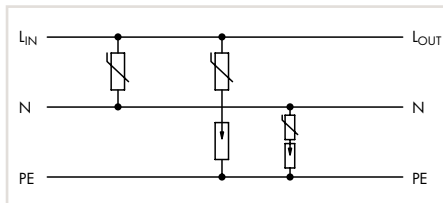
Two- and three-stage pluggable surge suppression modules (286 Series) for data, measurement, control, or power circuits are also available.

#### Features:

- Protect your system against overvoltage
- Slim, space-saving design
- Control operational costs by preventing expensive, unplanned downtime
- High operational reliability and system uptime

#### Note:

For isolation measurement, the ground contact at the transient suppression module must be disconnected.



Surge suppression module, for signal circuits, 24 VAC/DC nominal voltage, for two signal paths with common discharge connection, pluggable on rail-mounted terminal block, 15 mm wide

Surge suppression module, for signal circuits, 115 VAC nominal voltage, for two signal paths with common discharge connection, pluggable on rail-mount terminal block, 15 mm wide

$U_{BN}$	Item No.	Pack. Unit
24 VAC/DC	286-836	1

$U_{BN}$	$U_{max}$	Item No.	Pack. Unit
115 VAC	150 VAC	286-835/115-000	1

**Specific Technical Data**

Nominal operating voltage $U_{BN}$	24 VAC/DC
Operating voltage $U_{max}$	35 VAC/45 VDC
Nominal discharge current between L/N and PE	300 A
Nominal discharge current between L and N	300 A
Max. surge current between L/N and PE	1 kA
Max. surge current between L and N	1 kA
Protection level between L/N and PE	700 V
Protection level between L and N	100 V

	115 VAC
	150 VAC
	1 kA
	1 kA
	4.5 kA
	4.5 kA
	1 kV
	400 V

**Accessories**

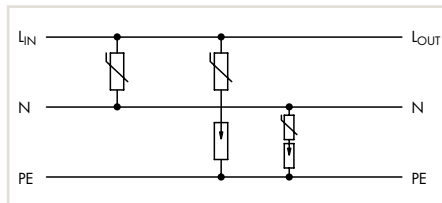
WMB marker card, 10 strips with 10 markers per card
--

Marking	Item No.	Pack. Unit
F	209-791	5
1 ... 10	209-702	5
Lin, N, PE Lout, N, PE, Lin, N, PE	249-655	5

Marking	Item No.	Pack. Unit
F	209-791	5
1 ... 10	209-702	5
Lin, N, PE Lout, N, PE, Lin, N, PE	249-655	5

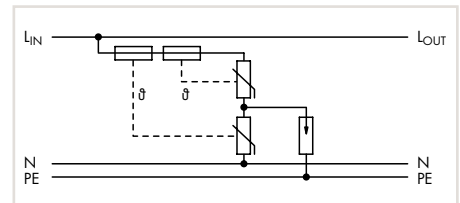
# Pluggable Surge Suppression Modules for Carrier Terminal Blocks

## 286 Series



Surge suppression module, for signal circuits, 230 VAC nominal voltage, for two signal paths with common discharge connection, pluggable on rail-mount terminal block, 15 mm wide

$U_{BN}$	$U_{max}$	Item No.	Pack. Unit
230 VAC	275 VAC	286-835	1



Surge suppression module, for signal circuits, 115 VAC nominal voltage, for two signal paths with common discharge connection, with optical indication, 15 mm wide

$U_{BN}$	Item No.	Pack. Unit
115 VAC	286-838/115-000	1

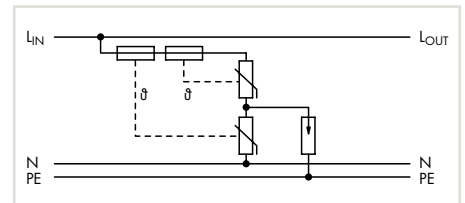
### Specific Technical Data

Nominal operating voltage $U_{BN}$	230 VAC	115 VAC
Operating voltage $U_{max}$	275 VAC	150 VAC
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	4.5 kA	2.5 kA
Max. surge current between L and N	4.5 kA	2.5 kA
Protection level between L/N and PE	1.3 kV	800 V
Protection level between L and N	700 V	400 V

### Accessories

WMB marker card, 10 strips with 10 markers per card	Marking	Item No.	Pack. Unit	Marking	Item No.	Pack. Unit
	F	209-791	5	F	209-791	5
	1 ... 10	209-702	5	1 ... 10	209-702	5
	Lin, N, PE Lout, N, PE, Lin, N, PE	249-655	5	Lin, N, PE Lout, N, PE, Lin, N, PE	249-655	5





Surge suppression module, for signal circuits, 230 VAC nominal voltage, for two signal paths with common discharge connection, with optical indication, pluggable on rail-mount terminal block, 15 mm wide

$U_{BN}$	Item No.	Pack. Unit
230 VAC	286-838	1

#### Specific Technical Data

Nominal operating voltage $U_{BN}$	230 VAC
Operating voltage $U_{max}$	300 VAC
Nominal discharge current between L/N and PE	1 kA
Nominal discharge current between L and N	1 kA
Max. surge current between L/N and PE	2.5 kA
Max. surge current between L and N	2.5 kA
Protection level between L/N and PE	1 kV
Protection level between L and N	800 V

#### Accessories

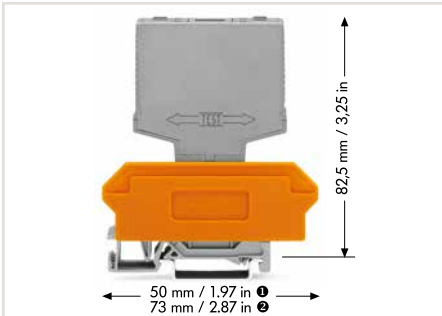
WMB marker card, 10 strips with 10 markers per card		
Marking	Item No.	Pack. Unit
F	209-791	5
1 ... 10	209-702	5
Lin, N, PE Lout, N, PE, Lin, N, PE	249-655	5

## Pluggable Surge Suppression Modules for Carrier Terminal Blocks 286 Series



### General Specifications

Permissible ambient operating temperature	-25 ... +85 °C
Dimensions (mm) W x H x D	Module width* x 50 x 51
*Type-dependent	



### Short description:

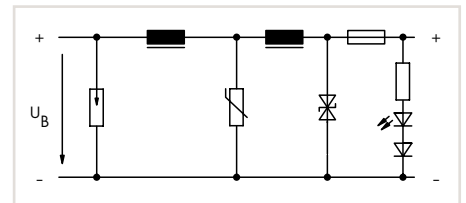
Two- and three-stage pluggable surge suppression modules (286 Series) for data, measurement, control, or power circuits are also available.

### Features:

- Protect your system against overvoltage
- Slim, space-saving design
- Control operational costs by preventing expensive, unplanned downtime
- High operational reliability and system uptime

### Note:

For isolation measurement, the ground contact at the transient suppression module must be disconnected.



Surge suppression module, for signal circuits, 24 VDC nominal voltage, for one signal path, plugged on rail-mount terminal block, 20 mm wide

$U_{BN}$	Item No.	Pack. Unit
24 VDC	286-833	1

#### Specific Technical Data

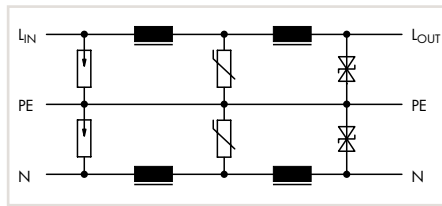
Nominal operating voltage $U_{BN}$	24 VDC
Operating voltage $U_{max}$	30 VDC
Nominal current	0.1 A
Nominal voltage per EN 60664-1	
Nominal discharge current between L/N and PE	
Nominal discharge current between L and N	5 kA
Max. surge current between L/N and PE	
Max. surge current between L and N	5 kA
Protection level between L/N and PE	
Protection level between L and N	$\leq 59$ V
Response time between L/N and PE	
Response time between L and N	$\leq 10$ ns
Contact resistance/inductivity	20 m $\Omega$ / 2 x 7 $\mu$ H

#### Accessories

WMB marker card, 10 strips with 10 markers per card		
	<b>Marking</b>	<b>Item No.</b>
	F	209-791
	1 ... 10	209-702
	+/-	209-652
	Lin, PE, PE, N, Lout, PE, PE, N	249-652
	<b>Width</b>	<b>Item No.</b>
Terminal block for pluggable modules		<b>Pack. Unit</b>
with 2-conductor terminals blocks, orange separator ①	22 mm	280-638
with 4-conductor terminals blocks, orange separator ②	22 mm	280-628
with 4-conductor terminals blocks, marker plate ②	25 mm	280-764
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch		

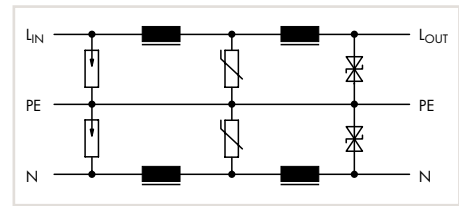
# Pluggable Surge Suppression Modules for Carrier Terminal Blocks

## 286 Series



Surge suppression module, for signal circuits, 12 VDC nominal voltage, for two signal paths with common discharge connection, 20 mm wide

$U_{BN}$	Item No.	Pack. Unit
12 VDC	286-834	1



Surge suppression module, for signal circuits, 24 VDC nominal voltage, for two signal paths with common discharge connection, plugged on rail-mount terminal block, 20 mm wide

$U_{BN}$	Item No.	Pack. Unit
24 VDC	286-834/024-000	1

### Specific Technical Data

Parameter	12 VDC (Item 286-834)	24 VDC (Item 286-834/024-000)
Nominal operating voltage $U_{BN}$	12 VDC	24 VDC
Operating voltage $U_{max}$	14 VDC	30 VDC
Nominal current	6 A	6 A
Nominal voltage per EN 60664-1		
Nominal discharge current between L/N and PE	1.5 kA	1.5 kA
Nominal discharge current between L and N		
Max. surge current between L and N		
Max. surge current between L/N and PE	1.5 kA	1.5 kA
Protection level between L and N		
Protection level between L/N and PE	$\leq 22$ V	$\leq 59$ V
Response time between L/N and PE	$\leq 10$ ns	$\leq 10$ ns
Response time between L and N		
Contact resistance/inductivity	50 m $\Omega$ / 14 $\mu$ H	50 m $\Omega$ / 14 $\mu$ H

10

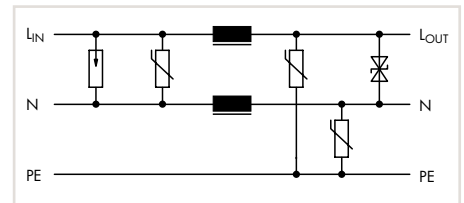
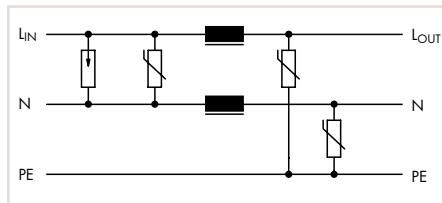
### Accessories

Accessories	Marking	Item No.	Pack. Unit
WMB marker card, 10 strips with 10 markers per card	F	209-791	5
	1 ... 10	209-702	5
	+/-	209-652	5
	Lin, PE, PE, N, Lout, PE, PE, N	249-652	5

Terminal block for pluggable modules	Width	Item No.	Pack. Unit
with 2-conductor terminals blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminals blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminals blocks, marker plate ③	25 mm	280-764	1

Conductor range: 0.08 ... 2.5 mm<sup>2</sup> / 28 ... 14 AWG;  
Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch



Surge suppression module, for signal circuits, 24 VAC/DC nominal voltage, for two signal paths with common discharge connection, plugged on rail-mount terminal block, 20 mm wide

Surge suppression module, for signal circuits, 24 VAC/DC nominal voltage, for two signal paths with common discharge connection, plugged on rail-mount terminal block, 20 mm wide

$U_{BN}$	Item No.	Pack. Unit
24 VAC/DC	286-831	1

$U_{BN}$	Item No.	Pack. Unit
24 VAC/DC	286-832	1

**Specific Technical Data**

Nominal operating voltage $U_{BN}$	24 VAC/DC
Operating voltage $U_{max}$	30 VAC / 38 VDC
Nominal current	6 A
Rated nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Nominal discharge current between L/N and PE	200 A
Nominal discharge current between L and N	1.5 kA
Max. surge current between L and N	1.5 kA
Max. surge current between L/N and PE	500 A
Protection level between L/N and PE	$\leq 93$ V
Protection level between L and N	$\leq 93$ V
Response time between L/N and PE	$\leq 25$ ns
Response time between L and N	$\leq 25$ ns
Contact resistance/inductivity	25 m $\Omega$ / 2 x 7 $\mu$ H

Nominal operating voltage $U_{BN}$	24 VAC/DC
Operating voltage $U_{max}$	30 VAC / 38 VDC
Nominal current	6 A
Rated nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Nominal discharge current between L/N and PE	200 A
Nominal discharge current between L and N	1.5 kA
Max. surge current between L and N	1.5 kA
Max. surge current between L/N and PE	500 A
Protection level between L/N and PE	$\leq 93$ V
Protection level between L and N	$\leq 59$ V
Response time between L/N and PE	$\leq 25$ ns
Response time between L and N	$\leq 5$ ns
Contact resistance/inductivity	25 m $\Omega$ / 2 x 7 $\mu$ H

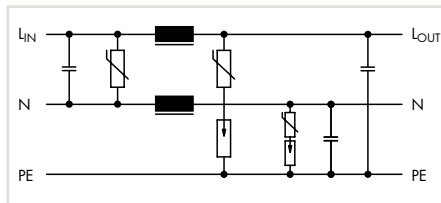
**Accessories**

WMB marker card, 10 strips with 10 markers per card	Marking	Item No.	Pack. Unit
	F	209-791	5
	1 ... 10	209-702	5
	PE, N, Lin, PE, N, Lout	209-911	5
Terminal block for pluggable modules*	Width	Item No.	Pack. Unit
with 2-conductor terminals blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminals blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminals blocks, marker plate ③	25 mm	280-764	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			

WMB marker card, 10 strips with 10 markers per card	Marking	Item No.	Pack. Unit
	F	209-791	5
	1 ... 10	209-702	5
	PE, N, Lin, PE, N, Lout	209-911	5
Terminal block for pluggable modules*	Width	Item No.	Pack. Unit
with 2-conductor terminals blocks, orange separator ①	22 mm	280-638	1
with 4-conductor terminals blocks, orange separator ②	22 mm	280-628	1
with 4-conductor terminals blocks, marker plate ③	25 mm	280-764	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch			

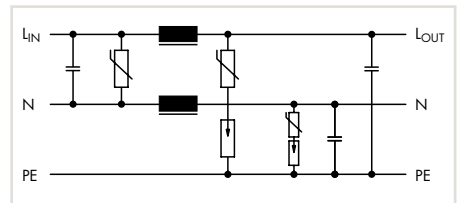
# Pluggable Surge Suppression Modules for Carrier Terminal Blocks

## 286 Series



Surge suppression module, for signal circuits, 110 VDC nominal voltage, for two signal paths with common discharge connection, 2-stage, plugged on rail-mount terminal block, 25 mm wide

Item No.	Pack. Unit
286-844	1



Surge suppression module, for signal circuits, 220 VDC nominal voltage, for two signal paths with common discharge connection, 2-stage, pluggable on rail-mount terminal block, 25 mm wide

Item No.	Pack. Unit
286-841	1

### Specific Technical Data

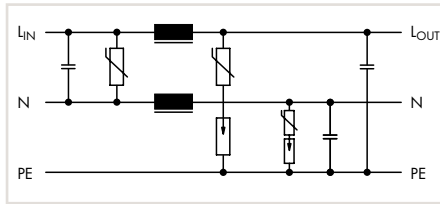
Nominal operating voltage $U_{BN}$	110 VDC
Operating voltage $U_{max}$	180 VDC
Nominal current	6 A
Rated nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Nominal discharge current between L/N and PE	600 A
Nominal discharge current between L and N	600A
Max. surge current between L and N	1.5 kA
Max. surge current between L/N and PE	1.5 kA
Protection level between L/N and PE	$\leq 900$ V
Protection level between L and N	$\leq 650$ V
Response time between L/N and PE	$\leq 1$ $\mu$ s
Response time between L and N	$\leq 25$ ns
Contact resistance/inductivity	- / 2 x 0.8 mH

Nominal operating voltage $U_{BN}$	220 VDC
Operating voltage $U_{max}$	320 VDC
Nominal current	6 A
Rated nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Nominal discharge current between L/N and PE	600 A
Nominal discharge current between L and N	600A
Max. surge current between L and N	1.5 kA
Max. surge current between L/N and PE	1.5 kA
Protection level between L/N and PE	$\leq 900$ V
Protection level between L and N	$\leq 650$ V
Response time between L/N and PE	$\leq 1$ $\mu$ s
Response time between L and N	$\leq 25$ ns
Contact resistance/inductivity	- / 2 x 0.8 mH

### Accessories

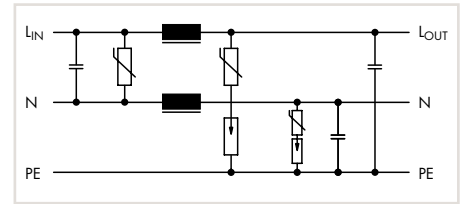
WMB marker card, 10 strips with 10 markers per card	Marking	Item No.	Pack. Unit	
	F	209-791	5	
	1 ... 10	209-702	5	
	PE, N, Lin, PE, N, Lout	209-911	5	
Terminal block for pluggable modules	Width	Item No.	Pack. Unit	
	with 2-conductor terminals blocks, orange separator ①	27 mm	280-639	1
	with 4-conductor terminals blocks, orange separator ②	27 mm	280-629	1
	with 4-conductor terminals blocks, marker plate ③	30 mm	280-765	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch				

WMB marker card, 10 strips with 10 markers per card	Marking	Item No.	Pack. Unit	
	F	209-791	5	
	1 ... 10	209-702	5	
	PE, N, Lin, PE, N, Lout	209-911	5	
Terminal block for pluggable modules	Width	Item No.	Pack. Unit	
	with 2-conductor terminals blocks, orange separator ①	27 mm	280-639	1
	with 4-conductor terminals blocks, orange separator ②	27 mm	280-629	1
	with 4-conductor terminals blocks, marker plate ③	30 mm	280-765	1
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch				



Surge suppression module, for signal circuits, 115 VAC nominal voltage, for two signal paths with common discharge connection, 2-stage, pluggable on rail-mount terminal block, 25 mm wide

Item No.	Pack. Unit
286-843	1



Surge suppression module, for signal circuits, 230 VAC nominal voltage, for two signal paths with common discharge connection, 2-stage, pluggable on rail-mount terminal block, 25 mm wide

Item No.	Pack. Unit
286-842	1

**Specific Technical Data**

Nominal operating voltage $U_{BN}$	115 VAC
Operating voltage $U_{max}$	140 VAC
Nominal current	6 A
Rated nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Nominal discharge current between L/N and PE	600 A
Nominal discharge current between L and N	600A
Max. surge current between L and N	1.5 kA
Max. surge current between L/N and PE	1.5 kA
Protection level between L/N and PE	$\leq 900$ V
Protection level between L and N	$\leq 650$ V
Response time between L/N and PE	$\leq 1$ $\mu$ s
Response time between L and N	$\leq 25$ ns
Contact resistance/inductivity	- / 2 x 0.8 mH

Nominal operating voltage $U_{BN}$	230 VAC
Operating voltage $U_{max}$	250 VAC
Nominal current	6 A
Rated nominal voltage	250 V
Rated surge voltage	4 kV
Pollution degree	2
Nominal discharge current between L/N and PE	600 A
Nominal discharge current between L and N	600A
Max. surge current between L and N	1.5 kA
Max. surge current between L/N and PE	1.5 kA
Protection level between L/N and PE	$\leq 900$ V
Protection level between L and N	$\leq 650$ V
Response time between L/N and PE	$\leq 1$ $\mu$ s
Response time between L and N	$\leq 25$ ns
Contact resistance/inductivity	- / 2 x 0.8 mH

**Accessories**

WMB marker card, 10 strips with 10 markers per card		
Terminal block for pluggable modules	Width	Item No.
with 2-conductor terminals blocks, orange separator ❶	27 mm	280-639
with 4-conductor terminals blocks, orange separator ❷	27 mm	280-629
with 4-conductor terminals blocks, marker plate ❸	30 mm	280-765
Conductor range: 0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG; Strip length: 8 ... 9 mm / 0.31 ... 0.35 inch		

Marking	Item No.	Pack. Unit
F	209-791	5
1 ... 10	209-702	5
PE, N, Lin, PE, N, Lout	209-911	5













Marking	Item No.	Pack. Unit
F	209-791	5
1 ... 10	209-702	5
PE, N, Lin, PE, N, Lout	209-911	5



## **Accessories and Tools**



## Shield Connecting Systems, Marking Systems, Accessories and Tools

		Page
	Shield Clamping Saddles	790 Series 595
	Spring-Equipped Shield Clamping Saddles	790 Series 597
	Busbar Carriers	790 Series 602
	Marking Systems	606
	End Stops for DIN-35 and DIN-15 Rails	613
	Carrier Rails, Collective Jumper Carriers and Rail-Mount Terminal Block Covers	614
	Operating Tools	620
	Stripping Tools	624
	Crimping Tools for Ferrules	625
	Cable Cutter	625
	Test and Measurement Devices	630
	General Test Accessories	632

## Shield Connection System, 790 Series Description and Installation



Carrier with grounding foot\* (790-113),  
45 mm long, busbar 90° to the rail

\*for all sizes of shield clamping saddles



Carrier with grounding foot\* (790-114),  
45 mm long, busbar parallel to the rail

\*for all sizes of shield clamping saddles



Carrier with grounding foot\* (790-115),  
125 mm long, busbar parallel to the rail

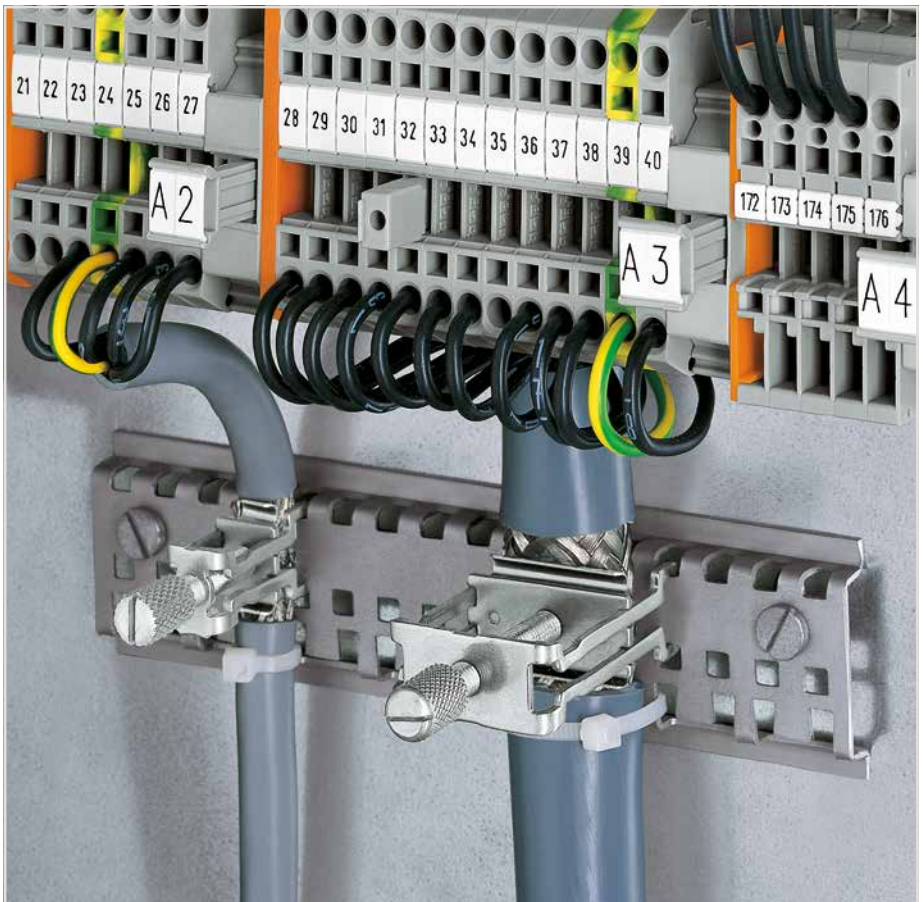
\*for all sizes of shield clamping saddles



Fitting spacer sleeve to a specialty slotted carrier rail



Fitting an additional clamping saddle.



Tightening/removing a shield clamping saddle.



After connection, tighten the knurled screw to complete the installation.  
Recommended tightening torque: 0.5 Nm



To remove the clamping saddle, unscrew until ratcheted mechanism is released, then slightly tip saddle and remove the clamping saddle.

11

# Shield Connection System, 790 Series Installation



Carrier with grounding foot – busbar parallel to the rail



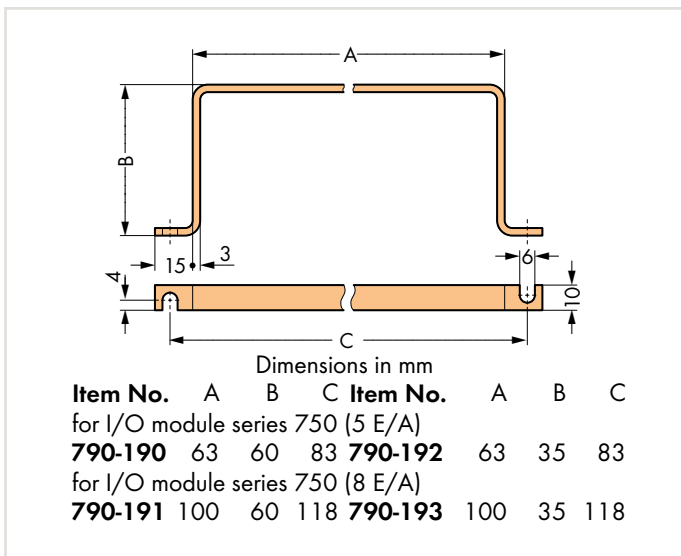
Insulated mounting carriers for a common shield reference potential, independent of housing potential



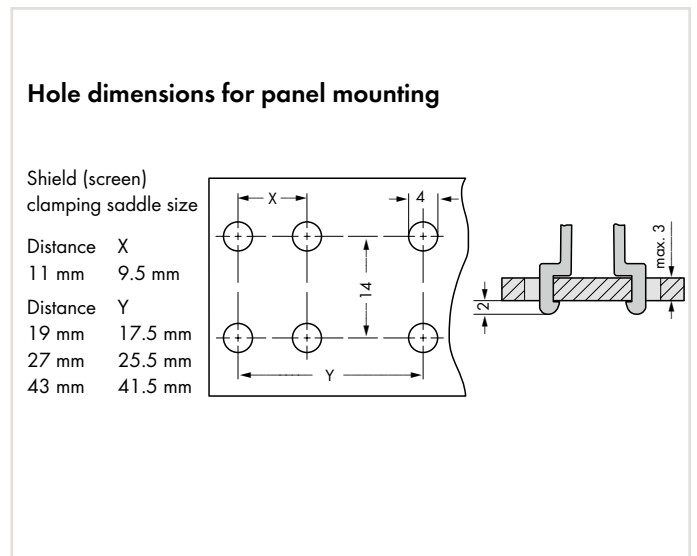
U-shaped (10 x 3) mm copper busbar



Snap shield clamping saddles into any metal plate (max. thickness: 3 mm).



Dimensions in mm



Additionally, the spring material is part of the clamping saddle, providing a good electrical connection (the system also acts as a partial strain relief). The spring element integrated in the shield clamping saddle compensates deformation and settling that results from a connected shield.

