

Relay modules and solid-state relays

Catalogue 2012/2013

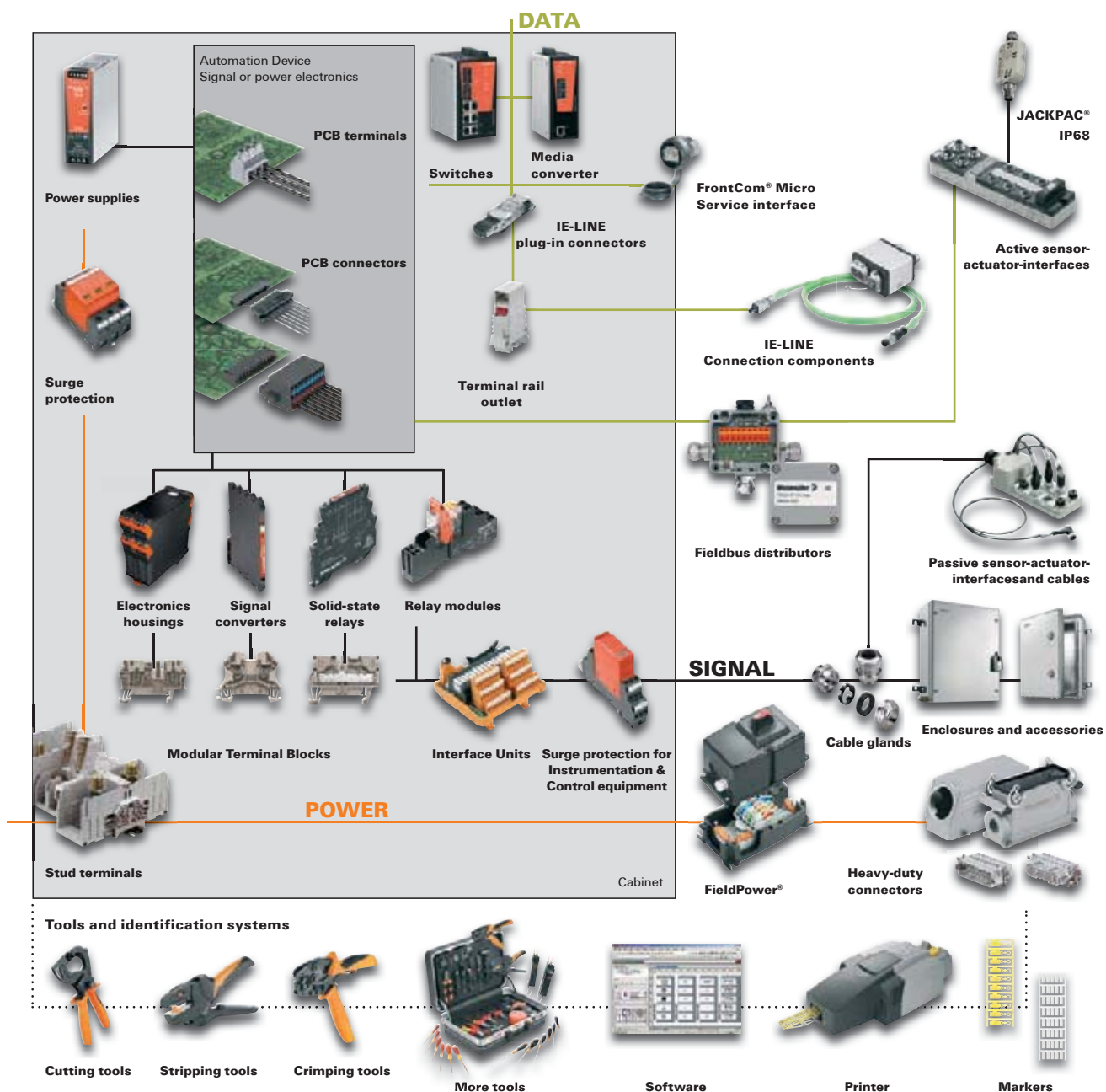
Digital signal processing



Weidmüller 

«ЭЛЕКТРО-ПРОФИ» - <http://www.ep.ru>

Product Portfolio



Relay modules and solid-state relays

Catalogue 4.2

Relay modules and solid-state relays

Relay modules and solid-state relays in 6 mm width

Industrial relay modules and solid-state relays

Power electronics

Timer

JACKPAC® (IP67) / Functional components

Appendix

Weidmüller Solutions & Service

Technical appendix/Glossary

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Addresses worldwide

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Relay modules and solid-state relays

TERMSERIES - Relay modules

Page A.6



- All-purpose, pluggable relay modules
- Space-saving width
- AgNi contact with and without gold plating
- Screw and tension clamp connection

TERMSERIES - Solid-state relays

Page A.18



- All-purpose, pluggable solid-state relays
- Space-saving width
- DC and AC output variants
- Screw and tension clamp connection

TERMOPTO - Solid-state relays

Page A.38



- Isolation of potentials in terminal format
- With PUSH IN technology
- Compact, enclosed design

MICROOPTO - Solid-state relays

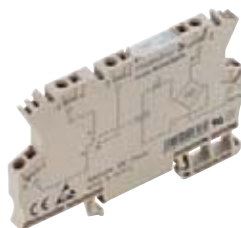
Page A.50



- Compact semiconductor switch in terminal format
- High power for loads up to 10 A
- Electrically isolates high-speed signals
- International approvals