## Shield Connection System, 790 Series Installation



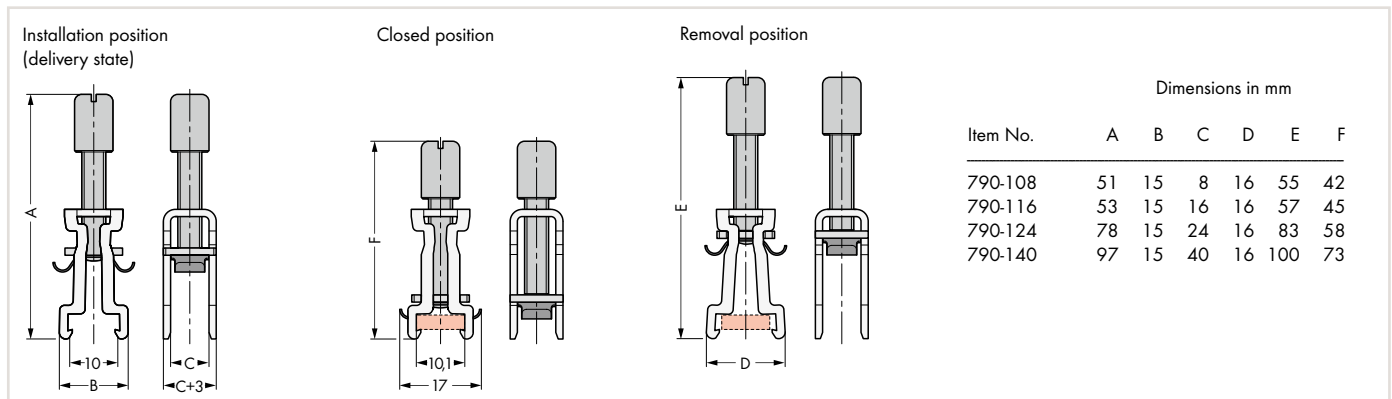
**Assembly:**

The shield clamping saddle is shipped ready for direct connection to the (10 x 3) mm busbar or to a drilled mounting plate. After connection, tighten the knurled screw to complete the installation.  
Maximum tightening torque: 0.5 Nm



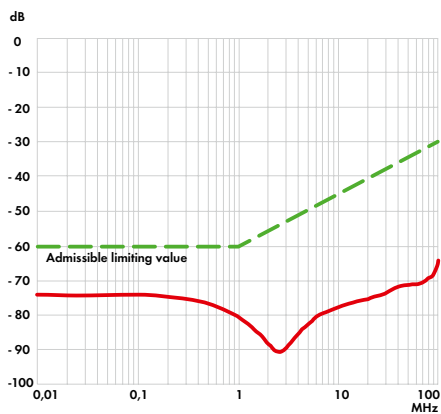
**Removal:**

To remove the clamping saddle, unscrew until ratcheted mechanism is released, then slightly tip saddle and remove the clamping saddle.



Dimensions in mm

### Negative Shield Attenuation



WAGO's Shield Connection System is highly effective because the clamping unit can be brought very close to the unshielded part of the cable.

## Shield Clamping Saddles 790 Series



Shield clamping saddle, 11 mm wide, max. shield diameter of 8 mm  
Note: Cannot be used for connecting ground conductors!

	Item No.	Pack. Unit
	790-108	50 (10)



Shield clamping saddle, 19 mm wide, 7 ... 16 mm shield diameter  
Note: Cannot be used for connecting ground conductors!

	Item No.	Pack. Unit
	790-116	50 (10)



Shield clamping saddle, 27 mm wide, 6 ... 24 mm shield diameter  
Note: Cannot be used for connecting ground conductors!

	Item No.	Pack. Unit
	790-124	50 (10)



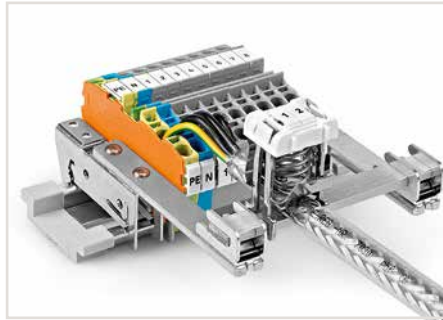
Shield clamping saddle, 43 mm wide, 22 ... 40 mm shield diameter  
Note: Cannot be used for connecting ground conductors!

	Item No.	Pack. Unit
	790-124	50 (10)

## Spring-Equipped Shield Clamping Saddles, 790 Series Installation



Shield clamping saddles are available in three different sizes for shield diameters ranging from 3 to 20 mm



Application example



Compress the clamping saddle until fully engaged



Mounting a clamping saddle on a specialty slotted carrier rail (790-145).  
When releasing the saddle, do not place your finger under the clamping spring!



Removing the shield clamping saddle.



Shield clamping saddle contacts shield conductor and specialty slotted carrier rail (790-145).



Labelling using a marking strip.



Labelling using WMB markers.

Delivery position

Mounting position

Item No.	Dimensions in mm				
	A	B	C	D	E*
790-208	30	29.9	8	12.4	25.8
790-216	34.6	28.3	16	21.8	30.2
790-220	45.6	28.3	24	30	41.2

\*Height with WMB marker

Dimensions in mm

## Spring-Equipped Shield Clamping Saddles 790 Series



Shield clamping saddle, 12.4 mm wide, 3 ... 8 mm shield diameter  
Note: Cannot be used for connecting ground conductors and strain relief!

Item No.	Pack. Unit
790-208	50



Shield clamping saddle, 21.8 mm wide, 6 ... 16 mm shield diameter  
Note: Cannot be used for connecting ground conductors and strain relief!

Item No.	Pack. Unit
790-116	25



Shield clamping saddle, 27 mm wide, 6 ... 20 mm shield diameter  
Note: Cannot be used for connecting ground conductors and strain relief!

Item No.	Pack. Unit
790-124	25

# Shield Clamps and Shield Termination

## 791 and 709 Series



Shield clamp, 10 ... 17 mm shield diameter, max. 63 mm high, 23 mm wide  
 Note: Cannot be used for connecting ground conductors!

Item No.	Pack. Unit
791-117	50



Shield termination, includes cable ties for 5 mm and 10 mm shield diameter

Item No.	Pack. Unit
709-350	100 (25)

Shield clamp, 1.5 ... 6.5 mm shield diameter, max. 40 mm high, 10 mm wide  
 Note: Cannot be used for connecting ground conductors!

Item No.	Pack. Unit
791-107	50

Shield termination, includes cable ties for 5 mm and 10 mm shield diameter

Item No.	Pack. Unit
709-352	100 (25)

Shield clamp, 5 ... 11 mm shield diameter, max. 47 mm high, 17 mm wide  
 Note: Cannot be used for connecting ground conductors!

Item No.	Pack. Unit
791-111	50

Shield clamp, 16 ... 24 mm shield diameter, max. 78 mm high, 30 mm wide  
 Note: Cannot be used for connecting ground conductors!

Item No.	Pack. Unit
791-124	50



Insert the shield termination into the female plug using the operating tool.



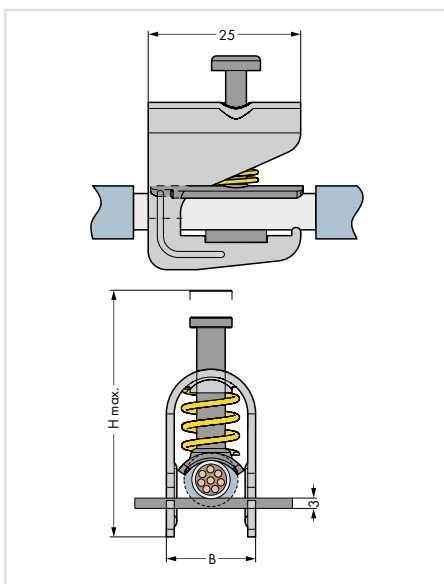
Fit the shield termination to the shield cable.



Secure both shield cable and shield termination to the strain relief plate using cable ties.



Shield termination connected to an X-COM® female plug



Dimensions in mm



## Accessories for Shield Connection Systems



Carrier with grounding foot, busbar parallel to the rail, 15 mm long, for (10 x 3) mm copper busbars, for shield clamping saddles (790-108)

Item No.	Pack. Unit
790-110	25



Carrier with grounding foot, busbar parallel to the rail, 25 mm long, for (10 x 3) mm copper busbars, for shield clamping saddles (790-108, 790-116) and shield clamps (791-111, 791-117)

Item No.	Pack. Unit
790-112	25



Carrier with grounding foot, busbar 90° to the rail, 45 mm long, for (10 x 3) mm copper busbars, for shield clamping saddles (790 Series)

Item No.	Pack. Unit
790-113	25



Carrier with grounding foot, busbar parallel to the rail, 45 mm long, for (10 x 3) mm copper busbars, for shield clamping saddles (790 Series) and shield clamps (791 Series)

Item No.	Pack. Unit
790-114	25



Carrier with two grounding feet, busbar parallel to the rail, 125 mm long, for (10 x 3) mm copper busbars

Item No.	Pack. Unit
790-115	25



Busbar, tin-plated, 1000 mm long, copper (10 x 3) mm, I<sub>N</sub> 140 A

Item No.	Pack. Unit
210-133	1



Busbar, tin-plated, 30 mm long, copper (10 x 3) mm

Item No.	Pack. Unit
790-133	20



Busbar, tin-plated, 50 mm long, copper (10 x 3) mm

Item No.	Pack. Unit
790-134	20



Carrier rail, specialty slotted, 1000 mm long, tin-plated

Item No.	Pack. Unit
790-145	1



Spacer sleeve, for carrier rail, for M5-size screw, specialty slotted

Item No.	Pack. Unit
790-144	200 (100)

## Accessories for Shield Connection Systems



Insulated mounting foot, for busbar with screw M4 x 8 mm		
Color	Item No.	Pack. Unit
gray	790-100	50 (25)



Insulated mounting foot, for busbar with (3.5 x 9) mm sheet metal screw		
Color	Item No.	Pack. Unit
gray	790-101	50 (25)



U-shaped busbar, copper (10 x 3) mm, for 750 Series I/O Modules		
	Item No.	Pack. Unit
for 5 I/O	790-190	25 (5)



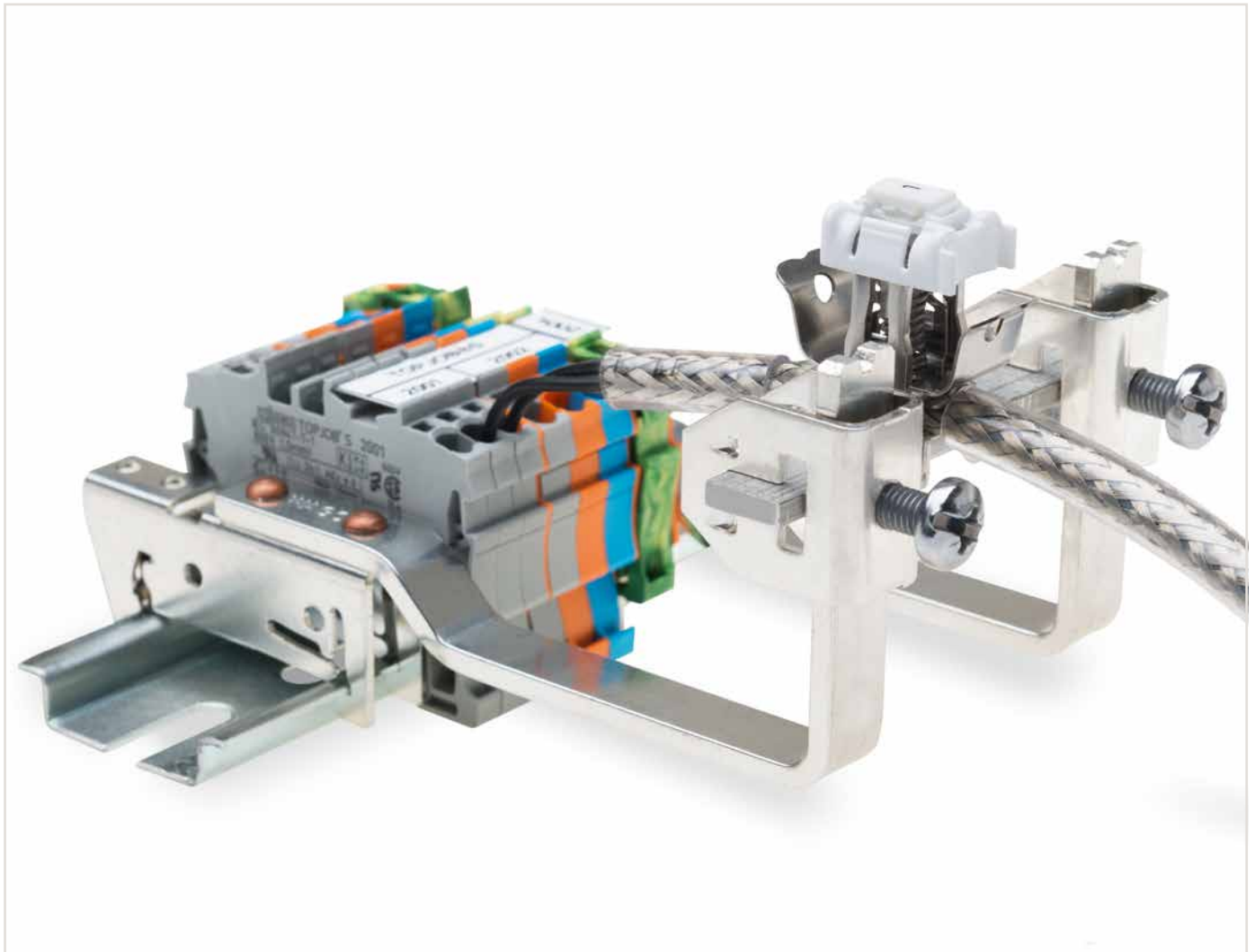
U-shaped busbar, copper (10 x 3) mm, for 750 Series I/O Modules		
	Item No.	Pack. Unit
for 8 I/O	790-191	25



U-shaped busbar, copper (10 x 3) mm, for 750 Series I/O Modules		
	Item No.	Pack. Unit
for 5 I/O	790-192	25



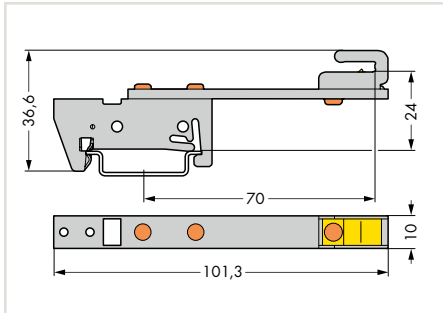
U-shaped busbar, copper (10 x 3) mm, for 750 Series I/O Modules		
	Item No.	Pack. Unit
for 8 I/O	790-193	25



## Busbar Carriers 790 Series



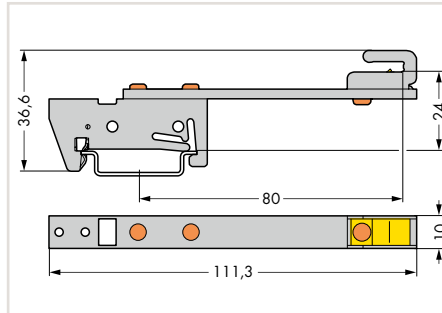
Dimensions in mm



Busbar carrier, for (10 x 3) mm copper busbars, single side, straight, 70 mm between center of DIN-rail and busbar carrier

Item No.	Pack. Unit
790-300	10

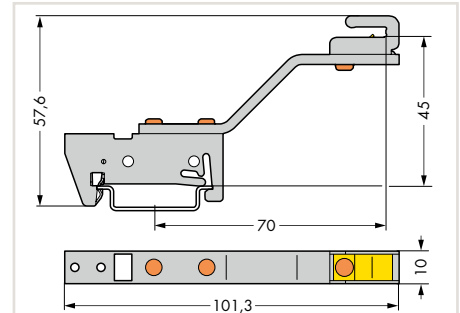
Dimensions in mm



Busbar carrier, for (10 x 3) mm copper busbars, single side, straight, 80 mm between center of DIN-rail and busbar carrier

Item No.	Pack. Unit
790-302	10

Dimensions in mm



Busbar carrier, for (10 x 3) mm copper busbars, single side, angled, 70 mm between center of DIN-rail and busbar carrier

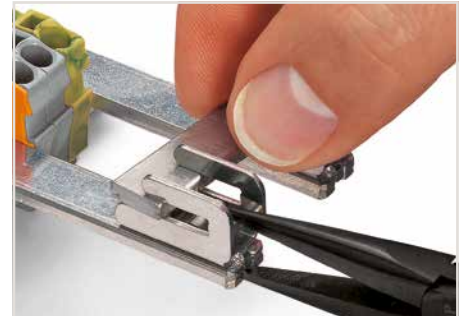
Item No.	Pack. Unit
790-301	10



Place the busbar in the busbar carrier.



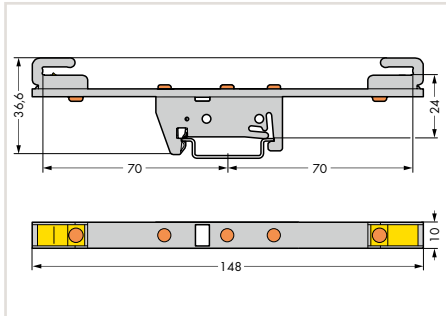
Remove the busbar carrier using an operating tool (type 3, 5.5 x 0.8 mm blade).



To remove the busbar, compress the spring using pliers.



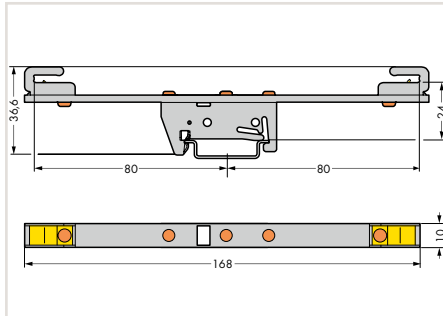
Dimensions in mm



Busbar carrier, for (10 x 3) mm copper busbars, both sides, straight, 70 mm between center of DIN-rail and busbar carrier

Item No.	Pack. Unit
790-310	10

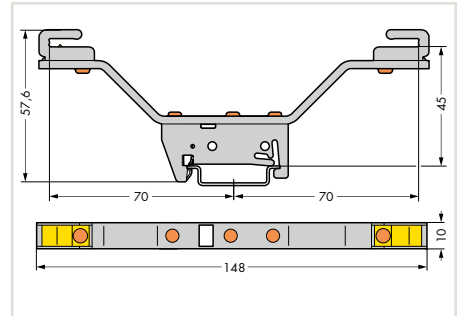
Dimensions in mm



Busbar carrier, for (10 x 3) mm copper busbars, both sides, straight, 80 mm between center of DIN-rail and busbar carrier

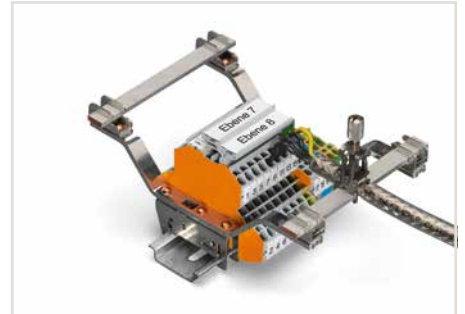
Item No.	Pack. Unit
790-312	10

Dimensions in mm



Busbar carrier, for (10 x 3) mm copper busbars, both sides, angled, 70 mm between center of DIN-rail and busbar carrier

Item No.	Pack. Unit
790-311	10

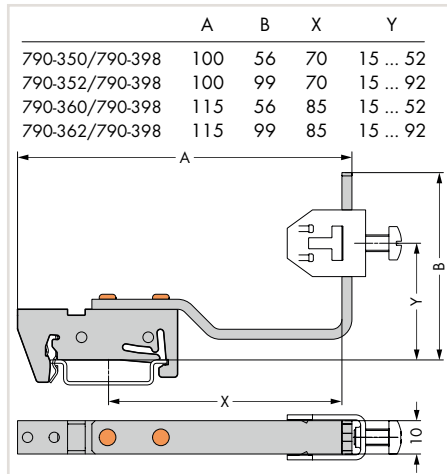


Application example

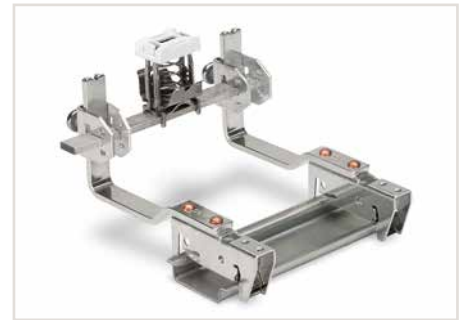
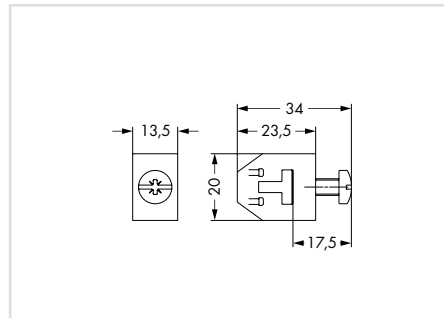
# Busbar Carriers with a T-Connector (Flexible) and T-Connector 790 Series



Dimensions in mm



Dimensions in mm



Horizontal mounting position of the busbar



Vertical mounting position of the busbar

Busbar carrier with a T-connector, flexible, for (10 x 3) mm copper busbars, 70 mm between center of DIN-rail and busbar carrier, 56 mm high

Item No.	Pack. Unit
790-350/790-398	12

T-connector, connects two (10 x 3) mm copper busbars

Item No.	Pack. Unit
790-398	10

Busbar carrier with a T-connector, flexible, for (10 x 3) mm copper busbars, 70 mm between center of DIN-rail and busbar carrier, 99 mm high

Item No.	Pack. Unit
790-352/790-398	12



The height of the busbar can be adjusted.

Busbar carrier with a T-connector, flexible, for (10 x 3) mm copper busbars, 85 mm between center of DIN-rail and busbar carrier, 56 mm high

Item No.	Pack. Unit
790-360/790-398	12

Busbar carrier with a T-connector, flexible, for (10 x 3) mm copper busbars, 85 mm between center of DIN-rail and busbar carrier, 99 mm high

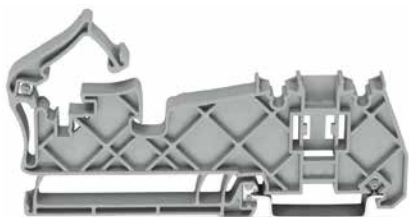
Item No.	Pack. Unit
790-362/790-398	25



Secure the busbar by tightening the screws at the required position.

# Busbar Carriers

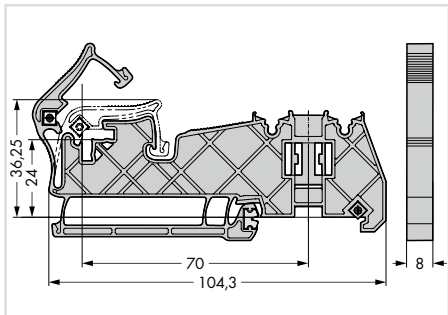
## 790 Series



Dimensions in mm

Snap the busbar carrier onto DIN-35 rail.

Vertical mounting position of the busbar



Busbar carrier, for (10 x 3) mm copper busbars, no contact to DIN-rail, insulated

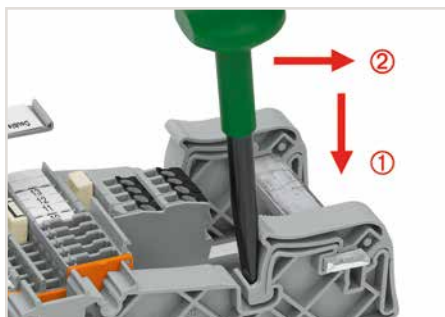
Color	Item No.	Pack. Unit
gray	790-400	20

Place the busbar in the carrier holder.

Horizontal mounting position of the busbar



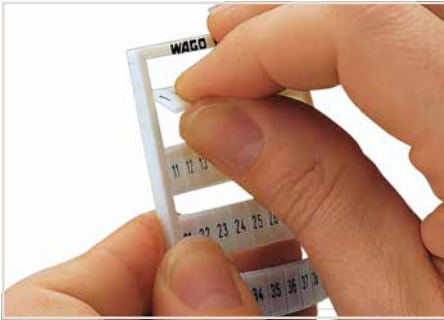
Snap the mounting bracket into position.



Release the mounting bracket by pushing the operating tool down ① and then forward ②.

# Marking Systems

## Description and Installation



WMB Multi Marking System:  
Separating a strip from the WMB or WMB marker card



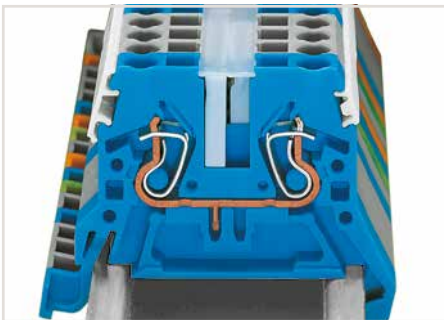
Stretching a strip.



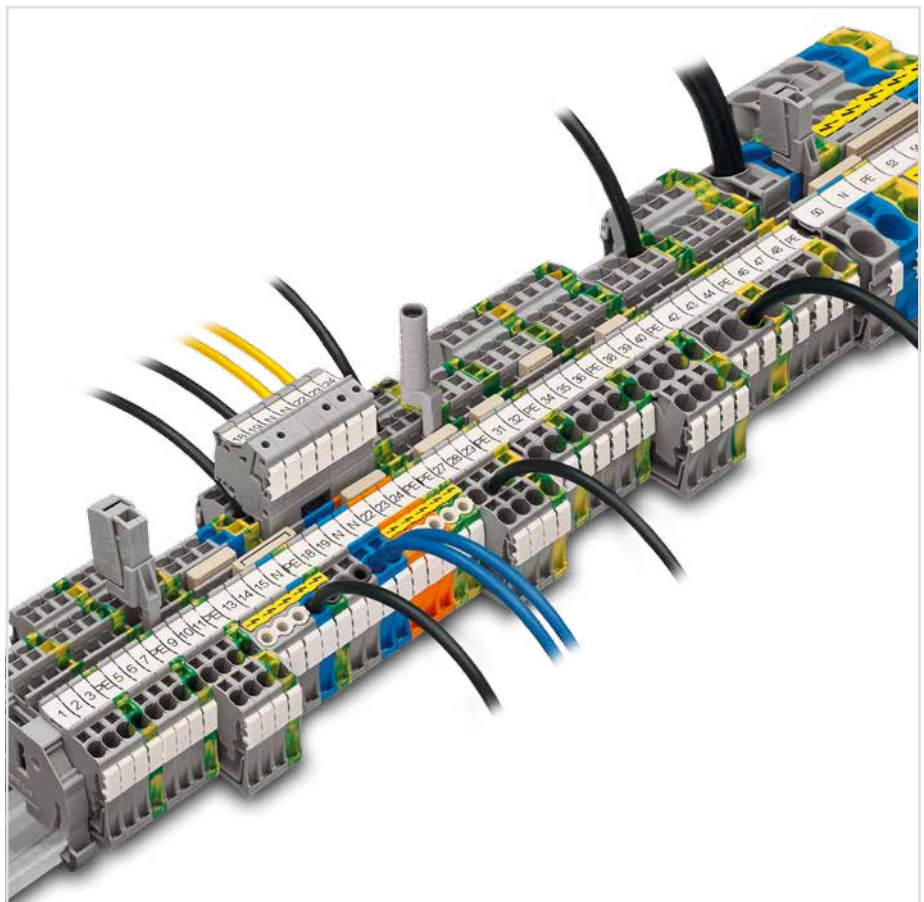
Separating an individual marker from the strip – for larger terminal blocks.



Mini-WSB (WAGO Quick Marking System):  
Marking via Mini-WSB Quick markers.



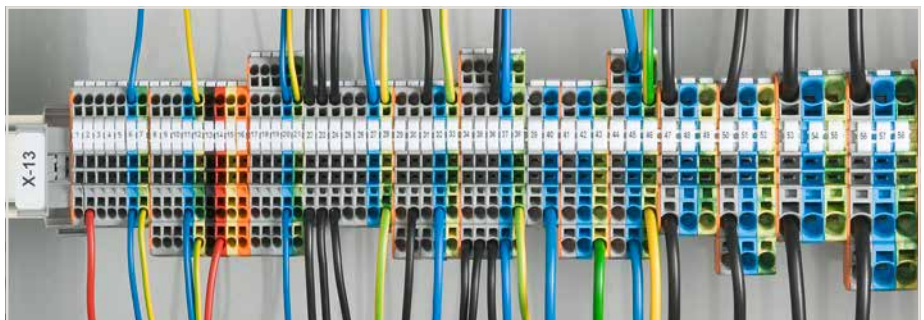
WMB markers in Mini-WSB marker slots  
Marking strip, translucent  
Mini-WSB markers



11

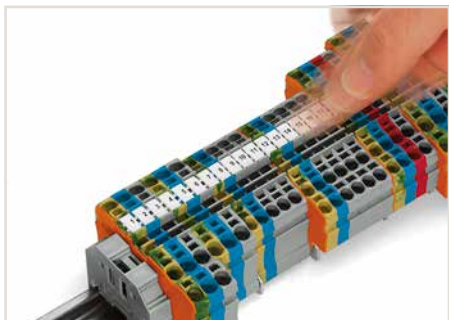


WMB Inline

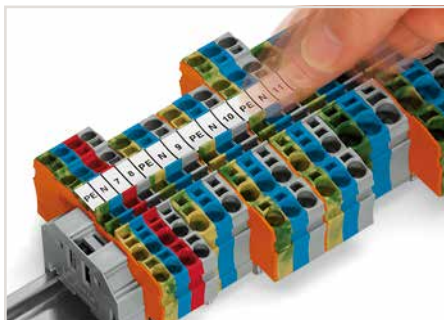


WMB Inline





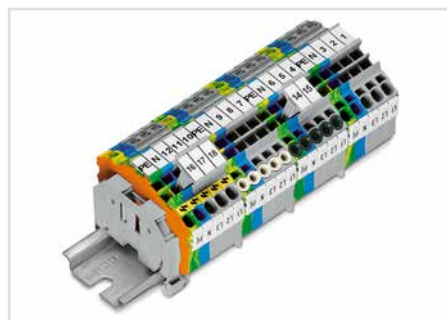
WMB Inline  
Snapping a strip into the marker slots.