MCZ-SERIES relay modules

Page A.58



- Low profile with tension clamp connection
- TRAK version developed for the rail industry
- Large temperature range of -40 °C to +70 °C

MCZ-SERIES solid-state relays

Page A.64



- Low profile with tension clamp connection
- Universal interface between controller and sensor/actuator
- TRAK version developed for the rail industry

RIDERSERIES - Relay modules

Page B.6



- Modularly designed product line
- Pluggable variants with 1 to 4 CO contacts
- Innovative relay base with PUSH IN connection

RIDERSERIES FG - Relay modules

Page B.46



- Modularly designed product line
- Relays with positively driven contacts
- Screw or tension clamp connection

RS-SERIES - Relay module and solid-state relays

Page B.48



- Extra rugged version
- RSM multi-interfaces with up to 16 relays
- Wide range of uses in the automation industry

PSSR 3-phase Power solid-state relays

Page C.4



- Load circuit: 12...275 V AC / 20 A at 55 °C
- No-voltage switch
- Ready to use

PSSR 3-phase Power solid-state relays

Page C.5



- Load circuit: 24...520 V AC / 20 A at 55 °C
- With integrated quick-action switch
- Ready to use

BT-SERIES - Timer

Page D.4



- Time range: 0.10 s...120 h
- Screw or tension clamp connection
- International approvals

Timer with 6 mm width

Page D.8



- Components for lengthening short pulses for the PLC
- Low input power
- DKZ Series with adjustable switch-off delay

JACKPAC®

Page E.3



- For use with decentralised wiring designs
- Integrates basic signal processing functionality
- IP67 protection

Selection table for relay modules

Using the selection table, you can find the article number quickly and easily. Proceed as follows:

1.) Select the output configuration (contact type, number of contacts, contact material) for your required product.

2.) Select the input voltage.

3.) If the search results in multiple product article numbers, then you should also specify a product series or a connection system.

If your search comes up with no results, then you may be in need of a customised solution from the RIDERSERIES product line.

Almost any desired relay module can be put together from the large variety of input and output configurations. We would be glad to help you develop the proper solution for your requirements.

Detailed technical specifications may be found in the corresponding catalogue pages.

Preferred types

① Output									③ Connection	④ SERIES
										
Type of contact	NC	NO	CO							
Number of contacts	1	1	1		2		3	4		
Contact material	AgNi	AgNi / RhRu	AgNi / AgSnO	AgNi +5uAu	AgNi	AgNi + 5uAu	AgNi	AgNi		
② Voltage/Input/DC										
5 VTTL	1167660000	1167760000							Screw	RS 30
5 V DC			1122740000	1122980000	1123470000	1123710000			Screw	TERMSERIES
			1122860000	1123100000	1123590000	1123830000			Tension clamp	
12 V DC			1122750000	1122990000	1123480000	1123720000			Screw	TERMSERIES
			1122870000	1123110000	1123600000	1123840000			Tension clamp	
24 V DC			1122770000	1123000000	1123490000	1123730000			Screw	TERMSERIES
			1122850000	1123090000	1123580000	1123820000				
			1122880000	1123120000	1123610000	1123850000			Tension clamp	
			1122970000	1123210000	1123700000	1123940000				
			8881580000		8881610000				Screw	RIDER - RCI KIT
			8897190000		8897230000				PUSH IN	
					8920940000		8920980000	8921030000	Screw	RIDER - RCM KIT
					8921080000			8921120000	PUSH IN	
	1100911001	1101611001	1181511001						Screw	RS 30
			1128361001						Screw	RS 31
				9406121001				Screw	RS 32	
		8365980000	8442960000					Tension clamp	MCZ	
110 V/ 115 V DC			8467470000						Tension clamp	MCZ
	1155221001	1155111001							Screw	RS 30
Input UC										
24 V UC			1122780000	1123010000	1123500000	1123740000			Screw	TERMSERIES
			1122890000	1123130000	1123620000	1123870000			Tension clamp	
					9406221001				Screw	RS 32
			8390590000						Tension clamp	MCZ
48 V UC			1122790000	1123020000	1123510000	1123750000			Screw	TERMSERIES
			1122900000	1123140000	1123630000	1123880000			Tension clamp	
60 V UC			1122800000	1123030000	1123520000	1123770000			Screw	TERMSERIES
			1122910000	1123150000	1123640000	1123890000			Tension clamp	
115 V/ 120 V UC			1122810000	1123170000	1123530000	1123780000			Screw	TERMSERIES
			1122920000	1123040000	1123650000	1123900000			Tension clamp	
					9406621001				Screw	RS 32
230 V UC			1122820000	1123050000	1123540000	1123790000			Screw	TERMSERIES
			1122930000	1123180000	1123670000	1123910000			Tension clamp	
					9406721001				Screw	RS 32

Preferred types

① Output										④ Connection	⑤ SERIES
											
Type of contact	NC	NO	CO								
Number of contacts	1	1	1		2		3	4			
Contact material	AgNi	AgNi / RhRu	AgNi / AgSnO	AgSnO +5uAu	AgNi	AgNi + 5uAu	AgNi	AgNi			
② Voltage/Input											
24 V AC			8881590000		8881620000				Screw	RIDER - RCI KIT	
			8897200000		8897240000				PUSH IN		
					8920950000		8920990000	8921040000	Screw	RIDER - RCM KIT	
					8921090000			8921130000	PUSH IN		
115 V/ 120 V AC			8897060000		8897080000				Screw	RIDER - RCI KIT	
			8897210000		8897250000				PUSH IN		
					8920960000		8921010000	8921060000	Screw	RIDER - RCM KIT	
					8921100000			8921140000	PUSH IN		
		1102111001	1100760000						Screw	RS 30	
			1150461001						Screw	RS 31	
120 V AC RC			8420880000						Tension clamp	MCZ	
			1122830000	1123070000	1123550000	1123800000			Screw	TERMSERIES	
			1122940000	1123190000	1123680000	1123920000			Tension clamp		
230 V AC			8881600000		8881630000				Screw	RIDER - RCI KIT	
			8897220000		8897260000				PUSH IN		
					8920970000		8921020000	8921060000	Screw	RIDER - RCM KIT	
					8921110000			8921150000	PUSH IN		
		1102211001	1100860000						Screw	RS 30	
			1128461001						Screw	RS 31	
230 V AC RC			8237710000						Tension clamp	MCZ	
			1122840000	1123080000	1123570000	1123810000			Screw	TERMSERIES	
			1122950000	1123200000	1123690000	1123930000			Tension clamp		

RSM multi-interface
in a compact design (with screw connections)

① Output			
			
Contact	CO		
Poles	4*1	8*1	16*1
Contact material	AgNi	AgNi	AgNi
② Voltage/Input			
24 V DC	1113361001	1113561001	1113761001
24 V UC	1173461001	1173561001	1173661001
115 V UC	1114561001	1114661001	1114761001
230 V AC	1114861001	1114961001	1115061001

MCZ TRAK relay modules adapted to rail industry
requirements (with tension-clamp connections)

① Output			
			
Contact	NO	CO	
Poles	1	1	
Contact material	AgSnO	AgSnO	AgSnO + 5uAu
② Voltage/Input			
24 V DC	8499550000	8713890000	8790520000
36 V DC		8713900000	8790510000
48-110 V DC	8574070000	8713910000	8790500000

Selection table for solid-state relays

Using the selection table, you can find the article number quickly and easily. Proceed as follows:

- 1.) Configure the load side for your desired product.
- 2.) Select the control voltage.
- 3.) If the search results in multiple product article numbers, then you should also specify a product series or a connection system.

We would be glad to help you develop the proper solution for your requirements.

Detailed technical specifications may be found in the corresponding catalogue pages.

Preferred types

❶ Load side									❷ Connection	❸ SERIES
Voltage type	DC					AC				
Switching voltage	5...48 V		24 V		5 V TTL	24...240 V				
Switching current	< 100 mA	<= 500 mA	<= 2 A	<= 5 A		<=100 mA	<=1 A	<=4 A		
❹ Control side										
Voltage/AC										
24 V AC	8950820000	8951020000				8951220000			Screw	TERMOPTO
	8950860000	8951060000				8951260000			PUSH IN	
48...60 V AC	8950830000	8951030000				8951230000			Screw	TERMOPTO
	8950870000	8951070000				8951270000			PUSH IN	
120 V AC	8950840000	8951040000				8951240000			Screw	TERMOPTO
	8950880000	8951080000				8951280000			PUSH IN	
120 V AC RC	1127000000		1127230000				1127480000		Screw	TERMSERIES
	1127110000		1127350000				1127600000		Tension clamp	
	1180290000								Screw	TERMOPTO
	1188830000								PUSH IN	
230 V AC	8950850000	8951050000				8951250000			Screw	TERMOPTO
	8950890000	8951090000				8951290000			PUSH IN	
	8421380000								Tension clamp	MCZ
230 V AC RC	1127010000		1127240000				1127490000		Screw	TERMSERIES
	1127120000		1127370000				1127610000		Tension clamp	
	1189270000								Screw	TERMOPTO
	1189260000								PUSH IN	
DC										
5VTTL	8398940000								Tension clamp	MCZ
	8937920000 100 kHz								Screw	
	5 V DC	1126920000		1127140000				1127390000		Screw
1127030000			1127270000				1127510000		Tension clamp	
8950700000		8950900000				8951100000			Screw	TERMOPTO
8950760000		8950960000				8951160000			PUSH IN	
12 V DC	1126930000		1127150000				1127400000		Screw	TERMSERIES
	1127040000		1127280000				1127520000		Tension clamp	
	8950710000	8950910000				8951110000			Screw	TERMOPTO
	8950770000	8950970000				8951170000			PUSH IN	
					8937930000 100 kHz				Screw	MICROOPTO
24 V DC	1126940000		1127170000	1127630000			1127410000		Screw	TERMSERIES
				1127680000					Screw	
	1127050000		1127290000	1127650000			1127530000		Tension clamp	
				1127700000					Tension clamp	
	8937990000 100 kHz				8937930000 100 kHz				Screw	MICROOPTO
	8950720000	8950920000		1275100000		8951120000			Screw	
	8950780000	8950980000		1254880000		8951180000			PUSH IN	TERMOPTO
					8324610000				Tension clamp	
48...60 V DC	8950730000	8950930000				8951130000			Screw	TERMOPTO
	8950790000	8950990000				8951190000			PUSH IN	
110 V DC	8950740000	8950940000				8951140000			Screw	TERMOPTO
	8950800000	8951000000				8951200000			PUSH IN	
220 V DC	8950750000	8950950000				8951150000			Screw	TERMOPTO
	8950810000	8951010000				8951210000			PUSH IN	