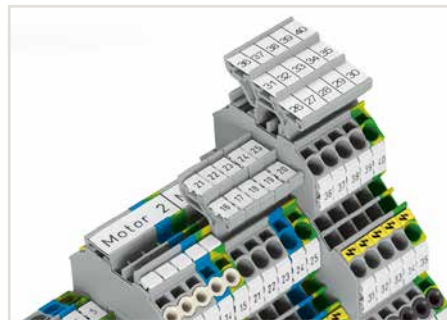
Marking strips:  
Snapping a strip into the marker slots.



WMB "decade" marking



Group marker carriers for TOPJOB® S terminal blocks –  
Snap-on type for jumper slot



Height adjustable group marker carrier (249-116) for TOPJOB®S marking strips (2009-110)



Group marking on N-busbar carrier used as an end stop

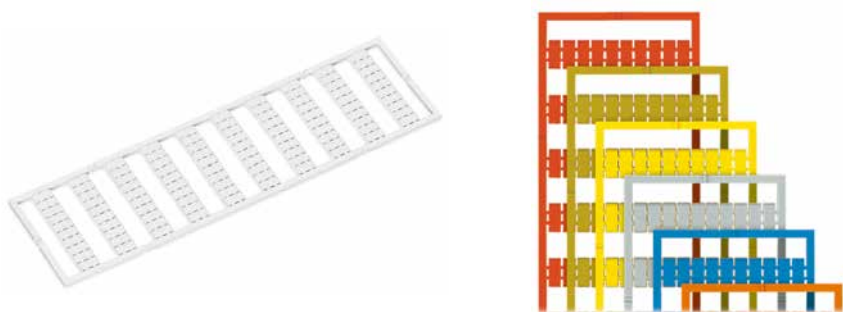


Height-adjustable group marker carrier



Additional group marking

## WMB Multi Marking Systems for Terminal Block Widths 3.5 mm, 4 ... 4.2 mm and from 5 mm



- 5 mm wide markers for continuous marking of 270, 280, 780, 869, 870, 880 and individual marking of 281 ... 285, 781 ... 785, 2002, 2003, 2022, 2004, 2006, 2010 and 2016 Series terminal blocks
- 5 ... 5.2 mm wide markers for continuous marking of 270, 280, 780, 869, 870, 880, 2002, 2003 and 2022 Series terminal blocks and individual marking of terminal blocks larger than 5/5.2 mm
- 4 ... 4.2 mm wide markers for continuous marking of 279 and 2001 Series terminal blocks
- 3.5 mm wide markers for continuous marking of 2000 and 2020 Series terminal blocks

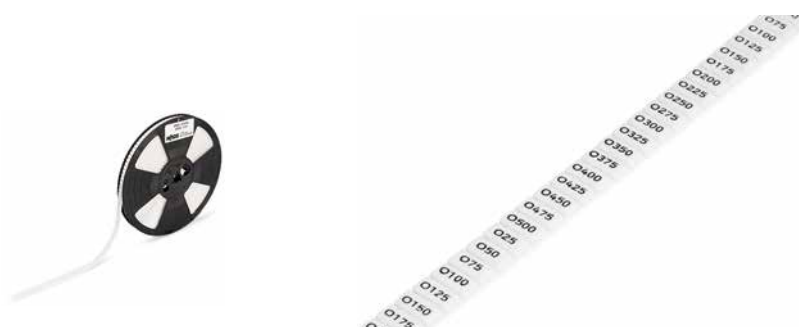
WMB Multi Marking System, 10 strips with 10 markers per card, unprinted

Marking	5 mm Item No.	5 ... 5.2 mm Item No.	4 ... 4.2 mm Item No.	3.5 mm Item No.	Pack. Unit
white	793-501	793-5501	793-4501	793-3501	5
yellow	793-501/000-002	793-5501/000-002	793-4501/000-002		5
red	793-501/000-005	793-5501/000-005	793-4501/000-005		5
blue	793-501/000-006	793-5501/000-006	793-4501/000-006		5
gray	793-501/000-007	793-5501/000-007	793-4501/000-007		5
orange	793-501/000-012	793-5501/000-012	793-4501/000-012		5
brown		793-5501/000-014	793-4501/000-014		5
light green	793-501/000-017	793-5501/000-017	793-4501/000-017		5
green	793-501/000-023	793-5501/000-023	793-4501/000-023		5
violet	793-501/000-024	793-5501/000-024	793-4501/000-024		5



WMB Inline, plain, 2,000 WMB markers (4 mm) per reel, 4 ... 4.2 mm stretchable

Color	Item No.	Pack. Unit
white	2009-114	1

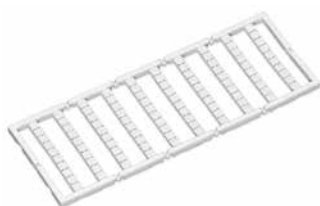


WMB Inline, plain, 1,500 WMB markers (5 mm) per reel, 5 ... 5.2 mm stretchable

Color	Item No.	Pack. Unit
white	2009-115	1

11

## Mini-WSB Quick Marking System



Mini-WSB Quick Marking System, white, 10 strips with 10 markers per card, 5 mm wide markers		
Marking	Item No.	Pack. Unit
plain	248-501	5



Mini-WSB Quick Marking System, 10 strips with 10 markers per card, 5 mm wide markers, unprinted		
Color	Item No.	Pack. Unit
yellow	248-501/000-002	5
red	248-501/000-005	5
blue	248-501/000-006	5
gray	248-501/000-007	5
orange	248-501/000-012	5
light green	248-501/000-017	5
green	248-501/000-023	5
violet	248-501/000-024	5



Mini-WSB Quick Marking System, white, 10 strips with 10 markers per card, 5 mm wide markers			
Suitable for:	Marking	Item No.	Pack. Unit
4-conductor terminal blocks	1, , 2, , 3, , 4, , 5, ; to 46, , 47, , 48, , 49, , 50, ; (each 1x)	264-900	5
	U, , V, , W, , N, , PE, ; (10x)	264-901	5
	L1, , L2, , L3, , N, , PE, ; (10x)	264-902	5
	1, , 1, , 1, , 1, , 1, ; (10x)	264-903	5
	2, , 2, , 2, , 2, , 2, ; (10x)	264-904	5
	3, , 3, , 3, , 3, , 3, ; (10x)	264-905	5

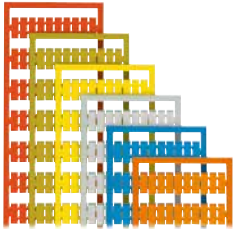


Mini-WSB Inline, plain, 1,700 Mini-WSB markers per reel, 5 mm wide markers		
Color	Item No.	Pack. Unit
white	2009-145	1

## Specific Marking



WSB Quick Marking System, white, 10 strips with 10 markers per card, 4 mm wide WSB markers			
Suitable for:	Marking	Item No.	Pack. Unit
Fuse plugs (281-5..)	plain	209-701	5



WSB Quick Marking System, 10 strips with 10 markers per card, 4 mm wide markers, plain		
Color	Item No.	Pack. Unit
yellow	209-701/000-002	5
red	209-701/000-005	5
blue	209-701/000-006	5
gray	209-701/000-007	5
orange	209-701/000-012	5
light green	209-701/000-017	5
green	209-701/000-023	5
violet	209-701/000-024	5



WSB Quick Marking System, for fuse plugs (281-5..), white, 10 strips with 10 markers per card, 4 mm wide markers, plain		
Marking	Item No.	Pack. Unit
F1, ..., F10 (10x)ab	209-787	5
F11, ..., F20 (10x)	209-700/209-124	5
F21, ..., F30 (10x)	209-700/209-125	5
F31, ..., F40 (10x)	209-700/209-126	5
F41, ..., F50 (10x)	209-700/209-127	5



WSB Quick Marking System, white, 10 strips with 10 markers per card, 5 mm wide markers			
Suitable for:	Marking	Item No.	Pack. Unit
Matrix patchboards	plain	209-501	5



WSB Quick Marking System, 10 strips with 10 markers per card, 5 mm wide markers, plain		
Color	Item No.	Pack. Unit
yellow	209-501/000-002	5
red	209-501/000-005	5
blue	209-501/000-006	5
gray	209-501/000-007	5
orange	209-501/000-012	5
light green	209-501/000-017	5
green	209-501/000-023	5
violet	209-501/000-024	5



WSB Quick Marking System, white, 10 strips with 10 markers per card, horizontal marking			
Suitable for:	Marking	Item No.	Pack. Unit
Matrix patchboards	1 ... 10 (10x)	209-502	5



WSB Quick Marking System, white, 10 strips with 10 markers per card, horizontal marking			
Suitable for:	Marking	Item No.	Pack. Unit
Matrix patchboards	1 ... 50 (2x)	209-566	5

## Specific Marking



WSB Quick Marking System, white, 10 strips with 10 markers per card, horizontal marking			
Suitable for:	Marking	Item No.	Pack. Unit
Matrix patchboards	X (100x)	209-500/209-035	5



WFB continuous marking strip, 1000 mm long			
Suitable for:	Color	Item No.	Pack. Unit
Matrix patchboards Rail-mount terminal blocks, Classic	transparent	210-612	10



Carrier for WFB continuous marking strip, snaps into marker slot			
Suitable for:	Color	Item No.	Pack. Unit
Matrix patchboards Rail-mount terminal blocks, Classic	gray	209-185	200 (25)



Marker carrier, for POWER CAGE CLAMP terminal blocks 35/50/95 mm <sup>2</sup> (2, 2/0, 4/0 AWG) Width: 10.4 mm			
Suitable for:	Color	Item No.	Pack. Unit
285-135 285-150 285-195 811 Series	gray	285-442	25



Marking strip, plain, 7.5 mm wide, 50 m reel			
Suitable for:	Color	Item No.	Pack. Unit
281-530 and 870, 869, 862, 270 Series	translucent	709-177	1



Marking strip, plain, 7.5 mm wide, 50 m reel			
Suitable for:	Color	Item No.	Pack. Unit
870, 869, 862, 270 Series	white	709-178	1

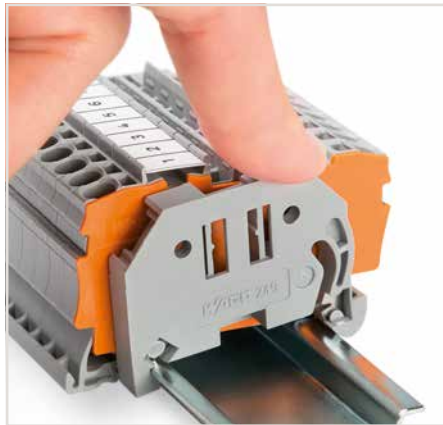


Marking strip, plain, 7.5 mm wide, 1 m long, for center group marking			
Suitable for:	Color	Item No.	Pack. Unit
870, 869 Series	translucent	709-196	1

## Screwless End Stops for DIN-35 and DIN-15 Rails, Mounting Carriers Installation



Simply snap on.



Snap on – that's it! Assembling the new WAGO screwless end stop is as simple and quick as snapping a WAGO rail-mount terminal block onto the rail.

### Without any tools!

This allows rail-mount terminal blocks to be safely secured, at low cost, against any movement on all DIN-35 rails per 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 – that's it!

In addition, costs are significantly reduced when using large numbers of end stops.

Additional benefit: Three marker slots for all WAGO rail-mount terminal block markers and one snap-in hole for WAGO adjustable height group marker carriers offer individual marking options.



That's it!

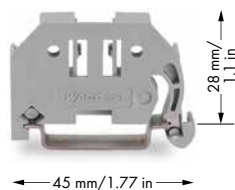


Removing an end stop from the DIN-rail.



Isolated mounting of a carrier rail in a distribution box for protection class II

## Screwless End Stops for DIN-35 Rails, Mounting Carriers



Screwless end stop, for DIN-35 rail, 6 mm wide

Color	Item No.	Pack. Unit
gray	249-116	100 (25)



Mounting carrier, for isolated mounting on DIN-35 rails

Color	Item No.	Pack. Unit
gray	209-106	25

Screwless end stop, for DIN-35 rail, 10 mm wide

Color	Item No.	Pack. Unit
gray	249-117	50 (25)



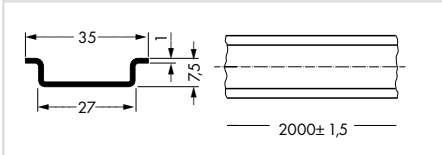
Screwless end stop, for DIN 35 rail, 14 mm wide

Color	Item No.	Pack. Unit
gray	249-197	10

## Carrier Rails, Rail End Caps, Angled Support Brackets



Dimensions in mm

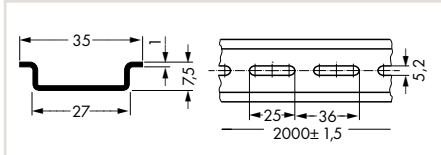


Steel carrier rail, I<sub>N</sub> 76 A (based on 1 m length), 35 x 7.5 mm, 1 mm thick, 2 m long, per EN 60715, unslotted

	Item No.	Pack. Unit
galvanized	210-113	10
continuously galvanized	210-505	1



Dimensions in mm

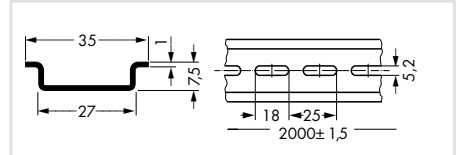


Steel carrier rail, I<sub>N</sub> 76 A (based on 1 m length), 35 x 7.5 mm, 1 mm thick, 2 m long, 25 mm hole width, 36 mm hole spacing, per EN 60715, slotted

	Item No.	Pack. Unit
galvanized	210-112	10 (1)
continuously galvanized	210-504	1



Dimensions in mm

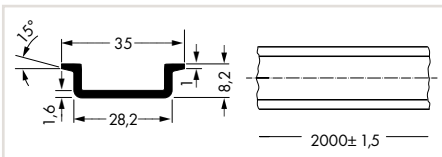


Steel carrier rail, I<sub>N</sub> 76 A (based on 1 m length), 35 x 7.5 mm, 1 mm thick, 2 m long, 18 mm hole width, 25 mm hole spacing, per EN 60715, slotted

	Item No.	Pack. Unit
slotted	210-115	1



Dimensions in mm



Aluminum carrier rail, I<sub>N</sub> 76 A (based on 1 m length), 35 x 8.2 mm, 1.6 mm thick, 2 m long, similar to EN 60715

	Item No.	Pack. Unit
unslotted	210-196	10

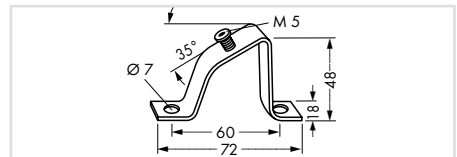


Rail end cap, for DIN-35 rail (7.5 mm high)

Color	Item No.	Pack. Unit
gray	209-109	50 (25)



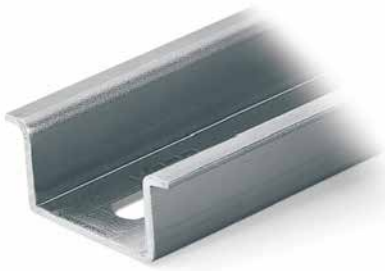
Dimensions in mm



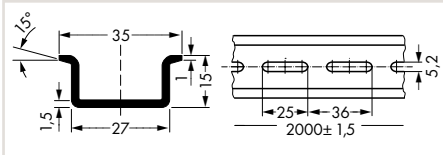
Angled support bracket, without screw

	Item No.	Pack. Unit
	210-148	10
	210-149	100 (20)





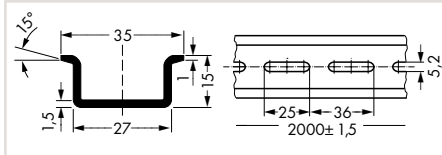
Dimensions in mm



Steel carrier rail, I<sub>N</sub> 125 A  
(based on 1 m length),  
35 x 15 mm, 1.5 mm thick,  
2 m long, similar to EN 60715

	Item No.	Pack. Unit
slotted	210-197	10
unslotted	210-114	10

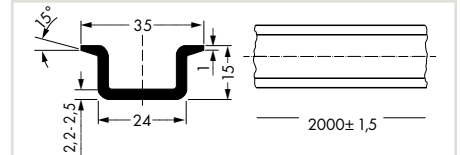
Dimensions in mm



Steel carrier rail, I<sub>N</sub> 125 A  
(based on 1 m length),  
35 x 15 mm, 1.5 mm thick,  
2 m long, similar to EN 60715

	Item No.	Pack. Unit
slotted	210-508	1
unslotted	210-506	1

Dimensions in mm

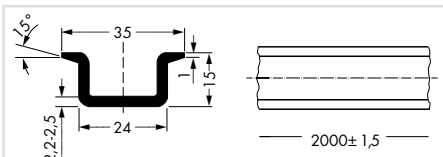


Steel carrier rail, I<sub>N</sub> 125 A  
(based on 1 m length),  
35 x 15 mm, 2.3 mm thick,  
2 m long, per EN 60715

	Item No.	Pack. Unit
slotted	210-118	10



Dimensions in mm



Copper carrier rail, I<sub>N</sub> 309 A  
(based on 1 m length),  
35 x 15 mm, 2.3 mm thick,  
2 m long, per EN 60715

	Item No.	Pack. Unit
unslotted	210-198	10

# Transparent Covers for Rail-Mount Terminal Blocks, Usable with Lead Seals, 709 Series

## Description and Installation



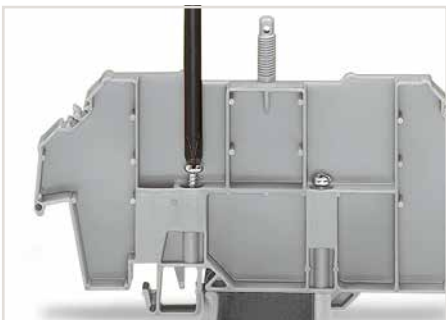
Snapping a cover carrier onto the DIN-rail.



Application example:  
Cover (type 1) without safety warning



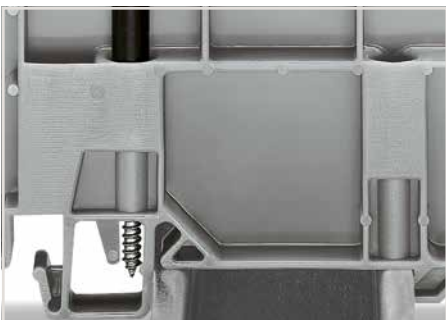
Application example:  
Cover (type 1) with safety warning



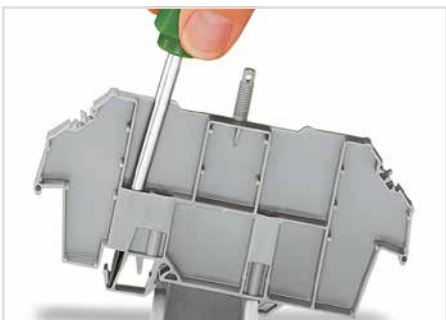
Tightening both securing screw (left) and mounting screw (right).



Application example:  
Cover (type 1) with safety warning



Securing screw – prevents lifting off from the rail.  
Mounting screw – prevents the cover carrier from being moved on the rail.



Removing a cover carrier from the DIN-rail.



Inserting a marking strip into the cover.



Cover with lead seals:  
Using covers without lead seals,  
the thread dome-head can be broken off.

11

# Transparent Covers for Rail-Mount Terminal Blocks, Usable with Lead Seals 709 Series



Cover, type 1, for cover carrier (type 1), 1 m long		
Item No.	Pack. Unit	
709-153	10	

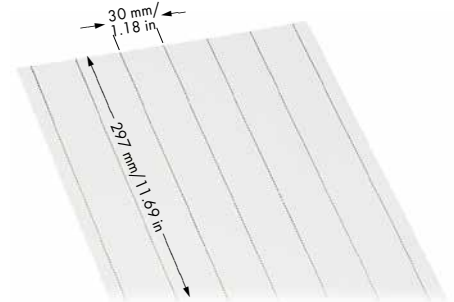


Cover, type 2, for cover carrier (type 2), 1 m long		
Item No.	Pack. Unit	
709-154	10	

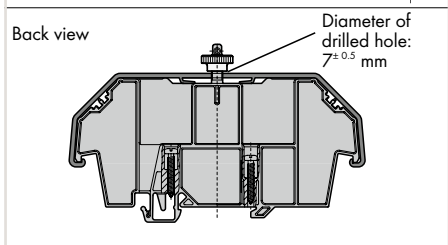
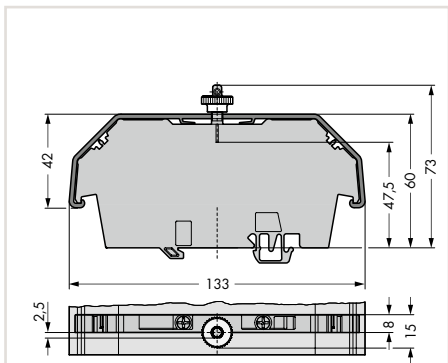


Spare mounting/securing screw, for cover		
Item No.	Pack. Unit	
209-196	200 (25)	

Spare knurled nut, for cover		
Item No.	Pack. Unit	
210-549	100 (25)	



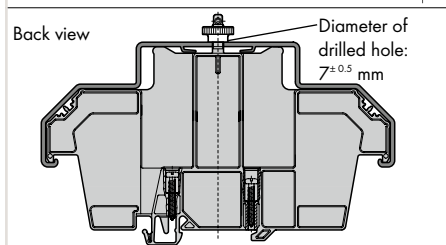
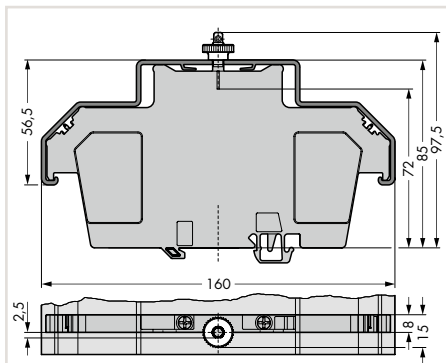
Dimensions in mm



Cover carrier, type 1, for 279 to 282, 880 Series rail-mount terminal blocks, incl. mounting/securing screws and knurled nut, for 264 Series Mini terminal blocks, for 270 Series sensor and actuator blocks

Item No.	Pack. Unit	
709-167	10	

Dimensions in mm



Cover carrier, type 2, for 283 to 285 Series Rail-Mount Terminal Blocks, incl. mounting/securing screws and knurled nut, for 279 to 281 Series Double- and Triple-Deck Terminal Blocks, 780 to 785, 775, 776 and 777 Series TOPJOB® Rail-Mount Terminal Blocks

Item No.	Pack. Unit	
709-168	10	

Marking card with 6 marking strips, for group marking or safety instructions

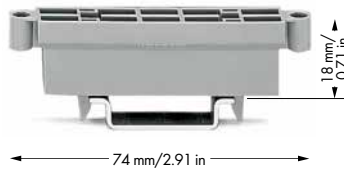
Item No.	Pack. Unit	
709-183	1	

## Collective Jumper Carriers



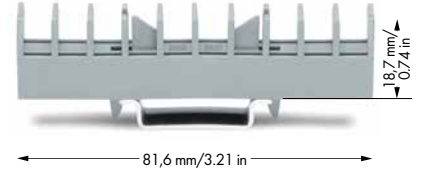
Collective jumper carrier, for DIN-35 rail, for 2000 to 2016 Series jumpers

Color	Item No.	Pack. Unit
gray	2009-180	25



Collective carrier for adjacent jumpers, for DIN-35 rail, for 279 to 284 Series Adjacent Jumpers and 215 Series Banana Plugs  
The collective carrier can be snapped onto DIN-35 rails.  
It serves as a depository for adjacent jumpers and banana plugs during maintenance work.

Color	Item No.	Pack. Unit
gray	209-100	50 (25)



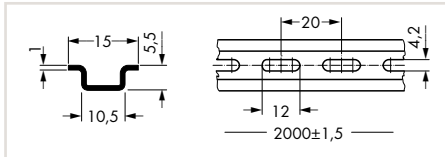
Collective jumper carrier, for DIN-35 rail, compatible with jumpers for transverse switching terminal block (282-811) and longitudinal switching disconnect terminal block (282-821)  
The collective carrier can be snapped onto DIN-35 rails.  
It serves as a depository for jumpers during maintenance.

Color	Item No.	Pack. Unit
gray	282-369	25

## Carrier Rails and Screwless End Stops for DIN-35 Rails



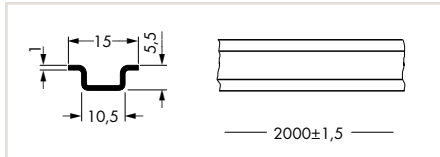
Dimensions in mm



Steel carrier rail, I<sub>N</sub> 57 A  
(based on 1 m length),  
15 x 5.5 mm, 1 mm thick,  
2 m long, per EN 60715

	Item No.	Pack. Unit
slotted	210-111	1

Dimensions in mm



Steel carrier rail, I<sub>N</sub> 57 A  
(based on 1 m length),  
15 x 5.5 mm, 1 mm thick,  
2 m long, per EN 60715

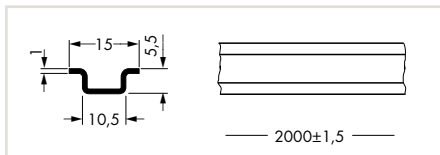
	Item No.	Pack. Unit
unslotted	210-295	1

Screwless end stop, for DIN-15 rail, 6 mm wide

Color	Item No.	Pack. Unit
gray	249-101	25



Dimensions in mm



Aluminum carrier rail, I<sub>N</sub> 57 A  
(based on 1 m length),  
15 x 5.5 mm, 1 mm thick,  
2 m long, per EN 60715

	Item No.	Pack. Unit
unslotted	209-296	10

## Operating Tools



Operating tool with a partially insulated shaft, type 1, (2.5 x 0.4) mm blade, for 279, 726, 727, 2000, 2001 and 2020 Series

Item No.	Pack. Unit
210-719	1

Set of operating tools with a partially insulated shaft, type 1, (2.5 x 0.4) mm blade, type 2, (3.5 x 0.5) mm blade, type 3, (5.5 x 0.8) mm blade

Item No.	Pack. Unit
210-722	1

Operating tool with a partially insulated shaft, (2.5 x 0.4) mm blade, short, for 279, 726, 727, 2000, 2001 and 2020 Series

Item No.	Pack. Unit
210-647	1

Operating tool with a partially insulated shaft, type 2, (3.5 x 0.5) mm blade, for 260, 261, 262, 264, 270, 280, 281, 290, 775, 776, 777, 769, 780, 781, 869, 870, 880, 2002, 2003, 2004, 2005 and 2022 Series

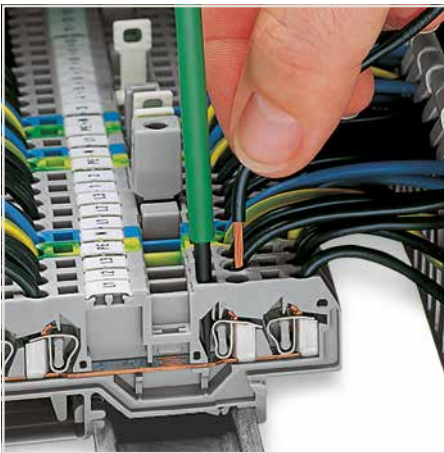
Item No.	Pack. Unit
210-720	1

Operating tool with a partially insulated shaft, (2.5 x 0.4) mm blade, short, angled, for 279, 2000, 2001 and 2020 Series

Item No.	Pack. Unit
210-648	1

Operating tool with a partially insulated shaft, type 3, (3.5 x 0.8) mm blade, for 282, 283, 284, 285, 782, 783, 784, 785, 2006, 2010 and 2016 Series

Item No.	Pack. Unit
210-721	1



Set of operating tools in a box

The blade dimensions of the above-listed operating tools with a partially insulated shaft are ideal for easy operation of front-entry terminal blocks.

# Operating Tools



Operating tool with a partially insulated shaft, (3.5 x 0.5) mm blade, short, for 260, 261, 262, 264, 270, 280, 281, 869, 870 and 880 Series

Item No.	Pack. Unit
210-657	1



Operating tool, insulated, for 279 Series

	Item No.	Pack. Unit
1-way	209-129	1
2-way	279-432	1
3-way	279-433	1
10-way	279-440	1



Operating pliers, for side-entry rail-mount terminal blocks (281, 282, 283 and 284 Series)

Item No.	Pack. Unit
210-141	1

Operating tool with a partially insulated shaft, (3.5 x 0.5) mm blade, short, angled, ideal for 280 Series Actuator/Sensor Terminal Blocks and for 260, 261, 262, 264, 280, 281, 869, 870, 880, 2002, 2004 Series

Item No.	Pack. Unit
210-658	1

Operating tool, insulated, for 264 Series (1- and 2-way only) and 280, 281 Series (up to 3-way only)

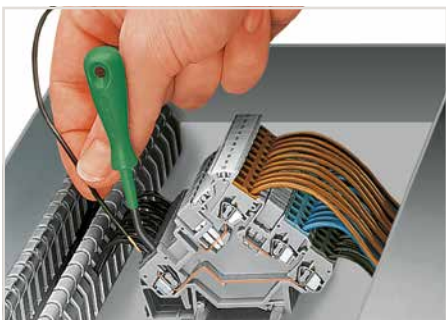
	Item No.	Pack. Unit
1-way	209-130	1
2-way	280-432	
3-way	280-433	
4-way	280-434	
5-way	280-435	
6-way	280-436	
7-way	280-437	
8-way	280-438	
9-way	280-439	
10-way	280-440	

Operating pliers, for side-entry rail-mount terminal blocks (279 and 280 Series)

Item No.	Pack. Unit
210-143	1

Operating tool, insulated, for 281 Series

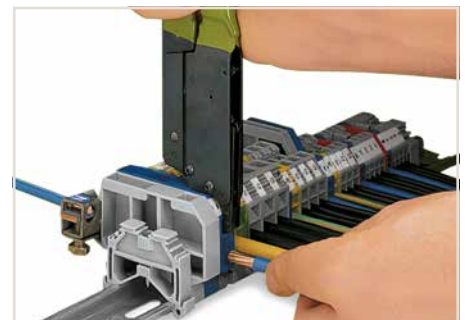
	Item No.	Pack. Unit
10-way	280-432	1



The blade dimensions (DIN 5264) of the above-listed operating tools are ideal for operating 280 Series Front-Entry Sensor/Actuator Terminal Block.



Commoning front-entry disconnect terminal blocks via comb-style jumper bar using a 10-pole operating tool.



When operating the handles beyond the locked position, the ratchet allows the tool to open and be removed from the terminal block.

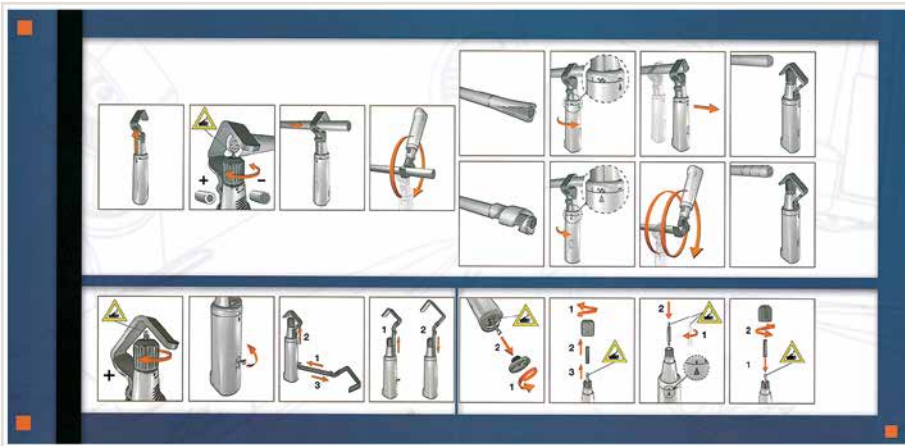
## Cable Strippers

### Installation



#### Cable Stripper (206-171):

- 10-position adjustment wheel ensures consistent stripping results
- Precision 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



#### Cable Stripper (206-174):

- Safe and easy to use: Three locking positions for circular, longitudinal and spiral cuts
- High cable stripping capacity of up to 40 mm diameter
- 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's handle



Set the cable diameter.



Strip the cable.



## Cable Strippers



Cable stripper, for round cables with 2.5 ... 11 mm outer diameter	
Item No.	Pack. Unit
206-171	1



Cable stripper, for round cables with 4.5 ... 45 mm outer diameter	
Item No.	Pack. Unit
206-174	1



Replacement blade, for 2.5 ... 11 mm Ø, for 206-171 Cable Stripper	
Item No.	Pack. Unit
206-170	1

Replacement blade, for 4.5 ... 45 mm Ø, for 206-174 Cable Stripper	
Item No.	Pack. Unit
206-173	1



## Stripping Tools



„Quickstrip 10“ wire stripper, 0.02 ... 10 mm<sup>2</sup> "f-st" (6 mm<sup>2</sup> "s"), wire cutter up to 10 mm<sup>2</sup> "f-st" (1.5 mm<sup>2</sup> "s")

Item No.	Pack. Unit
206-124	1



„Quickstrip 16“ wire stripper, 4 ... 16 mm<sup>2</sup>, wire cutter up to 10 mm<sup>2</sup> "f-st" (1.5 mm<sup>2</sup> "s")

Item No.	Pack. Unit
206-125	1



„Standard“ blade cassette, 0.02 ... 10 mm<sup>2</sup>, for wire stripper (206-124)

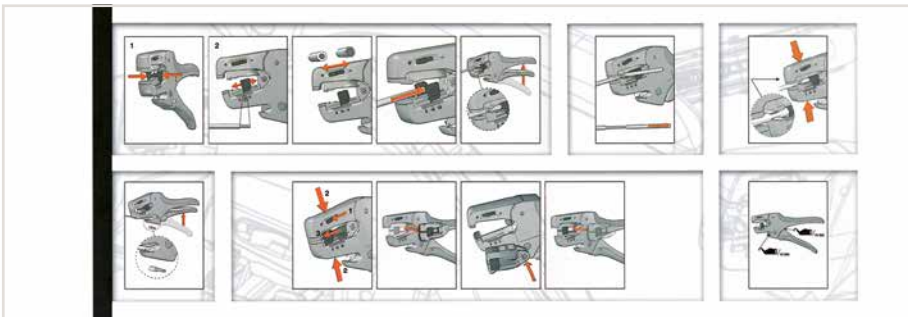
Item No.	Pack. Unit
206-126	1

V-blade cassette, 0.1 ... 4 mm<sup>2</sup>, for PTFE, for wire stripper (206-124)

Item No.	Pack. Unit
206-127	1

„Standard“ blade cassette, 4 ... 16 mm<sup>2</sup>, for wire stripper (206-125)

Item No.	Pack. Unit
206-128	1



Operating instructions are included.

### Wire Strippers:

- Automatically adjusts to conductor size
- Stripping blades cause no damage to conductor strands
- Gripping pressure of jaws adjusts automatically to conductor insulation diameter
- Clamping jaws and stripping blades automatically open once the stripping process is completed – no splaying of the conductor strands
- Exact strip length may be set by sliding black setting stop
- Stripping blades can be replaced
- Self-sharpening, fully protected cutter (replaceable\*)
- Entire body made of glass-fiber-reinforced polyamide

\*applies to Microstrip

11



Cutting a conductor.



Stripping a conductor.

## Crimping Tools



„Variocrimp 4“ crimping tool, for insulated and uninsulated ferrules, 0.25 ... 4 mm<sup>2</sup>/24 ... 12 AWG

Item No.	Pack. Unit
206-204	1



„Variocrimp 16“ crimping tool, for insulated and uninsulated ferrules, 6 ... 16 mm<sup>2</sup>/10 ... 6 AWG

Item No.	Pack. Unit
206-216	1



Cable cutter, for copper and aluminum cables up to 35 mm<sup>2</sup> (2 AWG)

Item No.	Pack. Unit
206-118	1



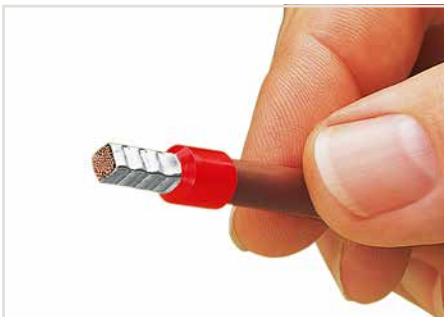
Insert the ferruled conductor into the crimping station.



Squeeze handles until ratchet mechanism is released.



Cutting a cable.



A perfect gas-tight crimp – both electrically and mechanically reliable

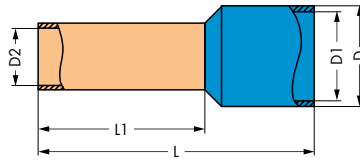


Only for "Variocrimp 16":  
Adjust conductor cross-section with crimping tool in open position.

### Application notes:

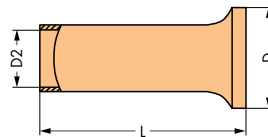
- The built-in crimping pressure control of "Variocrimp 4" automatically adjusts the crimping force to the conductor cross-section. Select the wire gauge on "Variocrimp 16" before crimping.
- Only one crimping station is needed to handle the specified conductor range.
- Uniform, compact crimping on all four sides for high conductor retention
- No need to center the conductor into the ferrule
- Crimping can be performed from either side (for left- or right-handed users).
- Built-in ratchet mechanism ensures gas-tight crimp connection.
- Crimping tools open automatically after crimping operation is complete.
- Ergonomically designed handles.

## Insulated and Uninsulated Ferrules per DIN 46228, Part 4/09.90



Ferrule, insulated, electro-tin-plated, electrolytic copper, gastight crimped, per DIN 46288, Part 4/09.09

Conductor Size	Color	Strip Length	L	L 1	D	D 1	D 2	Item No.	Pack. Unit
0.25 mm <sup>2</sup> / 24 AWG	yellow	7 mm / 0.28 inch	10,5	6	2,5	2	0,8	216-321	1000
0.25 mm <sup>2</sup> / 24 AWG	yellow	9 mm / 0.35 inch	12,5	8	2,5	2	0,8	216-301	1000
0.34 mm <sup>2</sup> / 24 AWG	green	7 mm / 0.28 inch	10,5	6	2,5	2	0,8	216-322	1000
0.34 mm <sup>2</sup> / 24 AWG	green	9 mm / 0.35 inch	12,5	8	2,5	2	0,8	216-302	1000
0.5 mm <sup>2</sup> / 22 AWG	white	7 mm / 0.28 inch	11,5	6	3	2,5	1,1	216-221	1000
0.5 mm <sup>2</sup> / 22 AWG	white	9 mm / 0.35 inch	13,5	8	3	2,5	1,1	216-201	1000
0.75 mm <sup>2</sup> / 20 AWG	gray	8 mm / 0.31 inch	12	6	3,3	2,8	1,3	216-222	1000
0.75 mm <sup>2</sup> / 20 AWG	gray	10 mm / 0.39 inch	14	8	3,3	2,8	1,3	216-202	1000
1 mm <sup>2</sup> / 18 AWG	red	8 mm / 0.31 inch	12	6	3,6	3	1,5	216-223	1000
1 mm <sup>2</sup> / 18 AWG	red	10 mm / 0.39 inch	14	8	3,6	3	1,5	216-203	1000
1.5 mm <sup>2</sup> / 16 AWG	black	8 mm / 0.31 inch	12	6	4	3,4	1,8	216-224	1000
1.5 mm <sup>2</sup> / 16 AWG	black	10 mm / 0.39 inch	14	8	4	3,4	1,8	216-204	1000
2.08 mm <sup>2</sup> / 14 AWG	yellow	10 mm / 0.39 inch	14,5	8	4,2	3,6	2,05	216-205	1000
2.5 mm <sup>2</sup> / 14 AWG	blue	10 mm / 0.39 inch	15	8	4,8	4,2	2,3	216-206	1000
4 mm <sup>2</sup> / 12 AWG	gray	12 mm / 0.47 inch	16,8	9,5	5,4	4,8	2,9	216-207	1000
6 mm <sup>2</sup> / 10 AWG	yellow	14 mm / 0.55 inch	20	12	6,8	6,3	3,5	216-208	100
10 mm <sup>2</sup> / 8 AWG	red	16 mm / 0.63 inch	21	12	8,1	7,5	4,6	216-209	100
16 mm <sup>2</sup> / 6 AWG	blue	23 mm / 0.91 inch	28	18	9,6	8,8	5,8	216-210	100

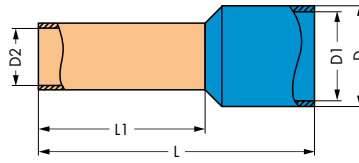


Ferrule, uninsulated, electro-tin-plated, electrolytic copper, gastight crimped, per DIN 46288, Part 4/09.90

Conductor Size	Strip Length	L	D	D 2	Item No.	Pack. Unit
0.25 mm <sup>2</sup> / 24 AWG	5 mm / 0.2 inch	5	1,7	0,75	216-151	1000
0.25 mm <sup>2</sup> / 24 AWG	7 mm / 0.28 inch	7	1,7	0,75	216-131	1000
0.34 mm <sup>2</sup> / 24 AWG	5 mm / 0.2 inch	5	1,7	0,85	216-152	1000
0.34 mm <sup>2</sup> / 24 AWG	7 mm / 0.28 inch	7	1,7	0,85	216-132	1000
0.5 mm <sup>2</sup> / 22 AWG	6 mm / 0.48 inch	6	2,1	1	216-121	1000
0.5 mm <sup>2</sup> / 22 AWG	8 mm / 0.31 inch	8	2,1	1	216-101	1000
0.75 mm <sup>2</sup> / 20 AWG	6 mm / 0.48 inch	6	2,3	1,2	216-122	1000
0.75 mm <sup>2</sup> / 20 AWG	8 mm / 0.31 inch	8	2,3	1,2	216-102	1000
1 mm <sup>2</sup> / 18 AWG	6 mm / 0.48 inch	6	2,5	1,4	216-123	1000
1 mm <sup>2</sup> / 18 AWG	8 mm / 0.31 inch	8	2,5	1,4	216-103	1000
1.5 mm <sup>2</sup> / 16 AWG	6 mm / 0.48 inch	6	2,8	1,7	216-124	1000
1.5 mm <sup>2</sup> / 16 AWG	8 mm / 0.31 inch	8	2,8	1,7	216-104	1000
2.5 mm <sup>2</sup> / 14 AWG	10 mm / 0.39 inch	10	3,4	2,2	216-106	1000
4 mm <sup>2</sup> / 12 AWG	10 mm / 0.39 inch	10	4	2,8	216-107	1000
6 mm <sup>2</sup> / 10 AWG	12 mm / 0.47 inch	12	4,7	3,5	216-108	250
10 mm <sup>2</sup> / 8 AWG	12 mm / 0.47 inch	12	5,8	4,5	216-109	250
16 mm <sup>2</sup> / 6 AWG	12 mm / 0.47 inch	15	7,5	5,8	216-110	250

## Rail-Mount Terminal Blocks, TOPJOB® S

### Insulated and Uninsulated Ferrules per DIN 46228, Part 4/09.90



Ferrule, insulated, electro-tin-plated, electrolytic copper, gastight crimped, per DIN 46288, Part 4/09.09

Conductor Size	Color	Strip Length	L	L 1	D	D 1	D 2	Item No.	Pack. Unit
0.5 mm <sup>2</sup> / 22 AWG	○ white	12 mm / 0.47 inch	16	10	3,1	2,6	1	216-241	1000
0.75 mm <sup>2</sup> / 20 AWG	○ gray	12 mm / 0.47 inch	16	10	3,3	2,8	1,2	216-242	1000
0.75 mm <sup>2</sup> / 20 AWG	○ gray	14 mm / 0.55 inch	18	12	3,3	2,8	1,2	216-262	1000
1 mm <sup>2</sup> / 18 AWG	● red	12 mm / 0.47 inch	16	10	3,5	3	1,4	216-243	1000
1 mm <sup>2</sup> / 18 AWG	● red	14 mm / 0.55 inch	18	12	3,5	3	1,4	216-263	1000
1.5 mm <sup>2</sup> / 16 AWG	● black	12 mm / 0.47 inch	16	10	4	3,5	1,7	216-244	1000
1.5 mm <sup>2</sup> / 16 AWG	● black	14 mm / 0.55 inch	18	12	4	3,5	1,7	216-264	1000
1.5 mm <sup>2</sup> / 16 AWG	● black	20 mm / 0.79 inch	24	18	4	3,5	1,7	216-284	1000
2.5 mm <sup>2</sup> / 14 AWG	● blue	12 mm / 0.47 inch	17	10	4,7	4,2	2,2	216-246	1000
2.5 mm <sup>2</sup> / 14 AWG	● blue	14 mm / 0.55 inch	19	12	4,7	4,2	2,2	216-266	1000
2.5 mm <sup>2</sup> / 14 AWG	● blue	20 mm / 0.79 inch	25	18	4,7	4,2	2,2	216-286	1000
4 mm <sup>2</sup> / 12 AWG	○ gray	14 mm / 0.55 inch	20	12	5,4	4,8	2,8	216-267	1000
4 mm <sup>2</sup> / 12 AWG	○ gray	20 mm / 0.79 inch	26	18	5,4	4,8	2,8	216-287	500
6 mm <sup>2</sup> / 10 AWG	● yellow	14 mm / 0.55 inch	20	12	6,8	6,3	3,5	216-208	100
6 mm <sup>2</sup> / 10 AWG	● yellow	20 mm / 0.79 inch	26	18	6,9	6,3	3,5	216-288	500
10 mm <sup>2</sup> / 8 AWG	● blue	20 mm / 0.79 inch	28	18	8,4	7,6	4,5	216-289	500
16 mm <sup>2</sup> / 6 AWG	● blue	23 mm / 0.91 inch	28	18	9,6	8,8	5,8	216-210	100

## Crimping Tools



Crimping Tool 25, for insulated and uninsulated ferrules, crimping range: 10 mm<sup>2</sup>, 16 mm<sup>2</sup> and 25 mm<sup>2</sup>

Item No.	Pack. Unit
206-225	1



Crimping Tool 50, for insulated and uninsulated ferrules, crimping range: 35 mm<sup>2</sup> and 50 mm<sup>2</sup>

Item No.	Pack. Unit
206-250	1



Insert the ferruled conductor into the crimping station.



Squeeze handles until ratchet mechanism is released.



A perfect gas-tight crimp – both electrically and mechanically reliable

Application notes:

- Improved crimping for higher conductor retention
- Crimping can be performed from either side (for left- or right-handed users).
- Built-in ratchet mechanism ensures gas-tight crimp connection.
- Crimping tools open automatically after crimping operation is complete.
- Ergonomically designed handles.

What is a "gas-tight" connection?

In a gas-tight connection, the conductor and the ferrule are compressed, eliminating all spaces. Under normal atmospheric conditions, neither a liquid nor gaseous medium can penetrate the crimped connection.

Oxidation between crimped single conductors is prevented, virtually eliminating the possibility of any increase in the crimped connection's resistance. In some exceptional cases, minute, isolated spaces may be present. However, these instances can be considered as closed off due to the twisted conductor.

Inadequate crimping can allow the conductor to be pulled out of the connection. Hollow spaces also remain, permitting oxidation formation and leading to an increase in contact resistance.

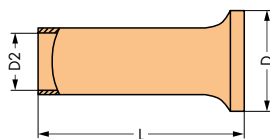
Elevated resistance is detrimental for both signal transmission (signal flow is damped) and power transmission, resulting in power loss and contact heating (risk of fire).

Crimping tools with built-in ratchets are recommended, such as the WAGO Variocrimp tools. These tools open automatically after the crimping operation is complete. Space-saving crimping from all four sides is ideal for spring clamp termination.

Ferruled conductor cross-sections specified for WAGO products are based on this crimping method.

## High-Current Rail-Mount Terminal Blocks

### Insulated and Uninsulated Ferrules per DIN 46228, Part 4/09.90



Ferrule, uninsulated, electro-tin-plated, electrolytic copper, gastight crimped, per DIN 46288, Part 4/09.90

Conductor Size	Strip Length	L	D	D 2	Item No.	Pack. Unit
25 mm <sup>2</sup> / 4 AWG	25 mm / 0.98 inch	25	9,5	7,3	216-413	50
35 mm <sup>2</sup> / 2 AWG	25 mm / 0.98 inch	25	11	8,3	216-414	50
35 mm <sup>2</sup> / 2 AWG	30 mm / 1.18 inch	30	11	8,3	216-424	50
50 mm <sup>2</sup> / 1 AWG	30 mm / 1.18 inch	30	13	10,3	216-425	50
50 mm <sup>2</sup> / 1 AWG	35 mm / 1.38 inch	35	13	10,3	216-435	50

## Test and Measurement Devices

### 206 Series



Profi LED+, 2-pole voltage tester with LED display, removable 4 mm Ø test probes

Item No.	Pack. Unit
206-707	1



Profi LED+, 2-pole voltage tester with LED display, removable 4 mm Ø test probes

Item No.	Pack. Unit
206-706	1



Spare test probes, 4 mm Ø (2 pieces)

Item No.	Pack. Unit
206-808	25



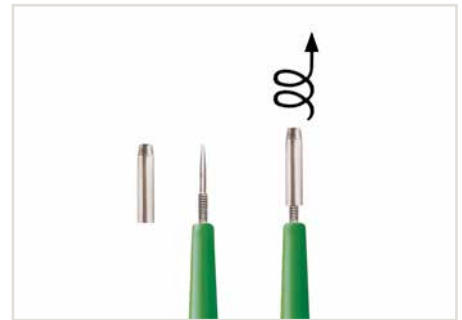
Additional Profi LED+ features:

- 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 Profi LED+ features:

- 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)



Profi-LED+:

- Improved socket contact via 4 mm Ø test probes
- Removable test probes for small test ports (suitable for all WAGO terminal blocks)



## Test and Measurement Devices

### 206 Series



Multi-Tester, digital multimeter with non-contact voltage tester

Item No.	Pack. Unit
206-810	1



Clamp-Multi-Tester

Item No.	Pack. Unit
206-816	1



Testboy, with integrated flashlight, non-contact voltage tester

Item No.	Pack. Unit
206-804	1



Additional Multi-Tester features:

- Contact-less voltage test AC >100 V (optical and acoustical)
- Resistance measurement up to 20 MΩ
- Acoustical continuity test
- Diode test
- Data hold function
- Auto power-off function
- LED torch lamp function
- CAT IV 600 V
- TÜV/GS tested and approved
- IEC/EN 61010-1 (DIN VDE 0411)



Voltage testing in switchgear cabinet

Additional Clamp-Multi-Tester features:

- DC and AC current up to 600 A
- True RMS and min./max. value measurement
- DC and AC voltage up to 600 V
- Manual or automatic measurement range selection
- Resistance up to 60 MΩ
- Capacitance measurement, acoustical continuity test
- Diode test, data hold function
- Large LCD with backlight
- LED measuring point lighting
- CAT III 600 V overvoltage protection
- IEC/EN 61010-1 (DIN VDE 0411)
- Includes batteries, measurement leads and carrying bag



A device that will reliably detect AC voltage in cables, sockets, fuses, switches, outlets and other installations.

Testboy can detect the following:

- Live conductors
- Cable breaks
- Blown fuses (in cartridges or holders)
- Defective switches
- Defective lamps in strings of lights



Current measurement in a switchgear cabinet

## General Test Accessories



Measuring range category	CAT I
Test voltage (AC)	30 V
Test voltage (DC)	60 V
Test current	10 A

Test plug, with 500 mm cable, 2 mm Ø		
Color	Item No.	Pack. Unit
red	210-136	50 (1)



Measuring range category	CAT I
Test voltage (AC)	30 V
Test voltage (DC)	60 V
Test current	10 A

Test plug, with 500 mm cable, 2.3 mm Ø		
Color	Item No.	Pack. Unit
yellow	210-137	50 (1)



Measuring range category	CAT I
Test voltage (AC)	30 V
Test voltage (DC)	60 V
Test current	20 A

Connection Data	
Connection technology	CAGE CLAMP®
Solid conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip Length	9 ... 11 mm / 0.35 ... 0.43 inch

Banana plug, for 4 mm socket diameter, color mixed, 10 x orange, white, black, blue, yellow		
Item No.	Pack. Unit	
215-111	50	



Measuring range category	CAT I
Test voltage (AC)	30 V
Test voltage (DC)	60 V
Test current	20 A

Connection Data	
Connection technology	CAGE CLAMP®
Solid conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Fine-stranded conductor	0.08 ... 2.5 mm <sup>2</sup> / 28 ... 14 AWG
Strip Length	9 ... 11 mm / 0.35 ... 0.43 inch

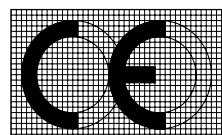
Banana plug, for 4 mm socket diameter		
Color	Item No.	Pack. Unit
orange	215-211	50
red	215-212	50
black	215-311	50
green	215-411	50
yellow	215-511	50
white	215-611	50
blue	215-711	50
gray	215-811	50
green-yellow	215-911	50





## Technical Section

## Technical Section



	Page
Technical Information	636
Installation Notes	654
Technical Support	658
CE Marking and EC Directives	660
General Technical Information for Electrical Equipment Used in Hazardous Areas	661
Electromagnetic Compatibility and Mechanical Strength (Industrial and Residential Areas)	662
Electromagnetic Compatibility and Mechanical Strength (Marine Applications)	663
Specifications and Test Results	664
Electrical Engineering Laboratory: Product Safety for Our Customers	668
WAGO Seminars	670

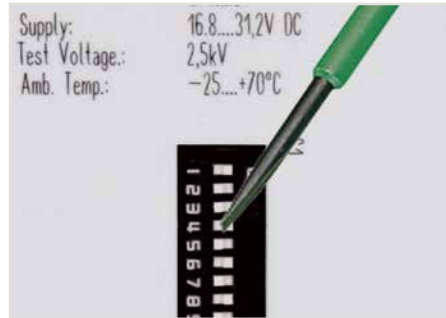
# JUMPFLEX® Signal Conditioners

## 857 Series

## Configuration Options



Housed in a 6 mm-wide package, the JUMPFLEX® Signal Conditioners feature eight Push-in CAGE CLAMP® connections and a common profile. These features play a key role in forming the basis for a successful overall solution. Additional benefits include: "safe isolation," extended operating temperature range and calibrated, configurable signals. Combined with excellent technical specifications, these features lead to a line of advanced signal conditioning solutions that maximize panel space while reducing signal wiring and downtime.



Configuration via DIP switch



Industry's most compact – "True" 6.0 mm (0.23 inch) width maximizes panel space.



Configuration via JUMPFLEX®-ToGo Smartphone App



For extreme applications – Extended temperature range of -25 °C to +70 °C to support more applications.

### Directly Connect:

Simple, push-in termination of solid and ferruled conductors – no operating tool needed.

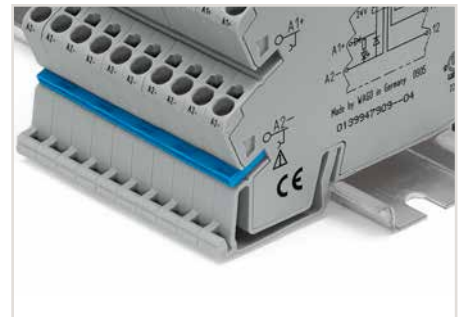
## PUSH-IN CAGE CLAMP®

### Highest Safety:

All devices provide "safe isolation" with 2.5 kV test voltage according to DIN EN 61010-1.



Configuration via PC software



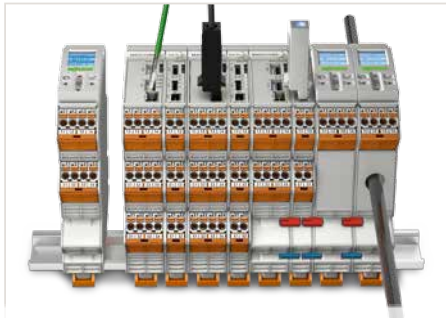
Commoning, not discrete wiring – Same outline allows use of a single in-line, push-in jumper.



Configuration via push/slide switch

2857 Series

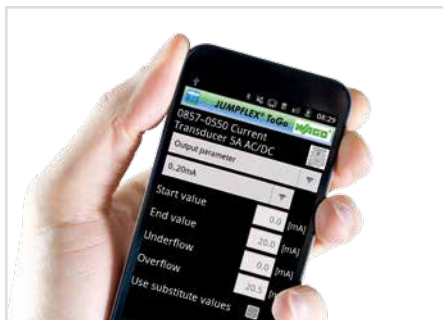
Configuration Options



The success of the 857 Series *JUMPFLEX*® Signal Conditioners shaped the design of the new 2857 Series. Just like the 857 Series, usability and absolute reliability are at the core of the 2857 Series. However, the 2857 Series takes flexibility to new levels by providing several convenient configuration options. In addition to DIP switches, PC configuration software and a smartphone configuration app, there is also a touch panel display. Every aspect has been engineered for maximum flexibility – exactly what you'd expect from WAGO.

Configuration via DIP switch

Commoning, not discrete wiring – Same outline allows use of a single in-line, push-in jumper.



Configuration via *JUMPFLEX*®-ToGo Smartphone App



For extreme applications – Extended temperature range of -40 °C to +70 °C to support more applications.