Preferred types

① Load side								③ Connection	④ SERIES	
Voltage type	DC					AC				
Switching voltage	5...48 V		24 V		5 V TTL	24...240 V				
Switching current	< 100 mA	<= 500 mA	<= 2 A	<= 5 A		<=100 mA	<=1 A			<=4 A
② Control side										
Voltage/UC										
24 V UC	1126950000		1127180000				1127420000		Screw	TERMSERIES
	1127060000		1127300000				1127540000		Tension clamp	
	8365940000		8287730000						Tension clamp	MCZ
24...230 V UC	1127020000		1127250000	1127640000			1127500000		Screw	TERMSERIES
				1127690000					Screw	
	1127130000		1127380000	1127670000			1127620000		Tension clamp	
				1127710000					Tension clamp	
48 V UC	1126960000		1127190000				1127430000		Screw	TERMSERIES
	1127070000		1127310000				1127550000		Tension clamp	
60 V UC	1126970000		1127200000				1127440000		Screw	TERMSERIES
	1127080000		1127320000				1127570000		Tension clamp	
115 V/ 120 V UC	1126980000		1127210000				1127450000		Screw	TERMSERIES
	1127090000		1127330000				1127580000		Tension clamp	
	8421060000								Tension clamp	MCZ
230 V UC	1126990000		1127220000				1127470000		Screw	TERMSERIES
	1127100000		1127340000				1127590000		Tension clamp	

MICROOPTO components specially customised for industrial applications (with screw connections)

① Load side				
Voltage type	DC			
Switching voltage	5...48 V DC	8...30 V DC	5...33 V DC	12...300 V DC
Switching current	0,5 A	2 A	10 A	1 A
② Control side/Voltage				
24 V DC	8937980000	8937970000	8937940000	8937830000
Remark	Electronic CO contact 1 kHz switching frequency	Short-circuit-proof Thermal overload fuse 3-wire actuator connection	Short-circuit-proof Alarm contact	Power Boost

PSSR high-performance semiconductor for single-phase or three-phase AC currents (with screw connections)

① Load side	
Voltage type	AC
Switching voltage	Single-phase 12...275 V AC
Switching current	20 A
② Control side/Voltage	
3...32 V DC	8952110000
8...30 V DC / 10...30 V AC	
110...240 V DC / 150...240 V AC	8952120000
90...240 V AC/DC	

Relay modules and solid-state relays in 6 mm width

Relay modules and solid-state relays in 6 mm width	Relay modules and solid-state relays in 6 mm width – Overview	A.2
	TERMSERIES – Overview	A.4
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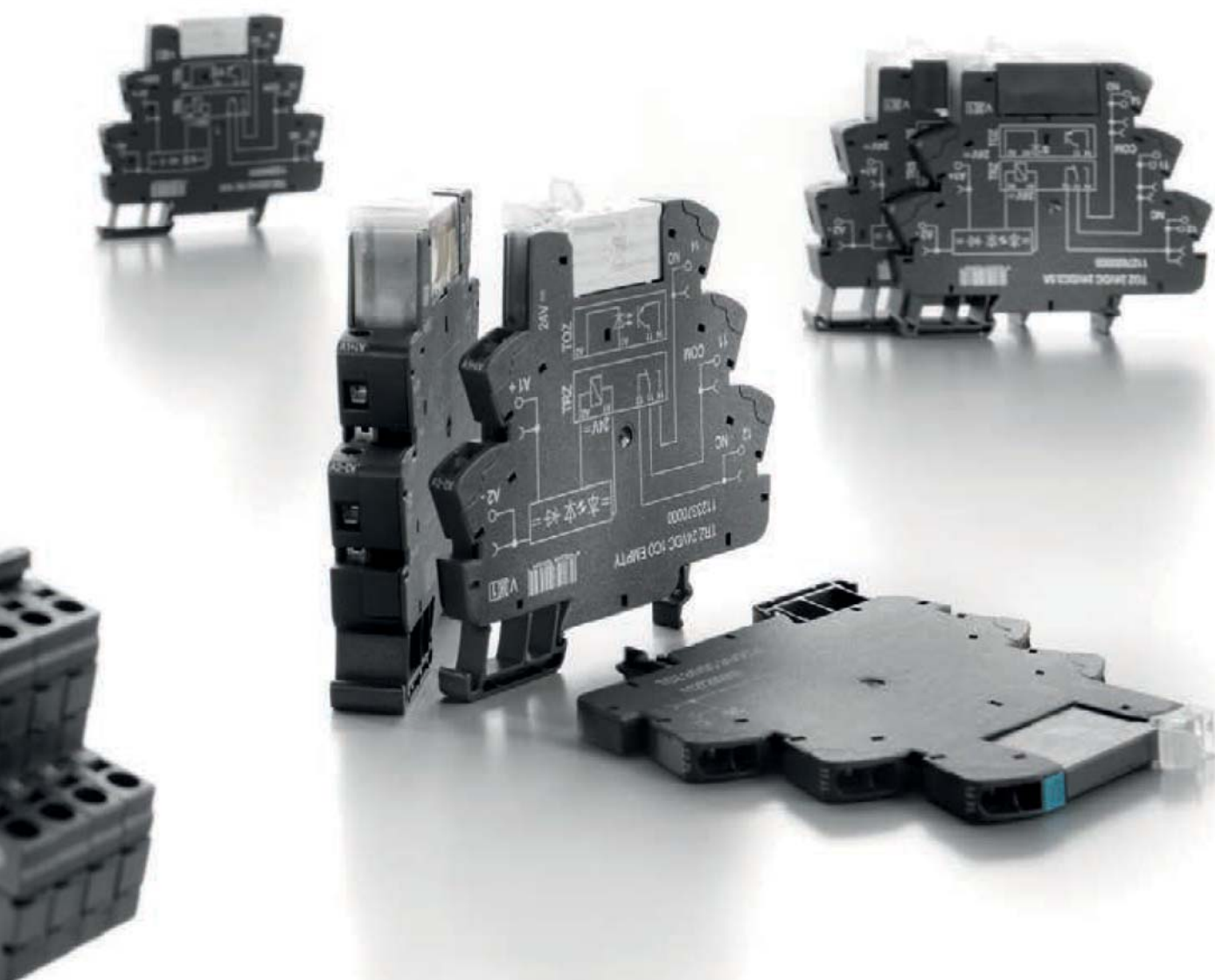
Coupling modules in a terminal block design