**Directly Connect:**  
Simple, push-in termination of solid and ferruled conductors – no operating tool needed.

**PUSH-IN CAGE CLAMP®**

**Highest Safety:**  
All devices provide "safe isolation" with 4 kV test voltage according to DIN EN 61010-1.



Configuration via PC software



Lock-out seal option



Configuration via touch panel – an innovative display



Pluggable connection technology

## Isolation Amplifiers with a Power Supply

### Pre-Configured Isolation Amplifiers

Pre-configured isolation amplifiers convert, amplify, filter and electrically isolate analog standard signals (e.g., 0 ... 10 V into 0 ... 20 mA).

### Configurable Isolation Amplifiers

For signal conditioners, and particularly two-wire signal conditioners, the measured signal is often in the 4 ... 20 mA range as a current value. For the analog input card of a PLC, however, input voltages in the ranges of 0 ... 10 V or 0 ... 5 V are required.

Configurable isolation amplifiers support various standard signals at the input and output; the devices also convert, amplify, filter and electrically isolate analog standard signals. DIP switches accessible from the side can be used to configure the input and output signals. Measurement range configuration via DIP switch is calibrated.

### Universal Isolation Amplifiers

In addition to the configurable isolation amplifiers, the universal isolation amplifiers can also be configured via PC configuration software or smartphone app. The configuration software also offers additional options, such as special input and output signal combinations with intermediate values or inversion of the analog output. An error message can be signaled via digital switching output.

### Bipolar Isolation Amplifiers

Bipolar measurement signals often require processing, e.g., when motor currents are measured in both directions of rotation. Bipolar signals are also processed for recording distances or for better resolution of measurement signals.

### Repeater Power Supplies

Repeater power supplies energize transmitters.

Two-wire transmitters regulate their own current consumption proportional to the measured value; the 4 ... 20 mA connection provides auxiliary power for the transmitter and the magnitude of the current is the same as the output measured value.

Three-wire transmitters usually have an active current output for the measured value and additional connections for the supply voltage (auxiliary power).

### Signal Splitters

Signal splitters divide a standard signal into two signals. The measured signal can be supplied to different downstream devices without interference.

Example: A signal conditioner supplies 4 ... 20 mA input current. 20 mA.

Output 1 is configured to 4 ... 20 mA and transmits the measured value to a controller.

Output 2 is configured to 0 ... 20 mA and regulates a controller.



## Isolation Amplifiers without a Power Supply

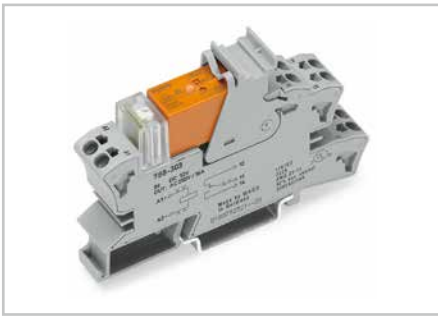
### Passive Isolators

Passive isolators draw their power from the input signal (4 ... 20 mA) and require no additional wiring or auxiliary power.

### Loop-Powered Isolation Amplifiers

Loop-powered isolation amplifiers draw their power from the output signal (4 ... 20 mA) and require no additional wiring or auxiliary power.

## Relay Modules



### Relay Modules

Conveniently Interface Electronics and Peripheral Devices

In modern automation systems, electro-mechanical relays safely connect process peripherals with electronic control, alarm and monitoring systems. For example, relays perform the following tasks:

- Electrical isolation with high isolation levels between input and output circuits
- Adjust different signal levels
- Signal amplification and/or signal multiplication if varying potentials coexist

The comprehensive design of modern relays provides applications with the following benefits:

- Immunity to electromagnetic interference and transient voltages
- High, short-term overload capacity on both input and output sides
- Minimal switching loss
- A single module that switches both direct and alternating currents

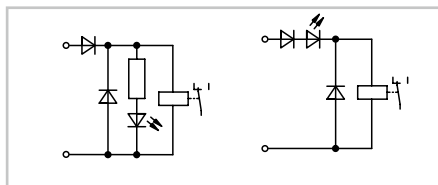
WAGO offers a complete range of relay modules that perform these tasks for a wide range of applications. Depending on the task and application requirements, there is a choice of relay modules with differently rated voltages, contacts, contact materials, housings and designs. In addition to standard switching relays, other relay models are available including bistable, timer, latching and safety relays with force-guided contacts.



### Definitions of Several Important Technical Terms

#### Coil-Side

The relays can be used within the stated temperature range with nominal voltage plus tolerance at 100% continuous rating. According to the type and application, the relays are triggered with a DC or AC signal. The DC versions (residual ripple  $\leq 6\%$ ) are, unless otherwise stated, equipped with LED function indicators, a recovery diode and a reverse voltage protection diode. The functional details are shown in the wiring diagram.



Possible input circuits of relay modules

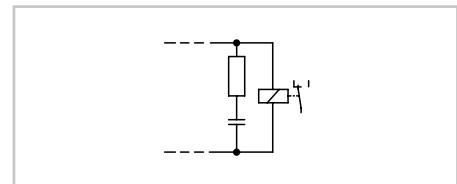


AC versions of select relays equipped with series connected rectifiers (refer to the wiring diagrams) can be triggered with AC and DC at the stated nominal voltage.

The free-wheel function is in this case actuated by the rectifier. The only input circuit on purely AC relays is the status display.

To guarantee safe operation, residual voltages (due to the cable capacitance of long connection lines or leakage currents of semi-conductor switches and their protective circuits) must be lower than the release voltage of the relays. For DC relays, the release voltage is specified with  $\leq 5\%$  of the nominal voltage; for AC relays, it is  $15\%$  of the nominal voltage (per EN 61810).

The relay may not reset if a high residual voltage exists. Depending on the reason for the residual voltage, changing the cable routing or a parallel connection of an RC element of  $R = 100 \dots 220 \Omega$  and  $C = 220 \dots 470 \text{ nF}$  could remedy this situation.



Optionally, modules specially developed for this application are available, e.g., sockets with a miniature switching relay and integrated base load module (857-358/006-000).

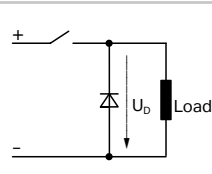
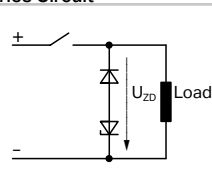
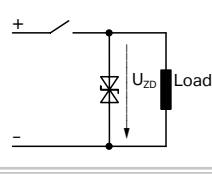
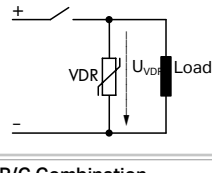
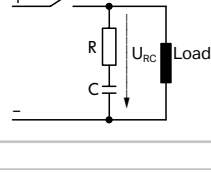
## Contact Materials

For contact reliability, the contact resistance over the entire operating life of the relay should remain relatively low and constant. A variety of contact materials can be selected depending on the load type, switching current, switching voltage and the desired number of switching cycles. The accompanying table shows the materials, their properties and applications when used with WAGO relay modules.

Contact Material	Properties and Applications	Application Range
AgNi 0.15 + Au	Excellent corrosion resistance, low and constant contact resistances at extremely low switching power, for dry circuits	$\mu\text{V} \dots 30 \text{ V}$ $\mu\text{A} \dots 0.2 \text{ A}$
AgCd O + Au	Low welding tendency, high burn-off resistance at higher switching power, suitable for small switching loads	$\geq 5 \text{ V}$ $\geq 10 \text{ mA}$
Ag Cd O, with gold flash	Low welding tendency, high burn-off resistance at higher switching power, Au as storage protection	$\geq 12 \text{ V}$ $\geq 100 \text{ mA}$
Ag Ni 0.15	Good mechanical stability, low welding tendency and low contact resistance, universal use at moderate loads	$\geq 12 \text{ V}$ $5 \text{ mA} \dots 10 \text{ A}$
Ag Sn O <sub>2</sub>	Low welding tendency, extremely high burn-off resistance at high switching power, suitable for circuits with high switch on/off loads, DC circuits	$\geq 5 \text{ V} / 100 \text{ mA}$ $\geq 10 \text{ V} / 10 \text{ mA}$ $\geq 24 \text{ V} / 1 \text{ mA}$
Ag alloy, with gold flash	Good mechanical stability, low welding tendency, large application range for small to medium switching power	$10^{-3} \text{ W}$

## Contact Protective Circuit

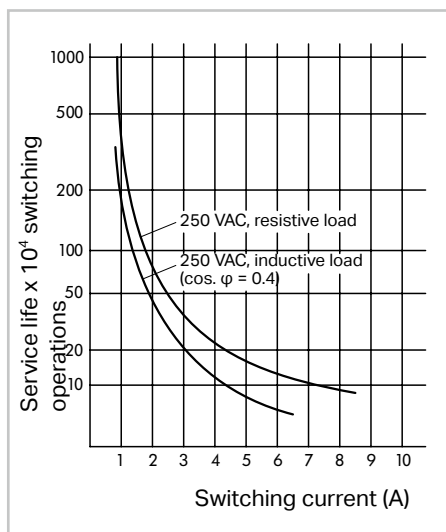
When switching off inductive loads, such as contactors and solenoid valves, transients occur with peak voltages up to several thousand volts. These transients often exceed the permissible EMC standard limits and must therefore be limited by external circuits. They also cause an electric arc at the switching contact, which can destroy the contact or can significantly diminish the relay's service life and reliability. The following protective circuits, which are outlined in the table, are connected directly to the source in parallel to the load and have proven to be successful.

Load Circuit	Additional Fall Delay	Defined Induction Voltage Limitation	Bipolar-Effective Attenuation	Advantages:	Disadvantages:
<b>Diode</b> 	Large	Yes ( $U_D$ )	No	<ul style="list-style-type: none"> <li>Easy implementation</li> <li>Cost-effective, reliable</li> <li>Uncritical dimensioning</li> <li>Small induction voltages</li> </ul>	<ul style="list-style-type: none"> <li>Attenuation only via load resistor</li> </ul>
<b>Diode/Zener Diode Series Circuit</b> 	Medium to small	Yes ( $U_{ZD}$ )	No	<ul style="list-style-type: none"> <li>Uncritical dimensioning</li> </ul>	<ul style="list-style-type: none"> <li>Attenuation only above <math>U_{ZD}</math></li> </ul>
<b>Suppressor Diode</b> 	Medium to small	Yes ( $U_{ZD}$ )	Yes	<ul style="list-style-type: none"> <li>Cost-effective</li> <li>Uncritical dimensioning</li> <li>Limitation of positive peaks</li> <li>Suitable for AC voltage</li> </ul>	<ul style="list-style-type: none"> <li>Attenuation only above <math>U_{ZD}</math></li> </ul>
<b>Varistor</b> 	Medium to small	Yes ( $U_{VDR}$ )	Yes	<ul style="list-style-type: none"> <li>High energy absorption</li> <li>Uncritical dimensioning</li> <li>Suitable for AC voltage</li> </ul>	<ul style="list-style-type: none"> <li>Attenuation only above <math>U_{VDR}</math></li> </ul>
<b>R/C Combination</b> 	Medium to small	No	Yes	<ul style="list-style-type: none"> <li>RF attenuation via power storage</li> <li>Suitable for AC voltage</li> <li>Level-independent attenuation</li> </ul>	<ul style="list-style-type: none"> <li>Accurate dimensioning required</li> <li>High inrush current</li> </ul>

## Relay Modules

### Service Life

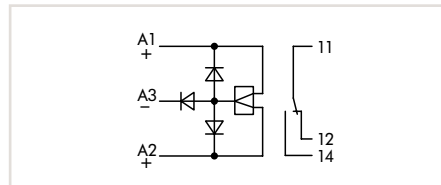
A distinction must be made between the mechanical life, which indicates the number of switching cycles without contact load, and the electrical service life at maximum load, which indicates the number of switching cycles with maximum switching power and resistive load. Reduced power increases the service life compared to the value of the maximum load. The following figure shows the typical curve between switching current and service life of a relay.



More details upon request

### Description of Select Relays

#### Bistable Switching Relays



Bistable switching relays have three coil contacts. According to the wiring scheme, the relay is switched into "working condition" (contacts 11 ... 14 closed) by the common connection A3 and the connection A2 and into "rest position" (contacts 11 ... 14 opened) by the connection A1. 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 Relays

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 Relays

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 essential safety component for these circuits, particularly when defects occur. For these applications, WAGO offers specialty relay modules with force-guided contacts as based on EN 61810-3.

If a partial or complete standstill is required in the event of a failure (e.g., in medical technology or chemical processes), each control contact can be polled and evaluated. Irrespective of whether a single or complete control for the NO contact is implemented, 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.

#### Timer Relays

WAGO's timer relay modules are electro-mechanical timer relays with an integrated time response, e.g., per EN 61812-1. 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.

## Optocouplers

### Optocouplers – The Modern and Powerful Alternative

As a link between process peripherals and electronic control, alarm and monitoring systems, optocoupler modules boast the following advantages over electromechanical relays:

- Longer service life – no mechanical wear
- High switching frequency because of fast switching times
- Vibration resistance
- No contact bouncing
- "Noiseless" switching
- Low control power

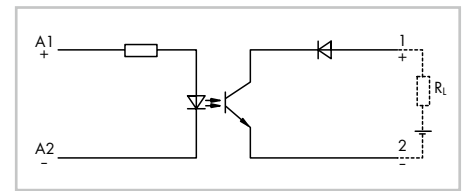
WAGO provides a full range of optocouplers for all interfaces between control and load circuits in applications where the following advantages are needed:

- Electrically isolate input and output circuits
- Adjust different signal levels
- Signal amplification

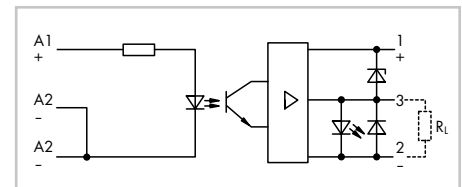
### Input circuit

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

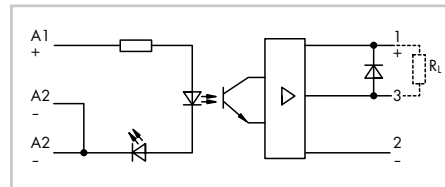
In the DC type, a reverse voltage protection diode is always provided; in the AC type optocoupler element, a rectifier is included. The optocoupler modules are equipped with a LED function indication at either the input side or at the load side, as shown in the wiring diagram.



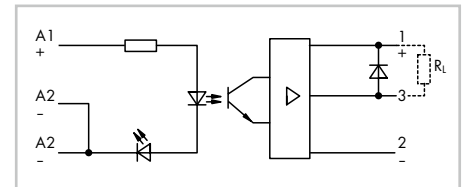
2-wire output



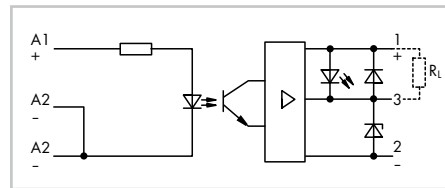
3-wire high-side switching output



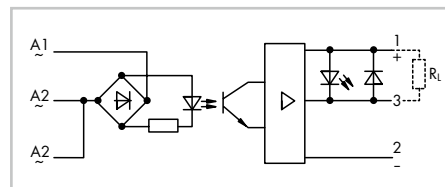
DC triggering with LED function indication in the triggering circuit



3-wire low-side switching output



DC triggering with LED function indication in the load circuit



AC triggering with LED function indication in the load circuit

Due to the low threshold voltages, it must be ensured that interference and residual voltages (caused by the cable capacitance of long connection lines or leakage currents of semi-conductor switches and their protective circuits) do not cause any malfunctions.

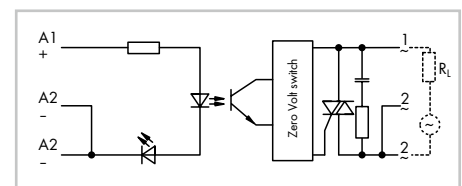
### Output Circuit

Depending on the application, an optocoupler module for DC or AC voltage consumers can be selected on the load side. In the case of DC outputs, they can be:

- 2-wire output
- 3-wire high-side switching output
- 3-wire low-side switching output

In addition to these different functional outputs, the output voltage range and the maximum switching current must be observed.

To ensure proper operation, the specified polarity must be observed. In order to protect the output transistors, inductive loads must always be equipped with a protective circuit, e.g., a recovery diode. For other types of protective measures, the cut-off voltage peaks must be lower than the indicated cut-off voltage of the output transistors. For the AC outputs a Triac is used as the switching element.



In order to avoid high inrush 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. Besides observing the maximum switching voltage and maximum switching current for inductive loads, ensure the provision of a protection circuit to cut-off peaks to a value below the reverse voltage.

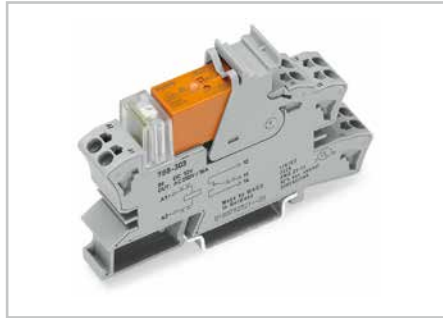
## Housings and Designs

Modern equipment design requires multiple components that can meet diverse challenges:

User- and maintenance-friendly, limited budgets, safety and availability, simplicity in design and usage.

WAGO offers relay and optocoupler modules in various designs to overcome any of the restraints posed by space requirements.

### Sockets with a Miniature Switching Relay or a Solid-State Relay, 788 Series



Socket with a pluggable miniature switching relay

### Relay and Optocoupler Modules, 857 Series



Relay module with plugged miniature switching relay

WAGO 788 Series Relay Sockets are an excellent platform for industrial and process automation switching relay applications. Featuring plug-and-play, miniature switching relays (1 or 2 changeover contacts), the 788 Series relays are ultra-compact, fitting where other relays won't.

A compact design (W x H x D: 15 x 53 x 86 mm) is just one of the 788 Series' unique and highly beneficial features.

A robust, easy-to-use lever lifts/ejects relays, simplifying replacement – even if relay modules are side-by-side.

For flexibility and the reduction of part numbers, the 788 Series can be ordered as: a fully equipped relay module, a relay and LED for switching status indication, or as individual components.

WAGO's 857 Series Relay and Optocoupler Modules are supplied in 6 mm-wide housing and share a common profile.

The modules feature a single, flexible in-line jumper system, eliminating discrete wiring. The pluggable relays can simply be replaced from the top.



Relay and optocoupler modules

### Pluggable Function Modules for Carrier Terminal Blocks, 286 Series



Pluggable function modules for carrier terminal blocks

Pluggable modules for carrier terminal blocks maximize flexibility while simplifying maintenance.

The carrier terminal block is mounted on the DIN-rail and wired just like a standard terminal block.

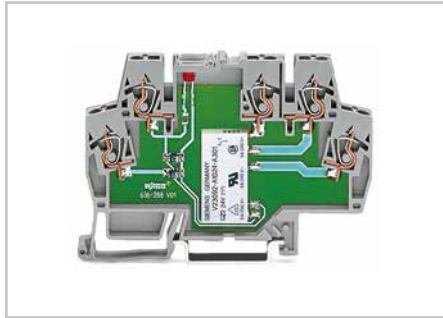
For ease of maintenance, the modules are replaced in one step without altering the wiring. This intelligent design also saves space and reduces wiring costs.



Pluggable relay modules for carrier terminal blocks

A comprehensive range of function modules is available to complement these relay and optocoupler modules. The modules seamlessly integrate any required function into control cabinets via pluggable modules.

### Rail-Mount Terminal Blocks with Relay and Optocoupler, 859 Series



Relay module

With a wide range of relays and optocouplers, the 859 Series will suit any industrial interface application.

The compact, 6 mm-wide housing is ideal for space-restricted control panels. Simple commoning at the control and load side streamlines looping through of common input and output potentials.

### Relay Modules in a DIN-Rail Mount Enclosure, 789 Series



Relay module in a DIN-rail-mount enclosure

WAGO 789 Series Switching Relays serve a wide variety of applications, from basic lighting control – homes, hotels and commercial structures – to comprehensive industrial control cabinets. Just 17.5 mm wide, the compact DIN-rail-mount enclosure is ideal for distribution boards and meter cabinets. The relay modules with manual operation allow simple emergency operation to be implemented.

### Sockets with an Industrial Relay, 858 Series



Socket with an industrial relay

A robust design and vibration-proof CAGE CLAMP® Spring Pressure Connection Technology ensure continuous and uninterrupted operation for any system. The right choice for applications requiring up to four changeover contacts. Dual conductor entries enable customized potential distribution.

## Interface Modules

### Safe and Maintenance-Free Connections

Interface modules connect electronics to electrical systems at the control level and perform:

- signal transmission between control and field level (system, machine), as well as
- signal distribution between control and field level

and vice versa. Here, the control signals from pre-assembled, plug-in connections are applied to terminal block connections.

WAGO offers a wide range of interface modules for commonly used connector types. Using these interface modules, the following benefits are provided for system wiring:

- Simple and time-saving planning and calculation
- Quick wiring, commissioning and troubleshooting thanks to clearly laid-out wiring and highly legible pole markings – decrease wiring errors
- Safe and maintenance-free connection of signal lines using CAGE CLAMP® terminal strips
- Space-saving, high-density wiring

The interface modules can be delivered as standard, in a universal DIN-rail mounting carrier for the following connectors:

### D-Subminiature Connector per DIN 41652

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.

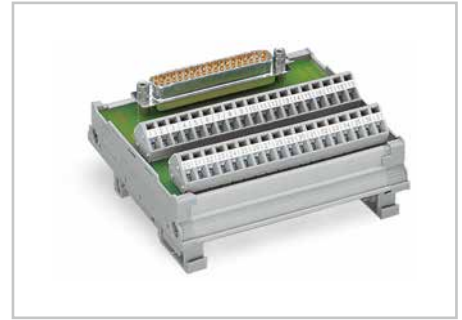
### Pluggable Connector per DIN 41651

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

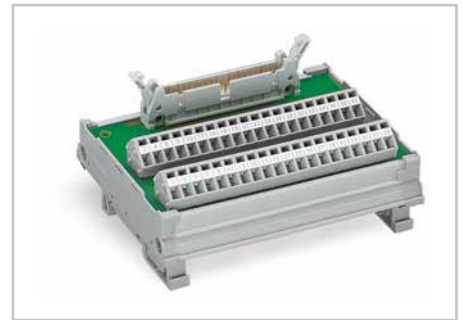
### RJ-45 Interface Modules

The RJ-45 interface modules are switch-gear cabinet components for passive and structured network cabling. A range of DIN-rail-mount RJ-45 interface modules in different variants are available for the various applications:

- with shield clamping saddles
- as crossover
- with additional power contacts



Interface module with D-subminiature connector per DIN 41652



Interface module with pluggable connector per DIN 41651



RJ-45 Interface Modules





## EPSITRON® – Advanced Power Supply System 787 Series

### PRO Power Supplies



Slimline, 1- and 3-phase, switched-mode power supplies feature a wide input voltage range, stabilized, adjustable 12, 24 or 48 VDC output voltage, output power up to 960 W and high efficiency. An integrated PowerBoost (up to 100% output power for 4 seconds or alternatively 150% for 8 s) allows reliable starting of heavy loads with high inrush currents, eliminating expensive oversizing of the power supply. The TopBoost function, which provides a much higher output current of up to 60 A for 50 ms, 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. Power supplies without LineMonitor offer a DC OK contact for output voltage monitoring and a stand-by mode to switch off the device output via remote input, while minimizing power consumption. Foolproof, pluggable CAGE CLAMP® connectors permit efficient pre-wiring.

### CLASSIC Power Supplies



Single-phase, two-phase and three-phase, primary switch mode, industrial power supplies provide a wide input voltage range and robust metal housings. The CLASSIC Power Supplies have a stabilized, adjustable output voltage and provide short-circuit and overload protection. The devices achieve high efficiency and the integrated LED status indicator conveniently provides operational status at a glance. Foolproof, pluggable CAGE CLAMP® connectors permit efficient pre-wiring. The CLASSIC Power Supplies are available in four nominal output voltages: 12, 24 or 48 VDC, as well as 30.5 VDC for AS-Interface networks. Depending on the voltage, outputs of up to 960 W are available. CLASSIC Power Supplies with outputs of up to 120 W comply with the EN 60335-1 standard, making them suitable for use in devices and machines subject to EN 60335-2 (so-called household appliance standard). CLASSIC Power Supplies with outputs of 120 W and higher are provided with a TopBoost, enabling the use of conventional circuit breakers for secondary-side protection. Virtually all devices of the CLASSIC Power family are provided with DNV GL approval for use in shipbuilding or onshore/offshore applications.

### ECO Power Supplies



Single-phase and three-phase, switched-mode power supplies in sturdy metal housing offer a wide input voltage range, without manual switching. The stabilized, front-panel adjustable 24 VDC output voltage is protected against open and short circuits, and constant current operation is provided in the overload range up to 180%. LEDs quickly provide operational status at a glance. CAGE CLAMP® provides fast, vibration-proof and maintenance-free terminations, allowing DIN-rail mounting in several positions as well as screw mounting without a DIN-rail. These devices also have conformity with EN 60335-1, allowing use in appliance building. Individual devices with ATEX, IEC Ex and ANSI/ISA 12.12.01 approval are available for use in Zone 2 hazardous areas.

### COMPACT Power Supplies



Single-phase, DIN-rail-mount power supplies are used in meter boards, junction boxes, small and system distribution boxes or flat control panels in buildings and industrial applications. Devices with nominal output voltages of 5, 12, 18 or 24 VDC are protected from overloads and short circuits, are provided with an integrated status LED and offer outputs of up to 150 W.

Some devices come with a pluggable female connector with integrated Push-in connection technology, ensuring particularly rapid and convenient wiring. This family also includes devices that comply with EN 60335-1 and are suitable for use in appliance building. Devices with DNV GL approval are also available for use in shipbuilding and on-shore/offshore applications.

### Electronic Circuit Breakers (ECBs)



Configurable protection via 2-, 4- or 8-channel ECBs, for shutting down faulty 12, 24 or 48 VDC current paths. Offering adjustable trip times, ECBs respond to short circuits/overloads quicker than traditional circuit breakers or fuses, or when unintended start-ups must be prevented in the event of a ground fault (see EN 60204). This is particularly advantageous when using long cables between a power supply and load where loop resistance may be very high. Due to their faster and more precise tripping characteristics, as well as the possibility to set at six times the nominal current, ECBs have clear benefits. The devices also come with integrated current and voltage monitoring, the possibility to charge high capacitive loads, a slim design, pluggable connection technology, as well as marking and sealing options. ECBs with active current limitation are also available as an option. These advanced features enable ECBs to reliably prevent voltage drops in the event of a short circuit.

A group message notifies whether channels have tripped. A remote reset is also possible. Furthermore, the digital signals provided enable the simple polling and switching of each individual channel. Voltage and current values can also be transferred.

### Uninterruptible Power Supplies (UPS)



Uninterruptible power supplies (UPS) reliably compensate for long power outages. They consist of a charger and controller, as well as a connected battery of varying capacities. In battery operation, 24 VDC can be provided for several hours depending on the load current and battery capacity. The charger and controller are supplied with 24 VDC from an external power supply – capacity must be matched to the load. Parameterization and diagnostics are simplified by an optionally integrated LCD with keypad, or free software using an RS-232 interface (for connection to a PC or PLC). The battery modules come with battery control technology. They have an integrated microcontroller with temperature sensor, allowing for temperature-controlled charging via charger and controller, which extends the battery's service life. The remaining battery life is determined, according to which the charger and controller can generate a signal for battery replacement.

## EPSITRON® – Advanced Power Supply System 787 Series

### Redundancy Modules



Redundancy modules have two integrated power diodes for parallel connection of power supplies, while improving power supply availability or increasing the total current for the 12, 24 or 48 VDC loads.

An optional signal contact reports the failure of one or both input voltages, which is also displayed via LED.

### Capacitive Buffer Modules



Maintenance-free capacitive buffer modules ensure smooth operation and protect data during shorter 24 VDC power interruptions. Depending on the output current and buffer capacity, buffer times up to several seconds can be achieved. While control units are particularly sensitive to short power interruptions, 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).

### DC/DC Converters



Available in a 6 mm wide housing or DIN-rail-mount enclosure, DC/DC 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).

### DIN-Rail-Mount Modules – Power Supplies



Standard transformer power supplies with bridge rectifier, smoothing capacitors and stabilized output voltage via longitudinal voltage regulator are ideal for supplying small loads with nominal output voltages of 24, 12,  $\pm 12$  and  $\pm 15$  VDC. Their low residual ripple makes them particularly well suited for applications using analog technology. The DIN-rail-mount modules feature CAGE CLAMP® technology for fast, vibration-proof and maintenance-free connections.

### DIN-Rail-Mount Modules – Constant Voltage Sources



Constant voltage sources provide stabilized 24 VDC voltage via integrated longitudinal voltage regulator. The DIN-rail-mount modules feature CAGE CLAMP® technology for fast, vibration-proof and maintenance-free connections.

### Communication Cables



The communication cables connect the RS-232 interface of the following devices to a PC or PLC RS-232 interface: power supplies with integrated LineMonitor (787-85x), ECBs (787-86x), UPS charger and controller (787-87x), power supply with integrated UPS charger and controller (787-1675). When combined with free software, users can easily set device parameters and perform diagnostics.

## Overvoltage Protection

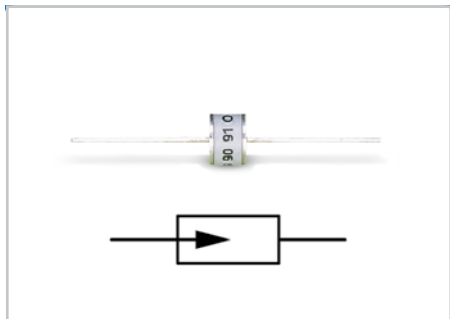
### Overvoltage protection for increased safety and longer on-line operation

On-the-line overvoltages cause most operating failures for measuring, control, data and power lines. Failure of electronic and semiconductor components due to surges can cause operating interruptions. The overvoltage (also called transients) can be generated by switching electrical equipment on or off or by lightning discharges. Depending on the application, protective measures for systems and devices can be broken down into:

- Coarse protection
- Medium protection
- Fine protection

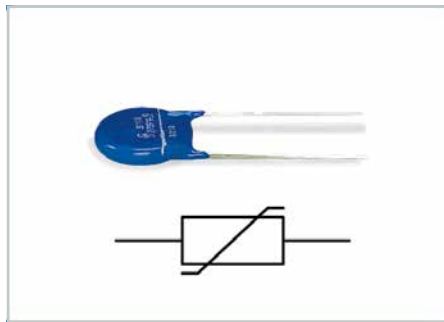
The boundaries between these levels of protection may not be sharply defined. To implement the appropriate protection measures, various components are used for discharging transient overvoltage, depending on the protection type. The following components have proven performance in these applications:

### Gas-filled surge arrester

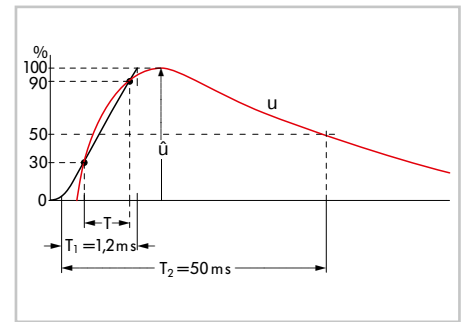


The gas filled surge arrester is comprised of two electrodes in a ceramic or glass tube filled with a pressurized inert gas. Once the ignition voltage is reached, resistance drops due to ionization and current begins to flow. The resistance of the device drops from high to low as it conducts. The voltage across the device after the arc is struck is typically 10 ... 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. This is always the case if the nominal voltage of the protected network is greater than 12 VDC and the nominal voltage of the power supply and the protected circuit is greater than 100 mA.

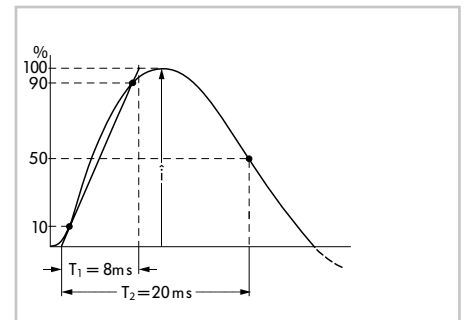
### Varistor



A varistor is a voltage-dependent resistor, in which the resistance becomes low after their "nominal voltage" is exceeded and for the voltage range above it, and can thus cut off any overvoltages through high discharge currents. Varistors can age with continued surge conduction, resulting in lower impedance even in the lower voltage range. However, this normally only occurs when a varistor frequently discharges transients. In this case, they must be replaced and specific time intervals.

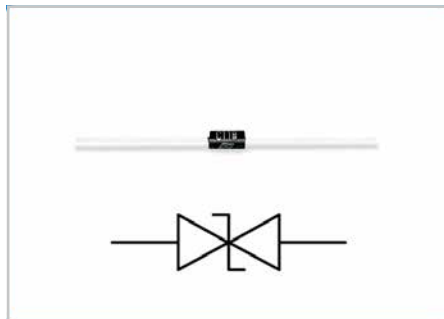


Voltage pulses 1.2/50  
IEC 60060-1



Current pulses 8/20  
per EN 62475:2010

### Suppressor Diode



Suppressor diodes 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 pico-second 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 and EN 62475:2010. Preference is given to voltage pulses of 1.2/50 and current pulses of 8/20.

### 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 a very short response time may be employed as fine protection. WAGO 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 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 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 also offers multistage 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 0.08 mm<sup>2</sup>/28 AWG to 2.5 mm<sup>2</sup>/14 AWG.



Pluggable surge suppression modules with  
on-unit warnings

Interference suppression modules are a special category here.

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 ( $U_{BN}$ )

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 ( $U_{Bmax}$ )

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  $\mu$ s waveform, which can flow through the surge arrester five times within a time period of 30 seconds (VDE) without destroying it.

### Max. Surge Current ( $I_{Smax}$ )

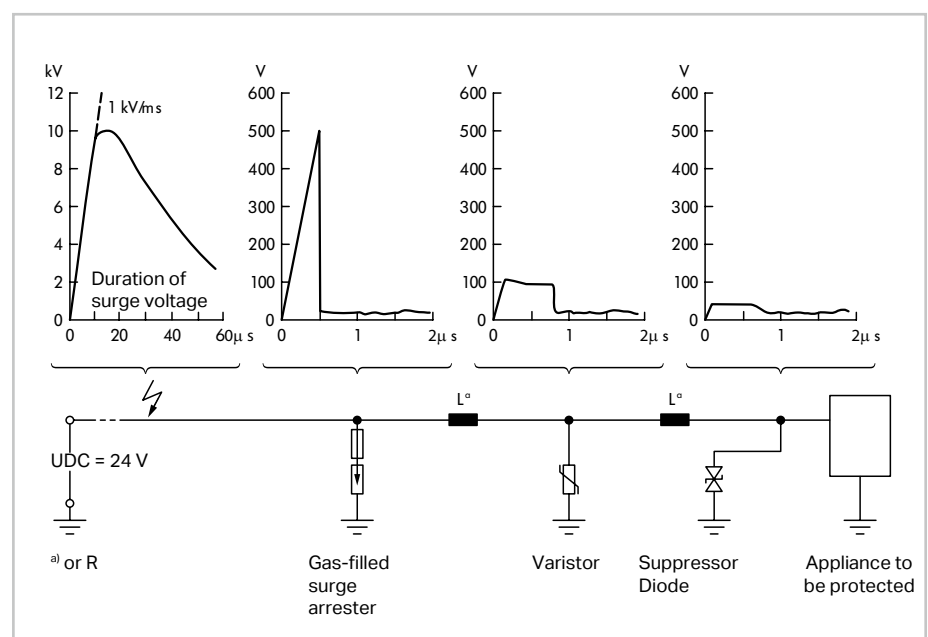
The maximum surge current  $I_{Smax}$  defines the maximum value of a current having the 8/20  $\mu$ s waveform, which can flow through the surge arrester once without destroying it.

### Protection Level ( $U_p$ )

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 ( $t_{resp}$ )

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 1kV/ $\mu$ s.



Function diagram of a multi-stage surge voltage protection module

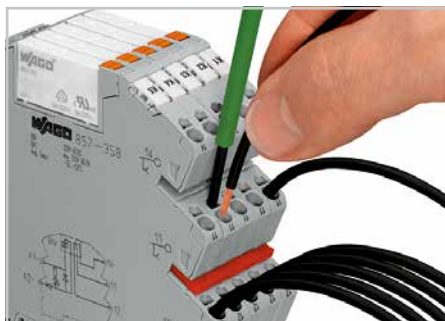
## Installation Notes

### Relay and Optocoupler Modules, 859 Series



Inserting a conductor via screwdriver.

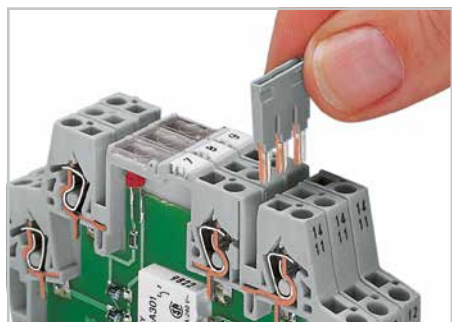
### Relay and Optocoupler Modules, 857 Series



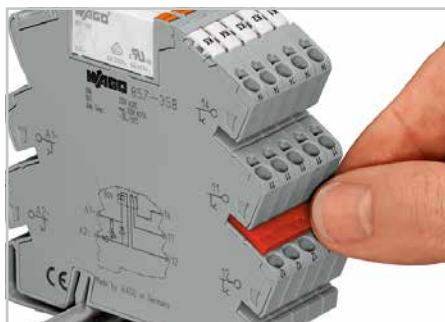
Inserting a conductor via screwdriver.



Removing a relay via ejector.



Easy commoning using adjacent jumpers.



Easy commoning using adjacent jumpers.



Marking via Mini-WSB Quick Marking System.

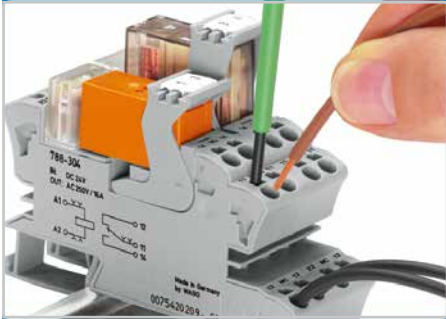


Marking via WMB Multi Marking System.

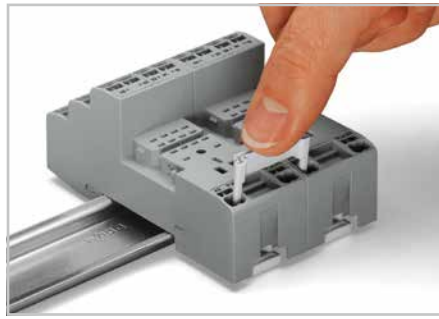


**Sockets with a Miniature Switching Relay, 788 Series**

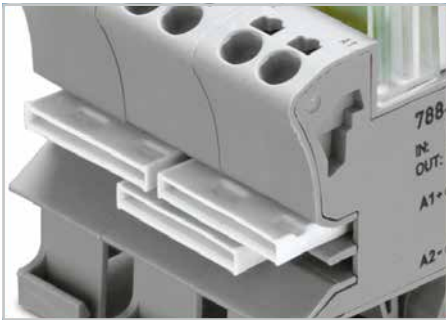
**Sockets with an Industrial Relay, 858 Series**



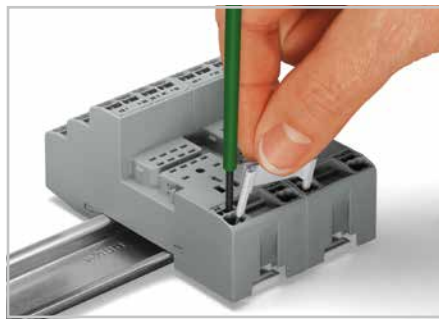
Inserting a conductor via screwdriver.



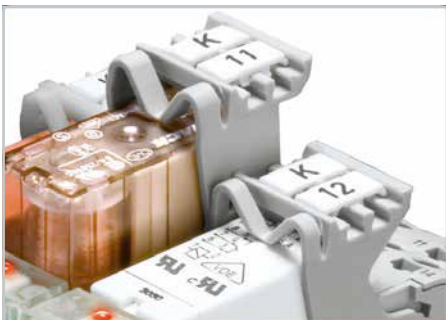
Easy commoning using adjacent jumpers.



Easy commoning using adjacent jumpers.



Removing a conductor via screwdriver.



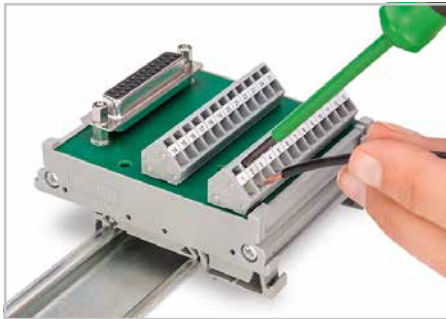
Marking using WMB Multi markers and group marker carriers.



Marking using WMB Multi markers and group marker carriers.

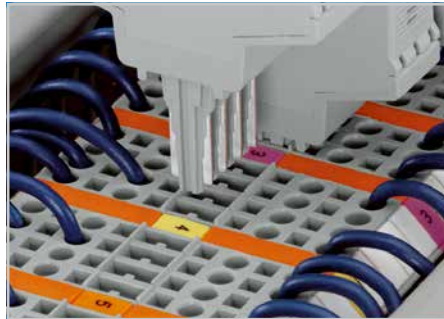
## Installation Notes

### DIN-Rail-Mounted Interface Modules, 289 Series



"Front-entry" conductor termination

### Pluggable Function Modules for Carrier Terminal Blocks, 286 Series

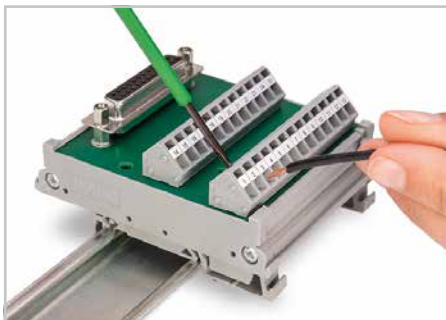


Coding ensures correct polarity.

### Relay Modules in a DIN-Rail Mount Enclosure, 789 Series



Inserting a conductor via screwdriver.



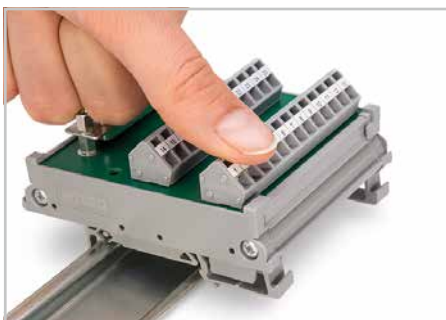
"Side-entry" conductor termination



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



Easy commoning via adjacent jumpers.



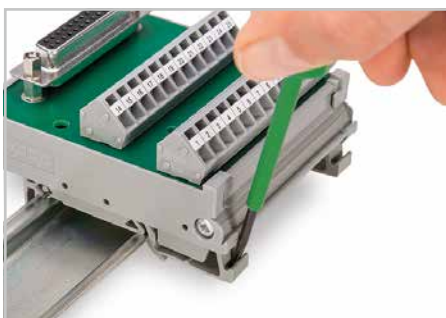
Snapping a module onto DIN-rail.



Marking via WMB Multi Marking System.



Marking via Mini-WSB Quick Marking System.



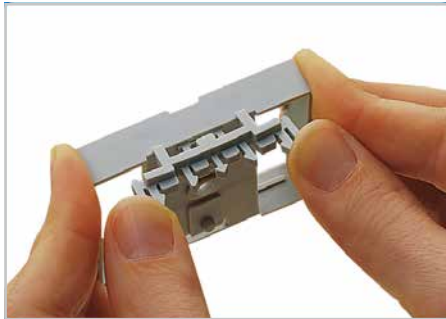
Removing a module from the DIN-rail.



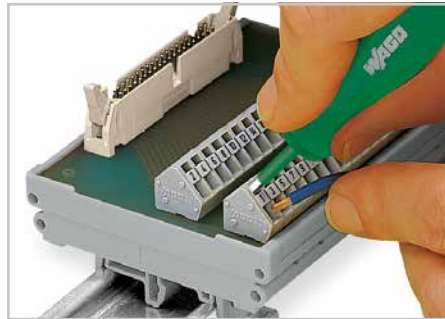
Function testing via touch-proof test slots.

### Interface Modules, 289 Series

### Interface Modules, 289 Series



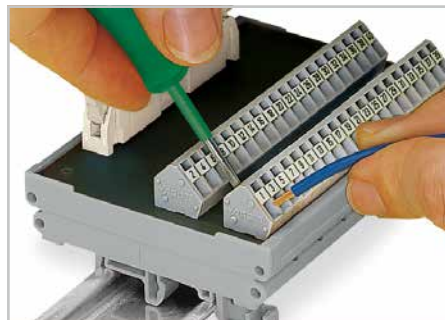
Mounting carrier, gray, snap-fit mounting of universal mounting feet



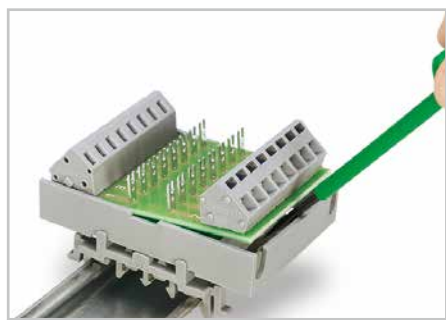
"Front-entry" conductor termination



Fitting an individual module to the mounting carrier.



"Side-entry" conductor termination



Removing an individual module from the mounting carrier.

# Product Support From

## Consulting:

- Selecting fieldbus systems
- Using components
- Combining components
- Assistance in preparing your bid



## Contact

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Online: [www.wago.com](http://www.wago.com)

# The Very Beginning...

## Experience:

- Trained staff
- PLC
- Fieldbus systems
- Projects:
  - Automotive industry
  - Machine building
  - Chemical industry
  - Food processing
  - Building automation
  - Process engineering
  - Process control
  - and many more



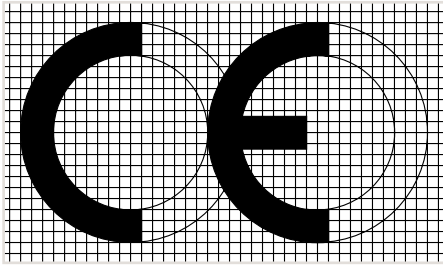
## Support:

- 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 conformity marking must be applied to all electrical equipment; should on-unit marking not be possible, mark the smallest packing unit. With this marking, manufacturers attest conformity of their products to relevant directives.

In addition to the CE marking, manufacturers provide an EC "Declaration of Conformity" for their products. This declaration of conformity must be retained and submitted to a national surveillance authority upon request.

**EC directives** are legally binding specifications for the European Union. Their goal is aligning legal and administrative specifications in the various EU member countries, in order to prevent trading hindrances arising from different national specifications.

In order to launch a product on the market, it must comply with the relevant directives. Several directives may apply for one single product, for example, EMC and low voltage directives.

### Low Voltage Directive (LVD)

The safety of electrical equipment is guaranteed by the Low Voltage Directive. The LVD covers all electrical equipment operating with a voltage between 50 and 1000 VAC and between 75 and 1500 VDC. Products falling within the scope of the LVD that are designed in such a way that they can be used in other electrical devices and whose safety, for the most part, is dependent 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 LVD. The LVD doesn't apply to basic components.

### 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.

### Explosive Atmospheres Directive (ATEX)

Directive for devices and protective systems intended for use in hazardous locations.

### Radio Equipment Directive

A device or relevant component thereof, capable of communication by emitting and/or receiving radio waves utilizing the spectrum allocated to terrestrial/space radio communication, falls within the scope of the Radio Equipment Directive. As such, these devices and components are tested and labeled accordingly. This label implicitly includes both Low Voltage and EMC Directives, since the Radio Equipment Directive also encompasses the safety targets for both of these directives.

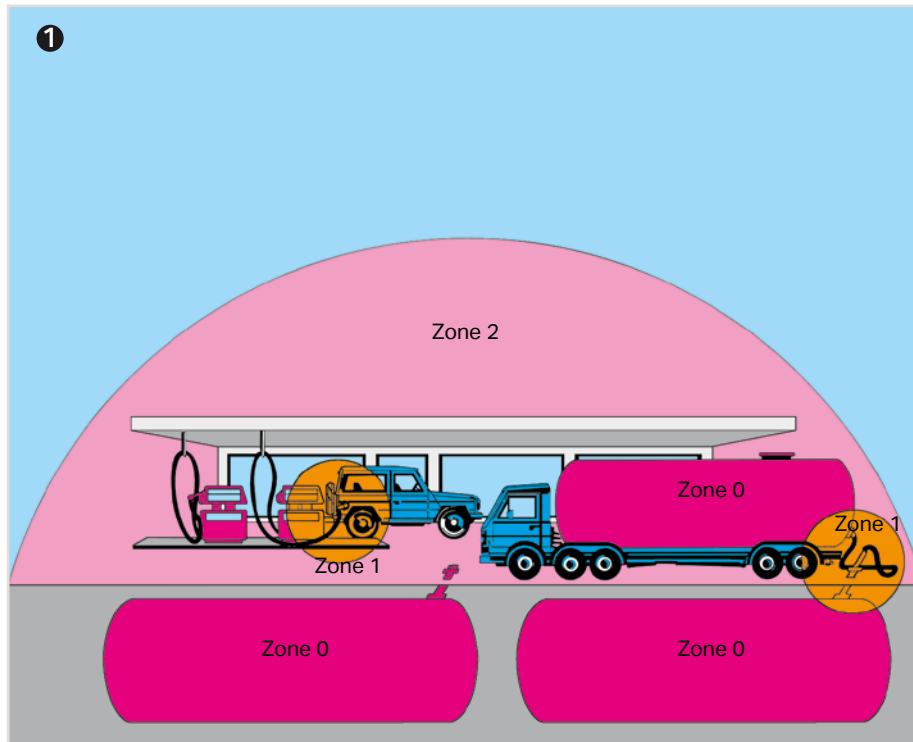
## General Technical Information for Electrical Equipment Used in Hazardous Areas

### Hazardous Areas

Hazardous environments are areas in which the atmosphere may become explosive. An explosive atmosphere is a mixture of flammable 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:



① Hazardous areas due to explosive gases, vapors and mists

#### Zone 0

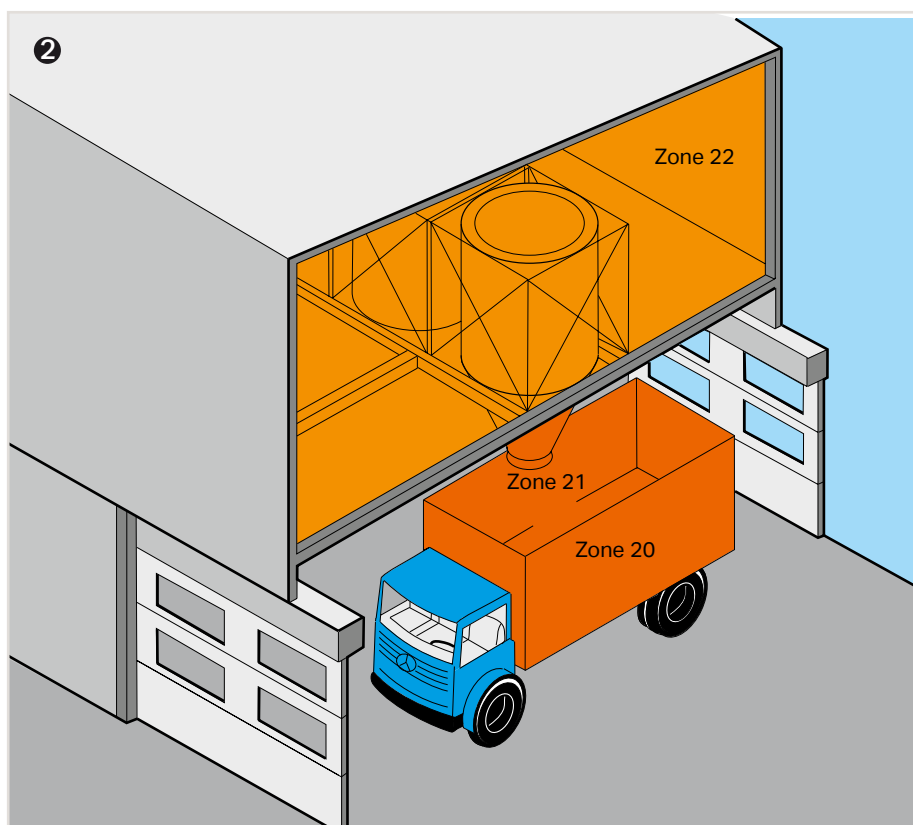
Areas in which an explosive atmosphere is present continuously, for long periods or frequently.

#### Zone 1

Areas in which an explosive atmosphere is likely to occur occasionally during normal operation.

#### Zone 2

Areas in which an explosive atmosphere is likely to occur rarely or only for a short period during normal operation.



② Hazardous areas due to explosive dust/air mixtures

#### Zone 20

Areas in which an explosive atmosphere due to dust/air mixtures is present continuously, for long periods or frequently and in which dust deposits of known or excessive thickness may form. Dust deposits alone do not constitute a Zone 20.

#### Zone 21

Areas in which the occurrence of an explosive atmosphere due to dust/air mixtures is to be expected occasionally and in which deposits or layers of combustible dust can generally be present.

#### Zone 22

Areas in which an explosive atmosphere due to dust/air mixtures 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 per EN 61000-6-2

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 ... 2.0 GHz	A
		1V/m: 2.0 ... 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 : ground)	B
		DC supply: 0.5 kV / 0.5 kV (line : line – line : ground)	B
		AC supply: 1 kV / 2 kV (line : line – line : ground)	B
EN 61000-4-6	RF disturbances	10 V/m, 80 % AM (0.15 ... 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 per EN 61000-6-3

Test Specification		Limit Values Quasi Peak	Frequency Range	Distance
EN 55016-2-1	AC supply, conducted	66 ... 56 dB(μV)	150 ... 500 kHz	
		56 dB(μV)	500 kHz ... 5 MHz	
		60 dB(μV)	5 ... 30 MHz	
EN 55016-2-1	DC supply/data line conducted	79 dB(μV)	150 ... 500 kHz	
		73 dB(μV)	500 kHz ... 30 MHz	
EN 55016-2-3	radiated	30 dB(μV/m)	30 ... 230 MHz	10 m
		37 dB(μV/m)	230 MHz ... 1 GHz	10 m
EN 55022	Telecommunications/ Mains connection, conducted	84 ... 74 dB(μV)	150 ... 500 kHz	
		74 dB(μV)	500 kHz ... 30 MHz	

### Emission of Interference for Industrial Areas per EN 61000-6-4

Test Specification		Limit Values Quasi Peak	Frequency Range	Distance
EN 55016-2-1	AC supply, conducted	79 dB(μV)	150 ... 500 kHz	
		73 dB(μV)	500 kHz ... 30 MHz	
EN 55016-2-3	radiated	40 dB(μV/m)	30 ... 230 MHz	10 m
		47 dB(μV/m)	230 MHz ... 1 GHz	10 m
EN 55022	Telecommunications/ Mains connection, conducted	97 ... 87 dB(μV)	150 ... 500 kHz	
		87 dB(μV)	500 kHz ... 30 MHz	

### Mechanical Strength per EN 61131-2

Test Specification		Frequency Range	Limit Values
IEC 60068-2-6	Vibration	5 Hz ≤ f < 9 Hz	1.75 mm amplitude (permanently)
			3.5 mm amplitude (short term)
		9 Hz ≤ f < 150 Hz	0.5 g (permanent)
			1 g (short term)
		Note on vibration test: a) Frequency change: max. 1 octave/minute b) Vibration direction: 3 axes	
IEC 60068-2-27	Shock		15 g
		Note on shock test: a) Type of shock: half sine b) Shock duration: 11 ms	
		c) Shock direction: 3x in positive and 3x in negative direction for each of the three mutually perpendicular axes of the test specimen	



## Electromagnetic Compatibility and Mechanical Strength (marine applications)

### Immunity to Interference in the Shipping Industry per Germanischer Lloyd

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	0.5 kV / 1 kV (line : line – line : ground)	A
IEC 61000-4-6	RF disturbances	10 V, 80 % AM (0.15 ... 80 MHz)	A
Type Test	AF disturbances (harmonics)	3 V, 2 W	A
Type Test	High voltage	755 VDC	-
		1500 VAC	-
*) 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.			