Relay modules and solid-state relays in 6 mm width

Weidmüller's relay couplers and solid-state relays feature excellent electrical characteristics. They also take advantage of the same reliable connection technology that has proven itself countless times in terminal products. This product line is ideally complimented by a wide variety of system accessories such as labelling material and end brackets. This helps to reduce your inventory overhead and stock levels. During the design of compact components, it is especially challenging to maintain minimal power loss since the small housing can exchange very little power with its surroundings. This challenge has already been mastered by Weidmüller since 1989. It was the first product in the terminal block format to come to market and it has been continually improved since then. Two compact but powerful semiconductor switches TERMOPTO and MICROOPTO also meet this challenge. The new TERMSERIES combines the proven properties of the established product lines with innovative technical solutions. A variable-voltage input has been specifically developed for the 6 mm disc design. This is the first time that the control of relay modules and solid-state relays can be used with voltages from 24 to 230 V DC/DC in this width. Another highlight is the ejector with integrated fibre-optic technology, which apart from allowing the simple and safe removal of the relay module and the solid-state relay, also illuminates the status indicator.

See for yourself, the quality of the Weidmüller's 6 mm products.





TERMSERIES – The All-rounder

Relays and solid-state relays for all purposes

Relay modules are universal isolating elements for use in electrical automation. There are always different requirements for them because of this versatility. With the development of our TERMSERIES relay modules and solid-state relays, we have used these practical requirements as our highest benchmark.

Depending on the application, you can choose the product with the fixed-voltage inputs or with the multi-voltage input, which is currently a unique feature in this thin 6 mm terminal block format. Our practical design is reflected in the high-quality design without any sharp edges, a large number of variants with screw and tension-clamp connections, and a clear status display even in difficult viewing conditions. The product shape allows it to be installed in many different positions. Unlimited cross-connectivity, even across partition plates, assures versatile usage for your application regardless of how unusual your needs are.

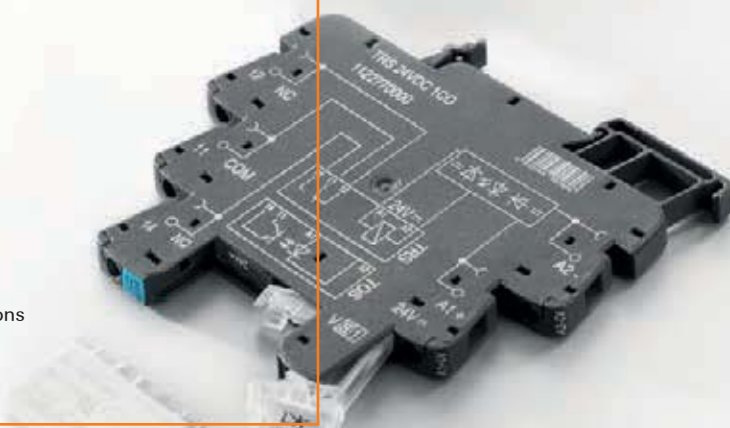
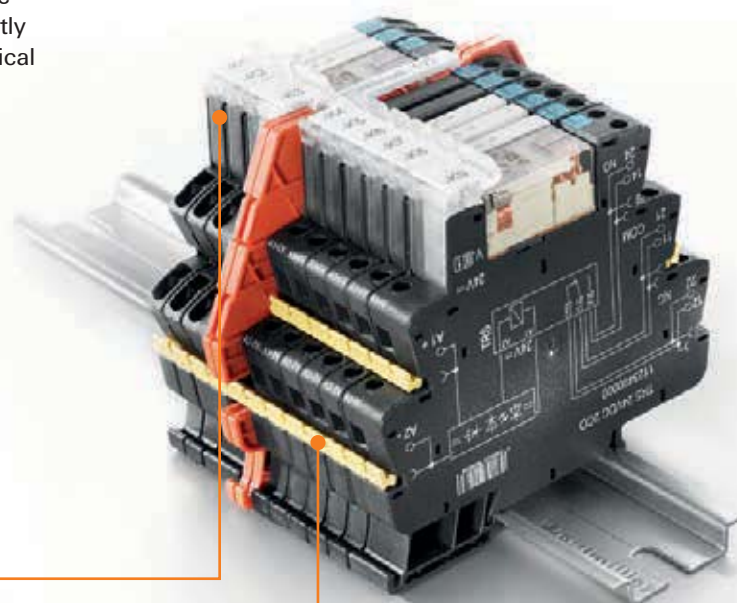
Always the best overview

A distinct status display is available through a LED that completely illuminates the ejector. This ensures the safe removal of the switching element.