### Immunity to Interference in the Shipping Industry per Germanischer Lloyd

Test Specification		Limit Values Quasi Peak	Frequency Range	Distance
Type Test	EMC 1, conducted (allows for ship bridge control applications)	96 ... 50 dB(μV)	10 ... 150 kHz	
		60 ... 50 dB(μV)	150 ... 350 kHz	
		50 dB(μV)	350 kHz ... 30 MHz	
Type Test	EMC 1, radiated (allows for ship bridge control applications)	80 ... 52 dB(μV/m)	150 ... 300 kHz	3 m
		52 ... 34 dB(μV/m)	300 kHz ... 30 MHz	3 m
		54 dB(μV/m)	30 MHz ... 2 GHz	3 m
		except for: 24 dB(μV/m)	156 ... 165 MHz	3 m
Type Test	EMC 2, conducted (allows for machine room applications)	120 ... 69 dB(μV)	10 ... 150 kHz	
		79 dB(μV)	150 ... 500 kHz	
		73 dB(μV)	500 kHz ... 30 MHz	
Type Test	EMC 2, radiated (allows for machine room applications)	80 ... 50 dB(μV/m)	150 kHz ... 30 MHz	3 m
		60 ... 54 dB(μV/m)	30 ... 100 MHz	3 m
		54 dB(μV/m)	100 MHz ... 2 GHz	3 m
		except for: 24 dB(μV/m)	156 ... 165 MHz	3 m

### Mechanical Strength per Germanischer Lloyd

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

The following standards apply to the design and application of the electrical components contained in this catalog:

DIN VDE 0100 Construction of high current installations with nominal voltages up to 1000 V	IEC 60529 EN 60529 VDE 0470-1 Degrees of protection provided by enclosures (IP code)	IEC 60998-2-2 EN 60998-2-2 VDE 0613-2-2 Connecting devices for low-voltage circuits for household and similar purposes – Part 2-2: Particular requirements for connecting devices as separate entities with screwless-type clamping units
EN 50110-1 VDE 0105-1 Operation of electrical installations	IEC 60603-1 EN 60603-1 Connectors for frequencies below 3 MHz for use with printed boards – Part 1: Generic specification: General requirements and guide for the preparation of detail specifications, with assessed quality	IEC 60947-1 EN 60947-1 VDE 0660-100 Low-voltage switchgear and controlgear – Part 1: General rules
IEC 61140 EN 61140 VDE 0140-1 Protection against electric shock – Common aspects for installation and equipment	IEC 61984 EN 61984 VDE 0627 Connectors – Safety requirements and tests	IEC 60947-5-6 EN 60947-5-6 VDE 0660-212 Low-voltage switchgear and controlgear – Part 5-6: Control circuit devices and switching elements, DC interface for proximity sensors and switching amplifiers (NAMUR)
IEC 60664-1 EN 60664-1 VDE 0110-1 Insulation coordination for equipment within low-voltage systems – Part 1: Principles, requirements and tests	IEC 60999-1 EN 60999-1 VDE 0609-1 Connecting devices – Electrical copper conductors; Safety requirements for screw-type and screwless-type clamping units – Part 1: General requirements and particular requirements for clamping units for conductors 0.2 mm <sup>2</sup> up to 35 mm <sup>2</sup>	IEC 60439-1 EN 60439-1 VDE 0660-500 Low-voltage switchgear and controlgear assemblies – Part 1: Type-tested and partially type-tested assemblies
IEC 60204-1 EN 60204-1 VDE 0113-1 Safety of machinery – Electrical equipment of machines – Part 1: General requirements	IEC 60617-2 EN 60617-2 Graphical symbols for diagrams – Part 2: Symbol elements, qualifying symbols and other symbols having general application	IEC 60555-1 EN 60555 Part 1 VDE 0838-1 Disturbances in supply systems caused by household appliances and similar electrical equipment; Part 1: definitions
EN 50178 VDE 0160 Electronic equipment for use in power installations	IEC 61558-1 EN 61558-1 VDE 0570-1 Safety of power transformers, power supplies, reactors and similar products – Part 1: General requirements and tests	IEC 60715 EN 60715 Dimensions of low-voltage switchgear and controlgear – Standardized mounting on rails for mechanical support of electrical devices in switchgear and controlgear installations
IEC 62305-1 EN 62305-1 VDE 0185-305-1 Protection against lightning – Part 1: General principles	IEC 60669-2-1 EN 60669-2-1 VDE 0632-2-1 Switches for household and similar fixed electrical installations – Part 2-1: Particular requirements – Electronic switches	IEC 60950-1 EN 60950-1 VDE 0805-1 Information technology equipment – Safety Part 1: General requirements
IEC 60060-1 HD 588.1 S1 VDE 0432-1 High voltage test techniques – Part 1: General specifications and test requirements	IEC 60947-7-1 EN 60947-7-1 VDE 0611-1 Low-voltage switchgear and controlgear – Part 7-1: Ancillary equipment – Terminal blocks for copper conductors	IEC 60127-6 EN 60127-6 VDE 0820-6 Miniature fuses – Part 6: Fuse-holders for miniature fuse-links

EN 50155 VDE 0115-200 Railway applications – Electronic equipment used on rolling stock	<b>Interfaces – Fieldbuses</b>  DIN 66259-1 Electrical characteristics for unbalanced double-current interchange circuits	IEC 60079-14 EN 60079-14 VDE 0165-1 Explosive atmospheres – Part 14: Electrical installations design, selection and erection
EN 50090-2-2 VDE 0829-2-2 Home and Building Electronic Systems (HBES) – Part 2-2: System overview – General technical requirements; German version	EN 50325-1 Industrial communications subsystem based ISO 11898 (CAN) for controller-device interfaces – Part 1: General requirements	IEC 60079-15 EN 60079-15 VDE 0170-16 Electrical apparatus for explosive gas atmospheres – Part 15: Construction, test and marking of type of protection "n" electrical apparatus
IEC 60099-1 EN 60099-1 VDE 0675-1 Surge arresters – Part 1: Non-linear resistor type gapped surge arresters for a.c. systems	IEC 61784-1 EN 61784-1 Industrial communication networks – Profiles – Part 1: Fieldbus profiles	IEC 61241-0 EN 61241-0 VDE 0170-15-0 Electrical apparatus for use in the presence of combustible dust – Part 0: General requirements
IEC 61643-1 EN 61643-11 VDE 0675-6-11 Low-voltage surge protective devices – Part 11: Surge protective devices connected to low-voltage power systems – Requirements and tests	IEC 61158-2 EN 61158-2 Industrial communication networks – Fieldbus specifications – Part 2: Physical layer specification and service definition	IEC 61241-1 EN 61241-1 VDE 0170-15-1 Electrical apparatus for use in the presence of combustible dust – Part 1: Protection by enclosures "tD"
IEC 61643-21 EN 61643-21 VDE 0845-3-1 Low voltage surge protective devices – Part 21: Surge protective devices connected to telecommunications and signalling networks; Performance requirements and testing methods	IEC 61158-6-x EN 61158-6-x DIN EN 61158-6-x Industrial communication networks – Fieldbus specifications – Part 6-x	IEC 61241-11 EN 61241-11 VDE 0170-15-11 Electrical apparatus for use in the presence of combustible dust – Part 11: Protection by intrinsic safety "iD"
IEC 61508-1 EN 61508-1 VDE 0803-1 Functional safety of electrical/electronic/programmable electronic safety-related systems – Part 1: General requirements	<b>Explosion Protection</b>  IEC 60079-0 EN 60079-0 VDE 0170-1 Electrical apparatus for explosive gas atmospheres – Part 0: General requirements	
IEC 62061 EN 62061 VDE 0113-50 Safety of machinery – Functional safety of safety-related electrical, electronic and programmable electronic control systems	IEC 60079-7 EN 60079-7 VDE 0170-6 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"	
	IEC 60079-11 EN 60079-11 VDE 0170-7 Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"	

## Specifications and Test Results (continued)

### Environmental Testing

IEC 60068-2-6  
EN 60068-2-6  
VDE 0468-2-6  
Environmental testing – Part 2-6: Tests –  
Test Fc: Vibration (sinusoidal)

IEC 60068-2-27  
EN 60068-2-27  
Basic environmental testing procedures  
– Part 2: Tests  
– Test Ea and guidance: Shock

IEC 60068-2-42  
EN 60068-2-42  
Environmental testing – Part 2-42:  
Tests – Test Kc: Sulphur dioxide test for  
contacts and connections

IEC 60068-2-43  
EN 60068-2-43  
Environmental testing – Part 2-43: Tests  
– Test Kd: Hydrogen sulphide test for  
contacts and connections

### EMC Requirements

IEC 61000-6-1  
EN 61000-6-1  
VDE 0839-6-1  
Electromagnetic compatibility (EMC) –  
Part 6-1: Generic standards  
– Immunity for residential, commercial  
and light-industrial environments

IEC 61000-6-2  
EN 61000-6-2  
VDE 0839-6-2  
Electromagnetic compatibility (EMC) –  
Part 6-2: Generic standards  
– Immunity for industrial environments

IEC 61000-6-3  
EN 61000-6-3  
VDE 0839-6-3  
Electromagnetic compatibility (EMC) –  
Part 6-3: Generic standards – Emission  
standard for residential, commercial and  
light-industrial environments

IEC 61000-6-4  
EN 61000-6-4  
VDE 0839-6-4  
Electromagnetic compatibility (EMC) –  
Part 6-4: Generic standards  
– Emission standard for industrial envi-  
ronments

IEC 61000-3-2  
EN 61000-3-2  
VDE 0838-2  
Electromagnetic compatibility (EMC) –  
Part 3-2: Limits  
– Limits for harmonic current emissions  
(equipment input current  $\leq 16$  A per  
phase)

IEC/CISPR 11  
EN 55011  
VDE 0875-11  
Industrial scientific and medical (ISM)  
radio-frequency equipment  
– Electromagnetic disturbance charac-  
teristics  
– Limits and methods of measurement

IEC/CISPR 22  
EN 55022  
VDE 0878-22  
Information technology equipment  
– Radio disturbance characteristics  
– Limits and methods of measurement

IEC/CISPR 24  
EN 55024  
VDE 0878-24  
Information technology equipment  
– Immunity characteristics  
– Limits and methods of measurement

IEC 61326-3-1  
EN 61326-3-1  
VDE 0843-20-3-1  
Electrical equipment for measurement,  
control and laboratory use – EMC re-  
quirements – Part 3-1: Immunity require-  
ments for safety-related systems and for  
equipment intended to perform safety-  
related functions (functional safety) –  
General industrial applications

**PLC**

IEC 61131-1  
EN 61131-1  
Programmable controllers – Part 1: General information

IEC 61131-2  
EN 61131-2  
VDE 0411-500  
Programmable controllers – Part 2: Equipment requirements and tests

IEC 61131-3  
EN 61131-3  
Programmable controllers – Part 3: Programming languages

**Relay**

IEC 61810-1  
EN 61810-1  
VDE 0435-201  
Electromechanical elementary relays – Part 1: General requirements

IEC 61810-2  
EN 61810-2  
VDE 0435-120  
Electromechanical elementary relays – Part 2: Reliability

IEC 61810-5  
EN 50205  
VDE 0435-2022  
Electromechanical non-specified time all-or-nothing relays – Part 5: Insulation coordination

IEC 60255-5  
EN 60255-5  
VDE 0435-130  
Electrical relays – Part 5: Insulation coordination for measuring relays and protection equipment – Requirements and tests

**UL Directives**

UL 1059; ANSI 1059  
Terminal blocks

UL 486E  
Equipment wiring terminals for use with aluminum and/or copper conductors

UL 508  
Industrial control equipment

ANSI/ISA12.12.01  
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  
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)  
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)  
Type Approval System  
Test Specification Number 1

RINA (Registro Italiano Navale)  
Rules for the classification of ships  
Part C – Machinery, systems and fire protection Ch.3, Sect.6, Table 1

BSH (Federal Maritime and Hydrographic Agency)  
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 Approval Equipment; Pt.6, Ch.1, Sec.3 of the Rules for Classification, Steel Ships

NKK (Nippon Kaiji Kyokai)  
Guidance for the approval and type approval of materials and equipment for marine use

PRS (Polski Rejestr Statkow)  
Publication No.11/P  
Environmental Tests on Marine Equipment

## Electrical Engineering Laboratory: Product Safety for Our Customers

WAGO's Minden, Germany laboratory is an "accredited test lab for electrical and mechanical tests on terminal blocks and connectors, as well as for environment simulations."

Accreditation, as ISO/IEC 17011:2004 defines, is a third party-attestation related to a conformity assessment body conveying formal demonstration of its competence to carry out specific conformity assessment tasks.

Accreditation, according to DIN EN ISO/IEC 17025, is granted by the Deutsche Akkreditierungsstelle GmbH DAkkS (German Accreditation Office GmbH DAkkS). This national accreditation office, which was established by the German Federal Ministry for Economics and Technology (BMWi), certifies that our test laboratory is officially recognized as possessing the necessary expertise to conduct defined tests and types of tests independently and objectively.

Through obtaining the accreditation, the following objectives were achieved:

- Exceeding customer requirements
- Workflow optimization
- Clearly defined processes
- Clear organization and structure
- Greater transparency
- Consistent, high-quality laboratory testing
- Maximum traceability
- Traceable measurement results
- Sustainable quality awareness

### Visitor Center



### High-Voltage Test



**Conductor Retention  
Force Testing**

### Vibration- and Shock- Resistance Testing





## Deutsche Akkreditierungsstelle GmbH

**Beliehene gemäß § 8 Absatz 1 AkkStelleG i.V.m. § 1 Absatz 1 AkkStelleGBV**  
 Unterzeichnerin der Multilateralen Abkommen  
 von EA, ILAC und IAF zur gegenseitigen Anerkennung

# Akkreditierung



Die Deutsche Akkreditierungsstelle GmbH bestätigt hiermit, dass das Prüflaboratorium

**WAGO Kontakttechnik GmbH & Co. KG**  
**Hansastraße 27, 32423 Minden**

die Kompetenz nach DIN EN ISO/IEC 17025:2005 besitzt, Prüfungen in folgenden Bereichen durchzuführen:

**Elektrische und mechanische Prüfungen an Klemmen und Steckverbinder  
 sowie Umweltsimulation**

Die Akkreditierungsurkunde gilt nur in Verbindung mit dem Bescheid vom 18.12.2014 mit der Akkreditierungsnummer D-PL-19704-01 und ist gültig bis 17.12.2019. Sie besteht aus diesem Deckblatt, der Rückseite des Deckblatts und der folgenden Anlage mit insgesamt 5 Seiten.

Registrierungsnummer der Urkunde: **D-PL-19704-01-00**

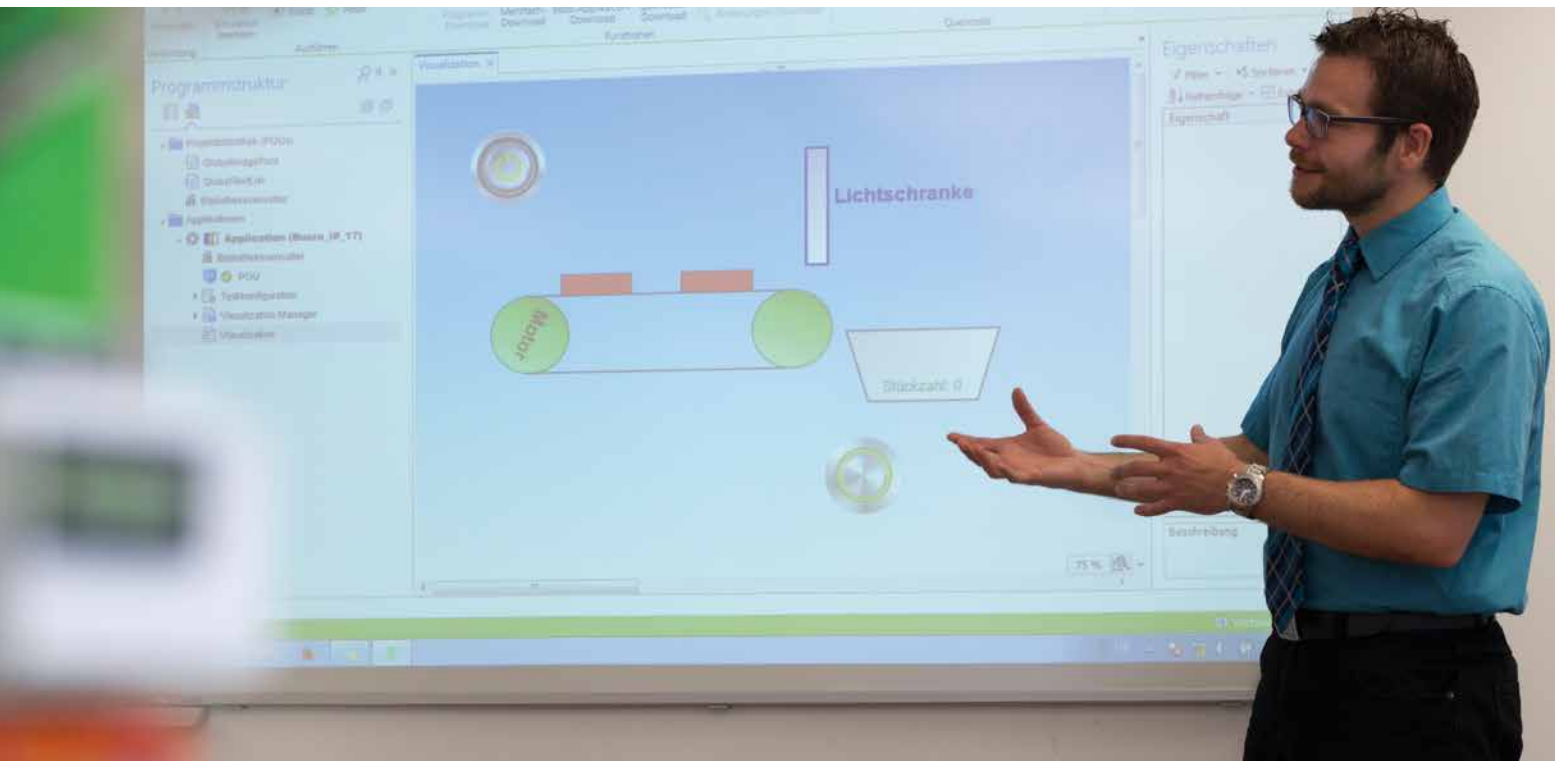
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Im Auftrag Dipl.-Ing. (FH) Ralf Egnér  
 Abteilungsleiter

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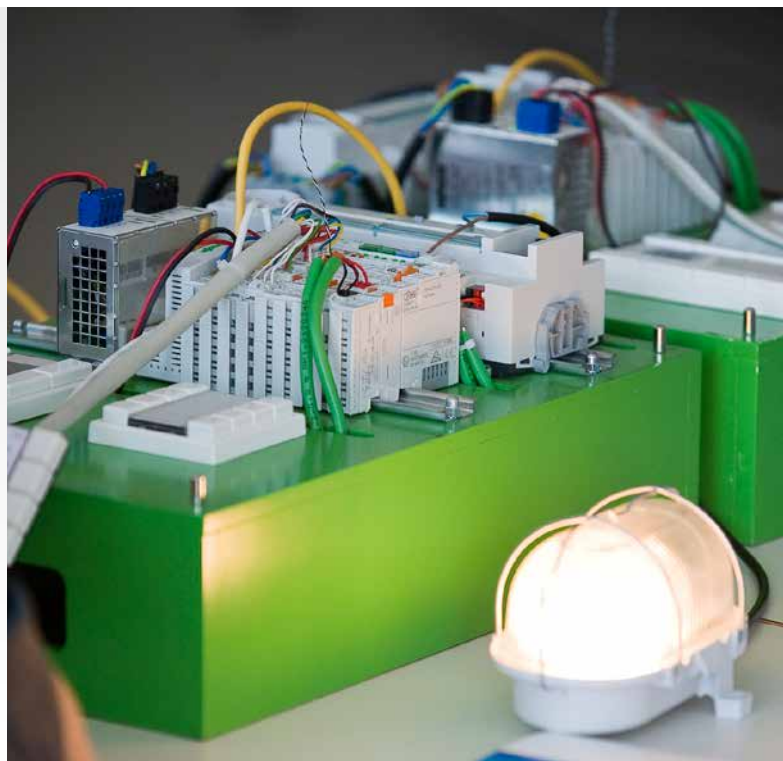
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# Indexes and Addresses

## Indexes Addresses

	Page
Product Index	674
Item Number Index	675
WAGO Locations – Worldwide	680
WAGO Locations – Germany	682

# Product Index

Item	Page	Item	Page	Item	Page		
<b>A</b>							
AND gate module, pluggable	522	<b>I</b>					
<b>B</b>							
Bipolar isolation amplifier	190	IEC/EN regulations/specifications	664	<b>R</b>			
Bistable relay		Industrial relays	46	Rail-mounted modules,			
- Pluggable	94	Interface adapter	256	for building custom circuits	512		
- Rail mounted	86	Interface configuration app	248	Rail end cap for DIN 35 rail	614		
Bluetooth® adapter	252	Interface configuration software	248	Rectifier modules	523		
Busbar carrier	602	Interface modules		Relay modules			
<b>C</b>							
Cable cutter	625	- for system wiring	470	- in DIN-rail mounted enclosure	70		
Cable length calculator	306	- for RJ-45 connectors	454	- Pluggable	90		
Cable stripper	623	- for pluggable connectors acc. to DIN 41651	446	- with miniature switching relay	58		
CAGE CLAMP® connection	2	- for connectors acc. to DIN 41612	450	Relay sockets, DIN-rail mounted	56		
Carrier rail adapters	431	- D-Sub/HD D-Sub connectors	436	Repeater power supplies	194		
Carrier rails	614	Item Number Index		Repeater power supplies, HART	196		
Carrier terminal blocks	533	<b>J</b>					
CE marking	660	JUMPFLEX®		Resistor modules, rail mounted	511		
Component modules	502	- Current and voltage signal conditioner	206	RJ-45 interface module	288		
Configuration app	248	- Frequency signal conditioner	244	Rogowski coils	276		
Configuration display	250	- Isolation amplifier	182	RS-232 communication cable	430		
Configuration software	248	- Milivolt signal conditioner	216	<b>S</b>			
Connection modules for sensors and actuators	460	- Potentiometer position signal conditioner	242	Shield clamping saddles	595		
Constant voltage sources, Rail mounted	424	- Temperature signal conditioners	224	Shield connecting system	592		
Covers	617	- Threshold value switches	218	Signal conditioners see JUMPFLEX®			
Crimping tools	625	<b>L</b>					
Current flow monitoring modules, pluggable	518	Latching relay module, in DIN-rail mounted enclosure	81	Signal duplicators	198		
Current sensors with bus connection	282	LED gate modules, rail mounted	521	Socket			
Current transformer		<b>M</b>					
- Plug-in current transformer CAGE CLAMP® connector	266	Manual operation module	500	- with industrial relay	46		
- Plug-in current transformers with picomax® pluggable connector	270	Marker cards		- with miniature switching relay	26		
- Split-core current transformers	272	- (Miniature WSB cards) for WAGO Miniature Quick marking system	609	- for miniature switching relay	43		
<b>D</b>							
DC/DC converters, rail mounted	418	- (WMB cards) for WAGO Multimarking system	608	- for miniature switching relays and optocouplers	22		
Diode gate modules		- (WSB cards) for WAGO Quick marking system	610	- with solid state relays	98		
- Pluggable	502	Marker pen	539	Solid state relays	98		
- Rail mounted	504	Marking systems	606	Subsidiaries and representatives			
<b>E</b>							
EC Directives	660	Miniature switching relays	26	Germany and overseas	680		
Empty housings		Modules for building custom circuits	512	Supply and through modules	254		
- for carrier terminal blocks	532	Mounting carrier for DIN-rail mounting PCBs	540	Switched-mode power supplies, see EPSITRON®			
- for rail mounted terminal blocks	534	Mounting carriers and feet for DIN-rail mounting PCBs	542	Switching modules			
- Modular empty housings	528	Mounting carriers with miniature switching relay	84	- in DIN-rail mounted enclosure	496		
- Rail-mounted enclosures	538	Multifunction time relay	16	- Pluggable	494		
End stops for DIN 35 rails	612	<b>O</b>					
EPSITRON®		Operating tools	620	- with manual operation	500		
- Capacitive buffer modules	380	Optocoupler modules		System wiring	465		
- CLASSIC-Power switched mode power supplies	326	- Pluggable	158	<b>T</b>			
- COMPACT Power switched-mode power supplies	358	- Rail-mounted terminal blocks	128	Technical information	636		
- ECO-Power switched-mode power supplies	346	- Rail mounted	110	Temperature signal conditioner see JUMPFLEX®			
- Electronic circuit breakers	387	Overvoltage protection		Terminal block assemblies	280		
- Lead-acid (AGM) battery modules	376	- Double-deck terminal with surge suppression device	570	Terminal blocks (carrier terminal blocks)	533		
- PRO-Power switched mode power supplies	314	- Rail-mounted terminal blocks with overvoltage protection	546	Test and measurement devices	630		
- Redundancy module	382	- Rail-mounted terminal blocks with surge suppression device	552	Testboy	631		
- Uninterruptible power supplies (UPS)	374	- Pluggable on carrier terminal blocks	580	Threshold value switches	218		
<b>F</b>							
Ferrules	626	- Pluggable for carrier terminal blocks	584	Timing relay modules	16		
Flip-Flop module	523	<b>P</b>					
Function modules	493	Passive isolators	204	Tools	620		
Fuse modules,		Potential multiplication modules	514	Training courses and seminars	670		
pluggable for carrier terminal blocks	522	Power measurement modules	292	<b>V</b>			
<b>G</b>							
Gate modules		Power supplies, see EPSITRON®		Voltage taps	290		
- Pluggable	502	Power supplies, rail mounted	426	Voltage testers	630		
- Rail mounted	504	Push-in CAGE CLAMP® connection	2	<b>W</b>			
Group marker carriers	44	<b>W</b>					
WAGO							
- in Germany							
- worldwide							
WAGO interface cables							
WAGO USB communication cable							
Wall mounting adapters							
Wire strippers							
WMB Inline							
WMB Multi marking system							
WSB Quick marking system							



## Item Number Index

Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
<b>280 Series</b>		<b>286 Series</b>		<b>289 Series</b>		<b>289 Series</b>	
280-504/281-583	571	286-662	518	289-101	505	289-544	438
280-504/281-584	572	286-665	519	289-102	512	289-545	435
280-504/281-585	572	286-721	159	289-103	505	289-546	435
280-504/281-586	573	286-723	160	289-105	506	289-547	435
280-504/281-587	573	286-752	161	289-111	507	289-548	435
280-504/281-588	574	286-752/002-000	158	289-113	511	289-549	435
		286-790	162	289-114	511	289-550	445
280-601	535	286-791	163	289-121	507	289-551	445
280-606	534	286-792	165	289-128	510	289-552	445
280-608	533	286-794	164	289-128/001-000	510	289-553	445
280-609	533			289-128/002-000	510	289-554	445
280-610	534	286-803	502	289-128/003-000	510	289-555	441
280-616	534	286-805	502	289-128/003-000	510	289-556	441
280-618	533	286-807	502	289-128/005-000	510	289-557	441
280-619	533	286-809	502	289-128/006-000	510	289-558	441
280-621	535	286-825	523	289-131	512	289-559	441
280-628	533	286-826	522	289-151	508	289-575	442
280-629	533	286-831	587			289-576	442
280-638	533	286-832	587	289-172	455	289-577	442
280-639	533	286-833	585	289-174	454	289-578	442
280-681	535	286-834	586	289-174/790-108	454	289-585	436
280-686	534	286-834/024-000	586	289-175	454	289-586	436
		286-835	582	289-175/790-108	454	289-587	436
280-762	90	286-835/115-000	581	289-176	458	289-588	436
280-763	91	286-836	581	289-177	458		
280-764	92	286-838	583	289-178	457	289-611	448
280-765	502	286-838/115-000	582	289-179	457	289-612	448
280-801	534	286-841	588	289-195	456	289-613	448
280-802	534	286-842	589			289-614	448
280-803	535	286-843	589	289-401	447	289-615	448
280-804	534	286-844	588	289-402	447	289-616	448
280-833	535	286-890	520	289-403	447	289-617	448
		286-891	520	289-404	447	289-618	448
280-901	535	286-895	494	289-405	447	289-619	448
280-916	534	286-896	494	289-406	447	289-620	437
280-944/281-589	574			289-407	447	289-621	437
280-944/281-590	575	<b>288 Series</b>		289-408	447	289-623	443
280-944/281-591	575	288-001	542	289-409	447	289-624	443
280-944/281-592	576	288-002	542	289-422	451	289-650	443
280-944/281-593	576	288-003	542	289-427	451	289-652	443
280-944/281-594	577	288-304	85	289-430	453	289-664	461
280-944/281-595	577	288-312	85	289-431	453	289-665	461
		288-364	84	289-440	438	289-667	462
<b>281 Series</b>		288-368	84	289-441	438	289-671	462
281-482	23	288-380	86	289-442	438		
281-530	611	288-414	88	289-443	438	289-707	444
		288-418	88	289-444	438	289-708	444
<b>282 Series</b>		288-437	87	289-445	435	289-710	437
282-369	618	288-504	85	289-446	435	289-713	444
		288-512	85	289-447	435	289-714	437
		288-564	84	289-448	435	289-720	436
		288-567	84	289-449	435	289-721	436
<b>285 Series</b>				289-450	445	289-725	442
285-135	611	288-600	540	289-451	445	289-726	442
285-150	611	288-601	540	289-452	445	289-907	424
285-195	611	288-602	540	289-453	445	289-965	288
285-442	611	288-620	540	289-454	445	289-966	288
		288-621	540	289-455	441		
		288-622	540	289-456	441	<b>704 Series</b>	
<b>286 Series</b>		288-626	541	289-457	441	704-2003	471
286-110	532	288-627	541	289-458	441	704-2004	473
286-111	532			289-459	441	704-2024	473
286-112	532	288-800	424			704-2044	474
286-113	532	288-801	425	289-501	447	704-2054	474
286-304	91	288-808	427	289-502	447	704-5003	472
286-312	92	288-809	426	289-503	447	704-5004	476
286-315	92	288-810	426	289-504	447	704-5013	472
286-316	92	288-812	428	289-505	447	704-5014	476
286-320	93	288-813	427	289-506	447	704-5024	475
286-328	93	288-814	428	289-507	447	704-5034	476
286-364	90	288-815	429	289-508	447	704-5044	475
286-368	90	288-816	429	289-509	447	704-5054	477
286-380	94	288-825	514	289-510	447	704-5064	478
286-381	94	288-837	514	289-522	452	704-5074	477
		288-867	515	289-523	452	704-8012	479
		288-870/000-030	517	289-531	453	704-8013	479
286-507	91	288-870/000-040	516	289-540	438		
286-508	91			289-541	438		
286-515	92			289-542	438		
286-516	92			289-543	438		

Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
<b>706 Series</b>		<b>745 Series</b>		<b>787 Series</b>		<b>787 Series</b>	
706-100/1300-200	491	745-382	514	787-872	378	787-1668/006-1000	411
706-100/1301-200	490	745-682	515	787-873	378	787-1668/006-1054	411
706-100/1303-200	490			787-875	375	787-1668/106-000	413
706-100/1602-200	491			787-876	377	787-1668/106-054	415
706-753/300-100	488	<b>750 Series</b>		787-880	381		
706-753/300-200	488	750-493	293	787-881	381	787-1671	379
706-753/300-300	488	750-493/000-001	293	787-885	385	787-1675	372
706-753/301-100	489	750-494	293	787-886	385	787-1685	386
706-753/301-200	489	750-494/000-001	293	787-890	430	787-1702	351
706-753/301-300	489	750-494/025-000	293	787-892	430	787-1712	351
		750-494/025-001	293	787-895	431	787-1722	352
706-2300/100-100	484	750-495	293	787-896	431	787-1732	352
706-2300/100-200	484	750-495/000-001	293	787-897	431		
706-2300/100-300	484	750-495/000-002	293			787-2801	421
706-2300/101-100	484	750-495/040-000	293	787-1001	367	787-2802	421
706-2300/101-200	484	750-495/040-001	293	787-1002	369	787-2803	422
706-2300/101-300	484	750-495/040-002	293	787-1011	368	787-2805	422
		750-841	253	787-1012	370	787-2810	423
706-2300/200-100	484	750-872/020-000	253	787-1014	419	787-2852	251
706-2300/200-200	484	750-921	252	787-1014/072-000	419		
706-2300/200-300	484	750-923	253	787-1017	369	<b>788 Series</b>	
706-2300/201-100	484	750-923/000-001	253	787-1020	367		
706-2300/201-200	484	750-975	289	787-1021	368	788-100	43
706-2300/201-300	484	750-1400	467	787-1022	370	788-101	43
		750-1500	467	787-1102	359	788-102	43
706-2300/300-100	485	750-1502	467	787-1112	359	788-103	43
706-2300/300-200	485			787-1122	360	788-113	44
706-2300/300-300	485	<b>753 Series</b>				788-114	44
706-2300/301-100	485	753-430	467	787-1202	363	788-115	44
706-2300/301-200	485	753-431	467	787-1212	363	788-116	44
706-2300/301-300	485	753-530	467	787-1216	364	788-117	44
				787-1226	364	788-120	44
706-2300/400-100	485					788-121	44
706-2300/400-200	485	<b>786 Series</b>		787-1601	327	788-122	44
706-2300/400-300	485	786-101	532	787-1602	331	788-123	44
706-2300/404-100	486	786-102	532	787-1606	331	788-124	44
706-2300/404-200	486	786-103	532	787-1611	327	788-125	44
706-2300/404-300	486			787-1616	332	788-148	42
706-2300/406-100	486	<b>787 Series</b>		787-1616/000-1000	332		
706-2300/406-200	486	787-712	347	787-1621	328	788-150	40
706-2300/406-300	486	787-722	347	787-1622	333	788-152	40
		787-732	348	787-1623	337	788-154	40
706-2300/500-100	486	787-734	348	787-1628	341	788-155	41
706-2300/500-200	486	787-736	349	787-1631	328	788-156	40
706-2300/500-300	486	787-738	355	787-1632	333	788-157	41
706-2300/502-100	486	787-740	355	787-1633	337	788-158	40
706-2300/502-200	486	787-742	356	787-1634	334	788-160	40
706-2300/502-300	486	787-783	383	787-1635	338	788-162	40
		787-785	383	787-1638	341	788-164	40
				787-1640	343	788-166	40
706-3057/300-100	482			787-1642	343	788-168	40
706-3057/300-200	482			787-1644	344	788-170	40
706-3057/300-300	482					788-172	40
		787-818	316	787-1662	393	788-174	40
706-7753/301-200	467	787-819	315	787-1662/000-004	394	788-175	41
706-7753/302-100	482	787-821	315	787-1662/000-054	394	788-176	40
706-7753/302-200	482	787-822	317	787-1662/000-100	387	788-177	41
706-7753/304-100	488	787-831	316	787-1662/000-200	397	788-178	40
706-7753/304-200	488	787-832	317	787-1662/000-250	397	788-179	41
706-7753/304-300	488	787-833	318	787-1662/004-1000	389	788-180	40
706-7753/306-100	489	787-834	318	787-1662/006-1000	389	788-181	41
706-7753/306-200	489	787-835	319	787-1662/106-000	393		
706-7753/306-300	489	787-840	321	787-1662/212-1000	390	788-303	25
		787-842	321			788-304	25
		787-844	322	787-1664	406	788-305	25
		787-844/000-002	322	787-1664/000-004	407	788-306	25
		787-845	325	787-1664/000-054	407	788-307	25
		787-847	325	787-1664/000-100	398	788-311	26
				787-1664/000-200	409	788-312	26
		787-850	322	787-1664/000-250	409	788-313	26
		787-852	323	787-1664/004-1000	402	788-314	26
		787-854	323	787-1664/006-1000	401	788-315	26
		787-860	405	787-1664/006-1054	403	788-341	37
		787-861	401	787-1664/106-000	406	788-346	37
		787-862	405	787-1664/212-1000	402	788-353	30
		787-870	375			788-354	30
		787-871	377	787-1668	413	788-356	31
				787-1668/000-004	414	788-357	32
				787-1668/000-054	414	788-384	33
				787-1668/000-200	417	788-390	39
				787-1668/000-250	417		
<b>709 Series</b>		<b>735 Series</b>					
709-153	617	735-500	260				
709-154	617						
709-167	617						
709-168	617						
709-177	611						
709-178	611						
709-183	617						
709-196	611						
709-198	95						
709-350	598						
709-352	598						

## Item Number Index

Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
<b>788 Series</b>		<b>790 Series</b>		<b>793 Series</b>		<b>855 Series</b>	
788-404	25	790-100	600	793-5501/000-002	608	855-8001	290
788-412	26	790-101	600	793-5501/000-005	608	855-8001	291
788-506	27	790-108	595	793-5501/000-006	608	855-8002	291
788-507	27	790-110	599	793-5501/000-007	608	855-8003	290
788-508	27	790-112	599	793-5501/000-012	608	855-8003	291
788-512	28	790-113	599	793-5501/000-014	608	855-8004	291
788-515	28	790-114	599	793-5501/000-017	608		
788-516	28	790-115	599	793-5501/000-023	608	855-9100/2000-000	277
788-541	38	790-116	595	793-5501/000-024	608	855-9100/500-000	277
788-543	38	790-124	595			855-9150/2000-1251	279
788-544	38	790-133	599	<b>855 Series</b>		855-9150/2000-1751	279
788-546	38	790-134	599	855-301/050-103	267	855-9150/2000-701	279
788-548	38	790-144	599	855-301/060-101	267	855-9300/2000-000	277
788-549	38	790-145	599	855-301/075-201	267	855-9300/500-000	277
				855-301/100-201	267	855-9450/2000-1251	279
				855-301/100-201	267	855-9450/2000-1751	279
788-607	27	790-190	600	855-301/150-501	267	855-9450/2000-701	279
788-608	27	790-191	600	855-301/200-501	267	855-9900	266
788-615	28	790-192	600	855-301/250-501	267	855-9910	266
788-616	28	790-193	600	855-301/400-1001	267	855-9927	270
788-700	123	790-208	597	855-301/400-1001	267		
788-701	123			855-301/600-1001	267		
788-720	125	790-300	602	855-305/050-103	267	<b>857 Series</b>	
788-721	125	790-301	602	855-305/060-101	267	857-104	22
788-906	34	790-302	602	855-305/075-201	267	857-107	22
		790-310	602	855-305/100-201	267	857-108	22
		790-311	602	855-305/150-501	267	857-150	21
		790-312	602	855-305/200-501	267	857-152	21
		790-350/790-398	604	855-305/250-501	267	857-153	21
789-112	82	790-352/790-398	604	855-305/300-501	267	857-154	21
789-112	539	790-360/790-398	604	855-305/400-1001	267	857-155	21
789-120	538	790-362/790-398	604	855-305/600-1001	267	857-157	21
789-122	538	790-398	604			857-161	117
789-124	538	790-400	605	855-401/400-501	267	857-162	118
789-126	538			855-401/600-501	267	857-164	117
789-127	538			855-405/250-501	267	857-165	119
789-128	538			855-405/400-501	267	857-167	118
789-129	538			855-405/750-501	267	857-168	119
789-130	538						
789-131	538			855-501/1000-1001	268	857-303	9
789-132	538			855-505/1000-1001	268	857-304	9
789-133	538			855-505/400-1001	268	857-304	259
789-134	538			855-505/600-1001	268	857-305	9
				855-505/800-1001	268	857-306	9
						857-314	9
789-304	70			855-601/1500-501	268	857-354	10
789-312	71			855-801/2000-1001	268	857-357	9
789-320	72			855-805/2000-1001	268	857-358	9
789-323	76					857-358/006-000	11
789-324	77			855-1001/2500-1001	269	857-359	13
789-325	78			855-1005/2500-1001	269	857-364	10
789-326	79			855-1700/032-000	271	857-367	10
789-329	80			855-2701/035-001	270	857-368	10
				855-2701/064-001	270	857-368/006-000	11
						857-369	13
				855-3001/060-003	273		
789-508	70			855-3001/100-003	273	857-400	184
789-512	71			855-3001/200-001	273	857-401	186
789-516	71			855-3001/250-001	273	857-402	188
789-520	72			855-4001/100-001	273	857-409	190
789-536	73			855-4001/150-001	273	857-411	192
789-552	73			855-4001/200-001	273	857-412	192
789-570	81			855-4005/150-101	273	857-412	192
789-571	81					857-413	192
				855-4101/200-001	273	857-414	192
789-620	282			855-4101/250-001	273	857-415	192
789-621	284			855-4101/400-001	273	857-416	192
789-622	286			855-4105/250-101	273	857-420	194
789-652	276			855-4105/400-101	273	857-421	196
789-654	265					857-423	198
						857-424	200
789-800	497			855-5001/1000-000	274	857-450	202
789-801	497			855-5001/250-001	274	857-451	204
789-802	498			855-5001/400-000	274	857-452	205
789-803	498			855-5001/600-000	274		
789-804	499			855-5005/1000-000	274	857-500	244
789-810	501			855-5005/400-001	274	857-531	222
789-811	501			855-5005/600-000	274	857-550	208
				855-5101/1000-000	274	857-552	210
				855-5105/1000-000	274	857-560	212
789-1341	74					857-569	214
789-1346	75						
789-1544	74						
789-1549	75						



Item No.	Page	Item No.	Page	Item No.	Page	Item No.	Page
<b>857 Series</b>		<b>859 Series</b>		<b>2007 Series</b>			
857-604	18	859-304	59	2007-8873	280		
857-624	115	859-305	59	2007-8874	281		
857-634	115	859-308	59	2007-8875	280		
857-640	17	859-312	59	2007-8877	281		
857-642	17	859-314	59				
		859-317	63	<b>2009 Series</b>			
857-704	99	859-318	59	2009-110	260		
857-707	99			2009-114	608		
857-708	100	859-353	60	2009-115	608		
857-714	103	859-354	60	2009-145	609		
857-717	103	859-355	60	2009-180	618		
857-718	104	859-356	60				
857-724	107	859-357	60	<b>2092 Series</b>			
857-727	107	859-358	60	2092-1601/002-000	516		
857-728	108	859-359	60	2092-1602/002-000	516		
		859-360	60	2092-1610	529		
857-800	224	859-367	67				
857-801	226	859-368	67	<b>2857 Series</b>			
857-808	228	859-384	63	2857-101	529		
857-809	242	859-386	63	2857-102	529		
857-810	230	859-390	63	2857-103	529		
857-811	232	859-391	64	2857-121	529		
857-812	234	859-392	63	2857-122	529		
857-815	236	859-392	63	2857-123	529		
857-818	238			2857-124	529		
857-819	216	859-397	64				
857-819	304	859-398	64	2857-191/3140-000	530		
857-820	240	859-399	64	2857-192/3140-000	530		
		859-402	23	2857-193/3140-000	531		
857-979	254	859-403	23	2857-194/3140-000	531		
857-980	256	859-404	23				
857-981	480	859-405	23	2857-401	182		
857-982	480	859-406	23	2857-533	218		
857-986	481	859-407	23	2857-534	220		
		859-408	23	2857-550	206		
857-1330	14	859-409	23	2857-900	250		
857-1430	111	859-410	23				
857-1432	112						
857-1494	111	859-500	68				
		859-501	536				
<b>858 Series</b>		859-525	68				
858-100	56	859-702	143				
858-110	57	859-706	148				
858-150	55	859-708	143				
858-151	55	859-712	141				
858-152	55	859-720	135				
858-153	55	859-730	133				
858-154	55	859-732	153				
858-164	55	859-734	155				
		859-737	137				
858-303	47	859-738	137				
858-304	47	859-739	138				
858-305	47	859-740	133				
858-307	47	859-744	139				
858-308	47						
858-314	47	859-750	145				
858-324	53	859-751	145				
858-325	53	859-752	146				
858-327	53	859-753	151				
858-328	53	859-755	151				
858-354	49	859-756	146				
858-355	49	859-758	147				
858-390	50	859-759	152				
858-391	50	859-761	134				
858-392	50	859-762	134				
		859-772	141				
858-402	57	859-791	129				
858-504	48	859-793	131				
858-507	48	859-794	129				
858-508	48	859-795	130				
858-514	48	859-796	130				
858-517	48	859-797	149				
858-518	48	859-798	131				
858-528	53	859-902	155				
<b>859 Series</b>							
859-110	536						
859-302	59						
859-303	59						

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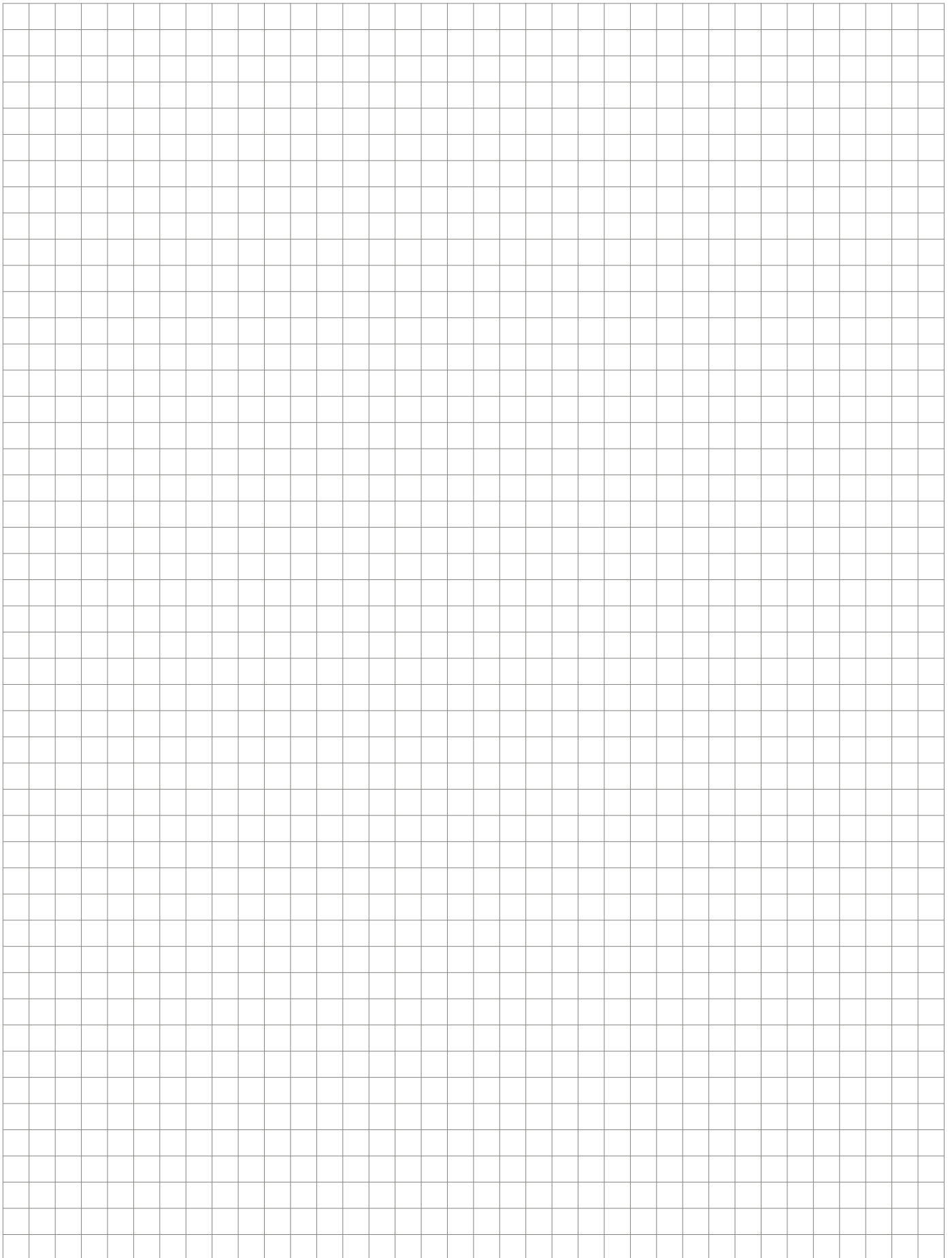
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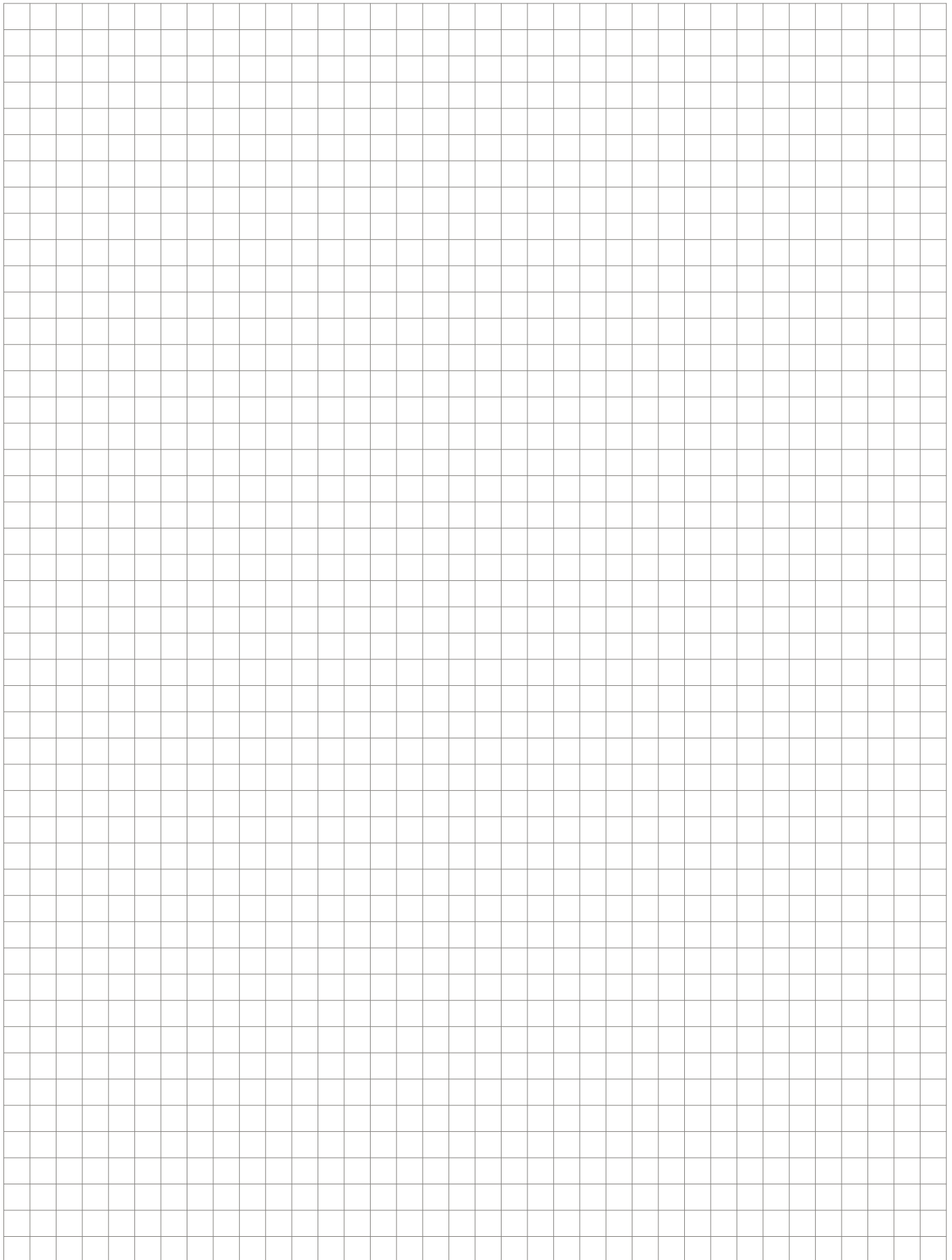
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# Notes

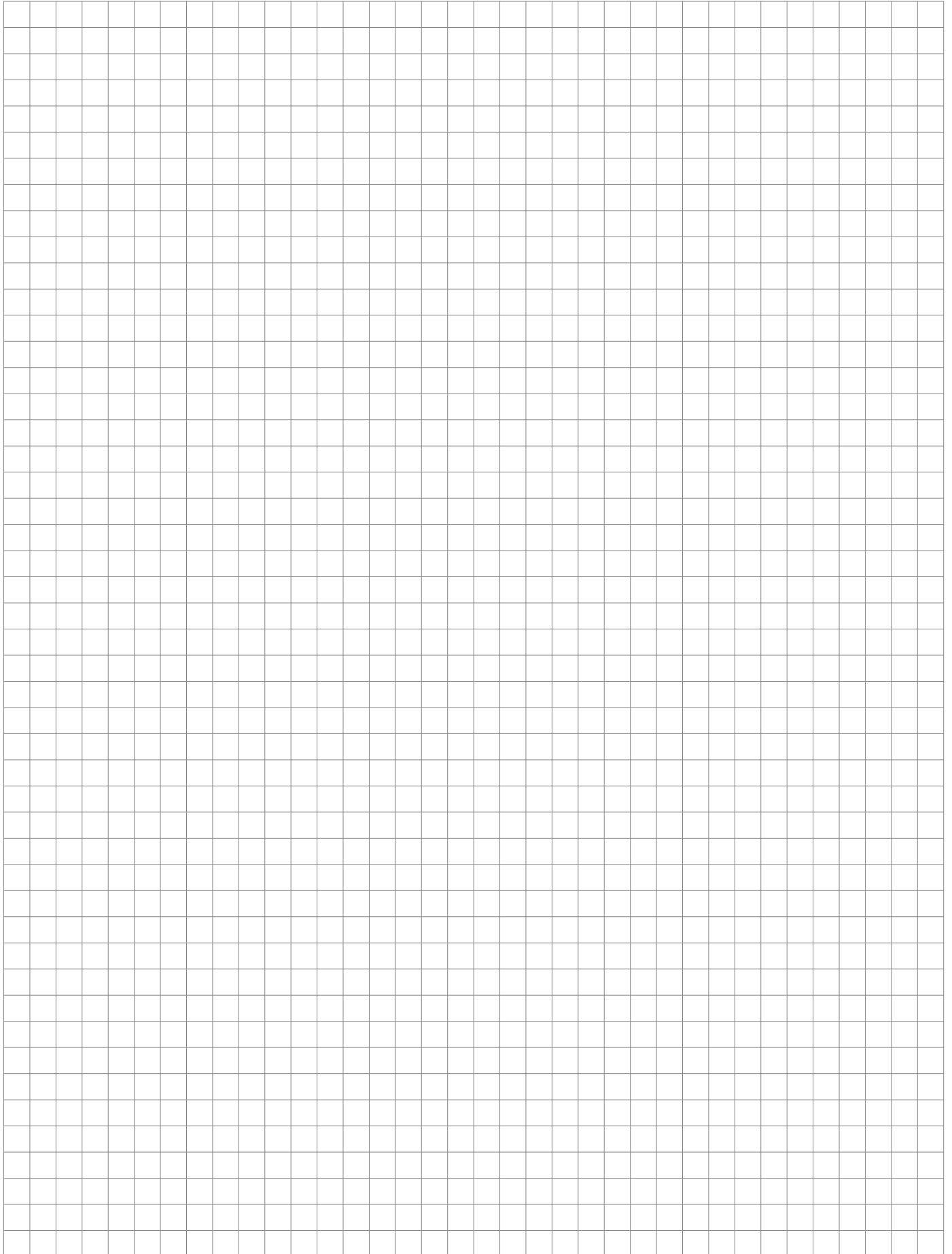


# Notes





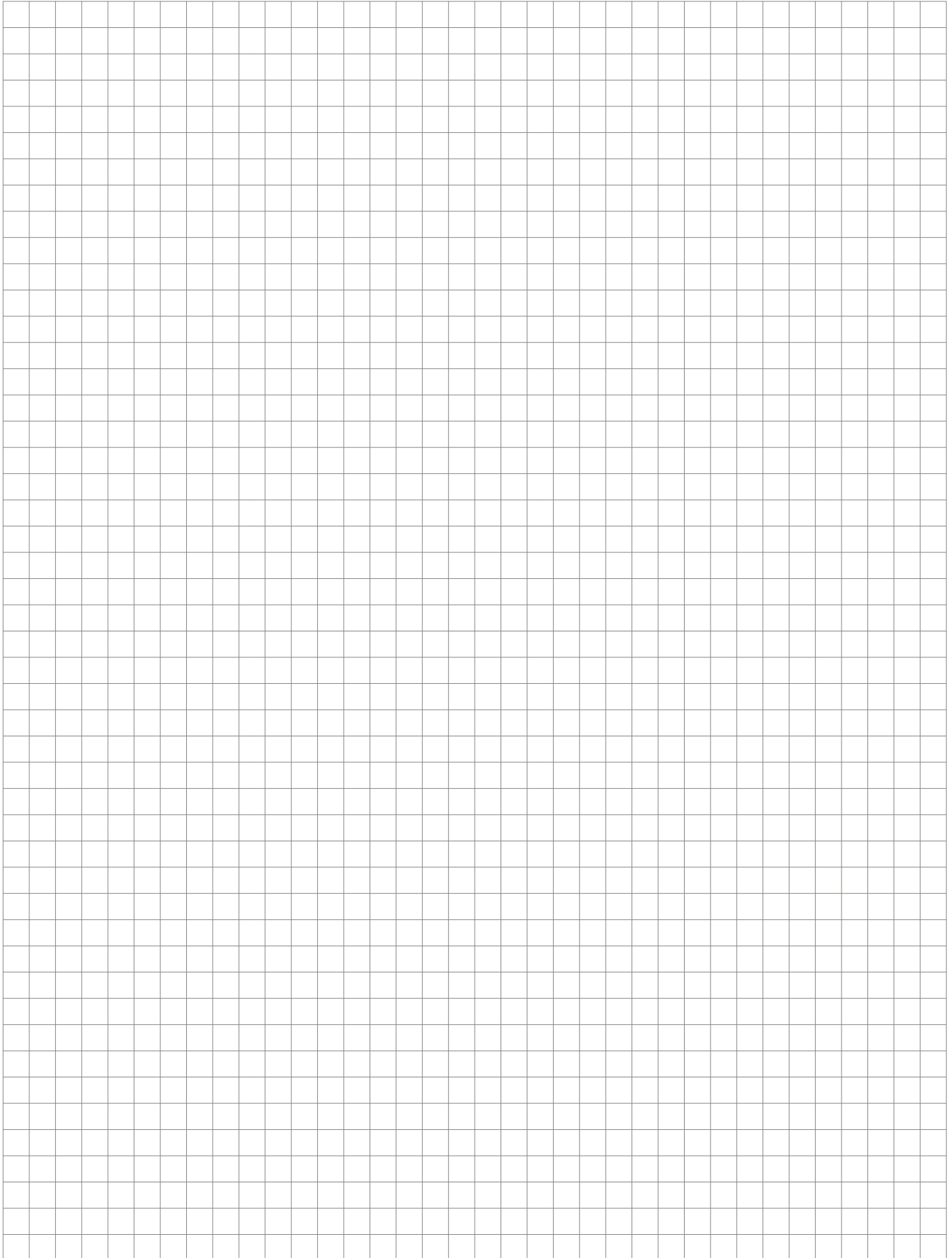
# Notes







# Notes







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