Well-designed handling of cross-connections

An exceptionally simple shortening of the cross-connections to the necessary length allows indentations between the poles. An additional bar supports the handling and mounting without having to grasp the contacts.



Clear marking

The unique legibility of all labelling is assured in different mounting positions and this, together with different voltage variant colour identification, reduces the danger of a false connection.



Unique multi-voltage input

Whether retro-fitting machines or in plant construction: with the multi-voltage input from 24 V to 230 V UC, the input signals are always optimally matched to your automation application.



Any desired combinations

The variants with single or dual CO-contacts have the same shape and can be cross-connected with each other.



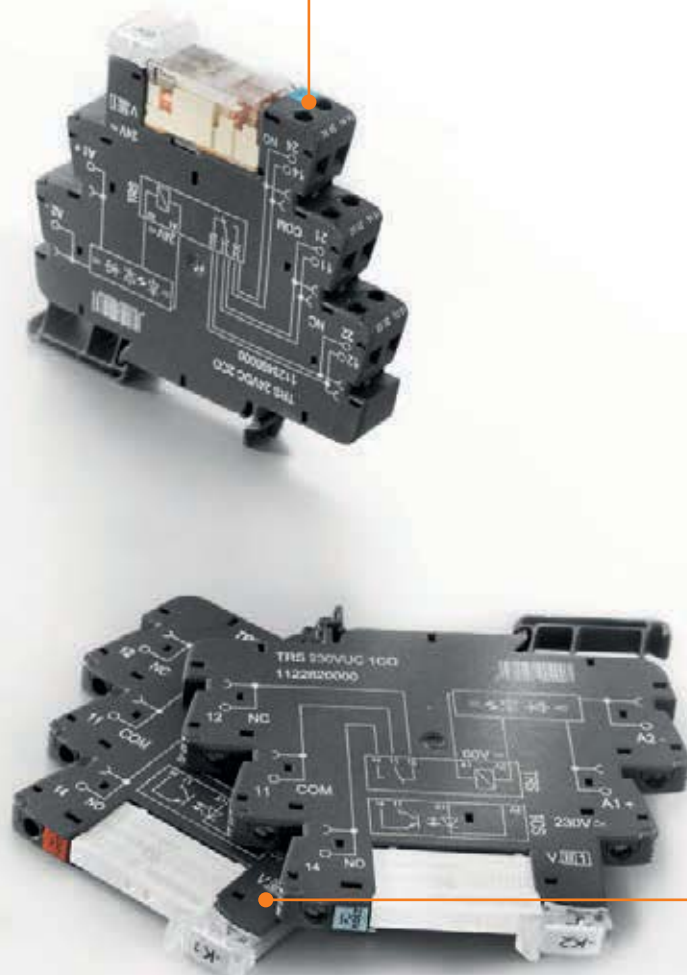
Custom-fit cross-connection

These cross-connectors are especially impressive because of their ease of use, good visibility and universal inter-connectivity – also across partition plates. Even the screw and tension-clamp variants can be cross-connected to each other.



Partition plates for safety and clarity

The partition plate is a unique accessory because of its many different uses. It is used to group signals together visibly, to electrically isolate assemblies, or to add labelling for a better overview.

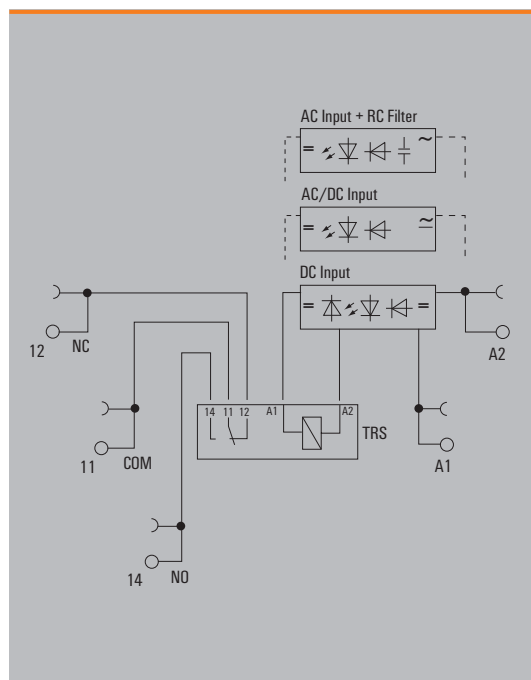


TERMSERIES - Relay modules

1 CO contact

AC/DC/UC coil

- Space saving, just 6.4 mm modular width
- AgNi contact
- Screw and tension clamp connection

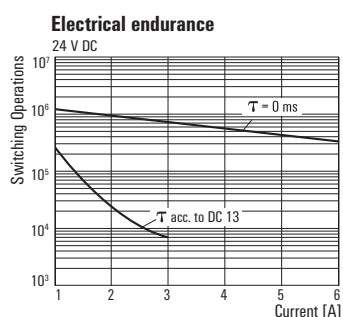
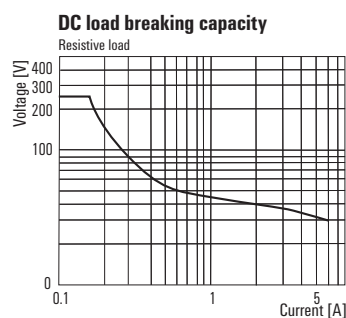
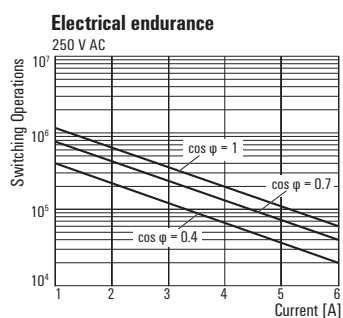


Technical data

Output	
Max. switching voltage, AC / Continuous current	250 V / 6 A
Min. switching power	100 mA / 5 V
Contact material	AgNi
Mechanical service life	20 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator	Green LED
Reverse polarity protection	Yes
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions		
Clamping range (nominal / min. / max.)	mm ²	1.5 / 0.14 / 1.5
Length x width x height	mm	88 / 6.4 / 90
Note		
Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

Applications



1 CO contact
AC/DC/UC coil
Ordering data

Input	5 V DC	12 V DC	24 V DC	24 V UC	48 V UC
Rated control voltage	5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	24 V UC $\pm 10\%$	48 V UC $\pm 10\%$
Rated current AC				10.1 mA	8 mA
Rated current DC	35.8 mA	18 mA	10 mA	6.4 mA	7 mA
Power rating	200 mW	210 mW	240 mW	270 mVA / 154 mW	240 mVA / 192 mW
AC Response/dropout Volt				16.6 V / 5 V	29 V / 10 V
DC Response/dropout Volt	3.3 V / 1 V	8 V / 2 V	16.6 V / 5 V	16.6 V / 5 V	29 V / 10 V
AC pickup/dropout current				4 mA / 1 mA	4 mA / 1.3 mA
DC pickup/dropout current	21.6 mA / 8 mA	9 mA / 3 mA	7 mA / 2 mA	4 mA / 1.2 mA	4 mA / 1.2 mA
Free-wheel diode	Yes	Yes	Yes	No	No
Output					
Switch-on delay	< 7 ms	< 7 ms	< 6 ms	< 4 ms	< 8 ms
Switch-off delay	< 4 ms	< 8 ms	< 7 ms	< 1.2 ms	< 4 ms

Ordering data

Screw connection	Type	TRS 5VDC 1CO	TRS 12VDC 1CO	TRS 24VDC 1CO	TRS 24VUC 1CO	TRS 48VUC 1CO
	Order No.	1122740000	1122750000	1122770000	1122780000	1122790000
Tension clamp conn.	Type	TRZ 5VDC 1CO	TRZ 12VDC 1CO	TRZ 24VDC 1CO	TRZ 24VUC 1CO	TRZ 48VUC 1CO
	Order No.	1122860000	1122870000	1122880000	1122890000	1122900000
Note		Spare relay Type: RSS113005 Orderno.: 4061580000	Spare relay Type: RSS113012 Orderno.: 4061610000	Spare relay Type: RSS113024 Orderno.: 4060120000	Spare relay Type: RSS113024 Orderno.: 4060120000	Spare relay Type: RSS113024 Orderno.: 4060120000

Ordering data

Input	60 V UC	120 V UC	230 V UC	120 V AC RC	230 V AC RC
Rated control voltage	60 V UC $\pm 10\%$	120 V UC $\pm 10\%$	230 V UC $\pm 10\%$	120 V AC $\pm 10\%$	230 V AC $\pm 10\%$
Rated current AC	6.1 mA	4 mA	3.5 mA	7 mA	10.1 mA
Rated current DC	3.3 mA	3.5 mA	2.9 mA		
Power rating	360 mW	0.48 VA, 420 mW	0.8 VA, 700 mW	0.84 VA	2.3 VA
AC Response/dropout Volt	35 V / 11 V	79 V / 60 V	159 V / 100 V	79 V / 60 V	145 V / 90 V
DC Response/dropout Volt	40 V / 10 V		159 V / 99 V		
AC pickup/dropout current		4 mA / 2.5 mA	2.2 mA / 1.3 mA	4 mA / 2.5 mA	9.13 mA / 4.78 mA
DC pickup/dropout current			1.7 mA / 0.7 mA		
Free-wheel diode	No	No	No	No	No
Output					
Switch-on delay	< 6 ms	< 8 ms	< 22 ms	< 5.3 ms	< 22 ms
Switch-off delay	< 6.5 ms	< 7 ms	< 30 ms	< 4 ms	< 30 ms

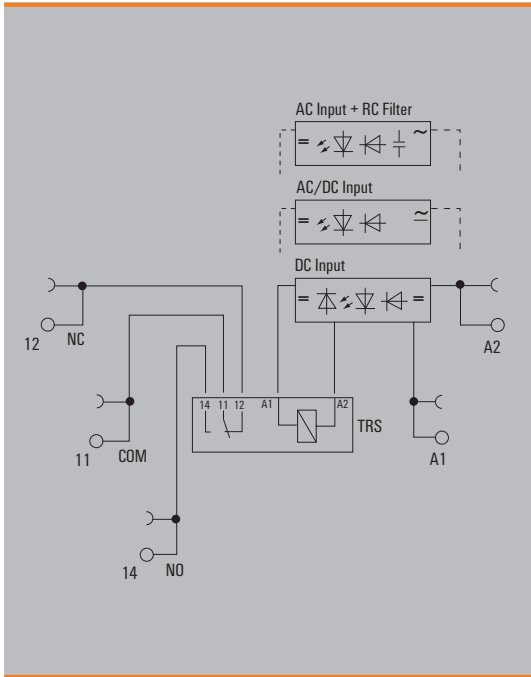
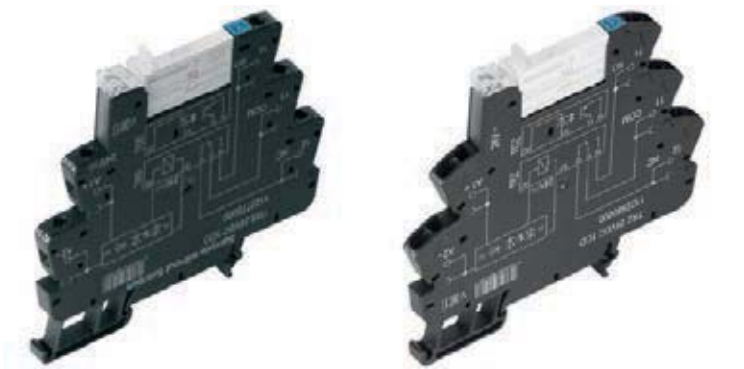
Ordering data

Screw connection	Type	TRS 60VUC 1CO	TRS 120VUC 1CO	TRS 230VUC 1CO	TRS 120VAC RC 1CO	TRS 230VAC RC 1CO
	Order No.	1122800000	1122810000	1122820000	1122830000	1122840000
Tension clamp conn.	Type	TRZ 60VUC 1CO	TRZ 120VUC 1CO	TRZ 230VUC 1CO	TRZ 120VAC RC 1CO	TRZ 230VAC RC 1CO
	Order No.	1122910000	1122920000	1122930000	1122940000	1122950000
Note		Spare relay Type: RSS113060 Orderno.: 4061630000	Spare relay Type: RSS113060 Orderno.: 4061630000	Spare relay Type: RSS113060 Orderno.: 4061630000	Spare relay Type: RSS113060 Orderno.: 4061630000	Spare relay Type: RSS113060 Orderno.: 4061630000

TERMSERIES - Relay modules

1 CO contact with hard gold-plated contacts
AC/DC/UC coil

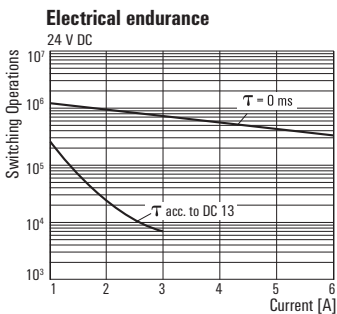
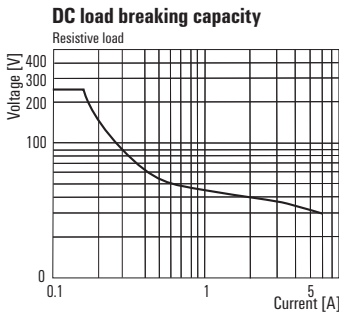
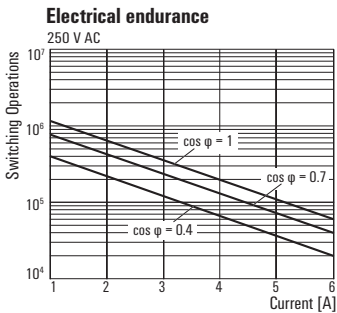
- Space saving, just 6.4 mm modular width
- AgNi contact with gold plating
- Screw and tension clamp connection



Technical data

Output			
Max. switching voltage, AC / Continuous current	250 V / 6 A		
Min. switching power	1 V / 1 mA		
Contact material	AgNi 5µm Au		
Mechanical service life	20 x 10 ⁶ switching cycles		
Max. switching frequency at rated load	0.1 Hz		
Rated data			
Status indicator	Green LED		
Reverse polarity protection	Yes		
Ambient temperature (operational)	-40 °C...+60 °C		
Storage temperature	-40 °C...+85 °C		
Humidity	5...95 % rel. humidity		
	T _a = 40 °C, no condensation		
Approvals	CE		
Insulation coordination (EN 50 178)			
Rated voltage	300 V		
Impulse withstand voltage	6 kV (1.2/50 µs)		
Clearance and creepage distances for control side - load side	≥ 5.5 mm		
Surge voltage category	III		
Pollution severity	2		
Dimensions		Screw connection	Tension clamp connection
Clamping range (nominal / min. / max.)	mm ²	1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm	88 / 6.4 / 90	88 / 6.4 / 90
Note			
Approvals: GL from March 2012, eULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.			

Applications



1 CO contact with hard gold-plated contacts AC/DC/UC coil

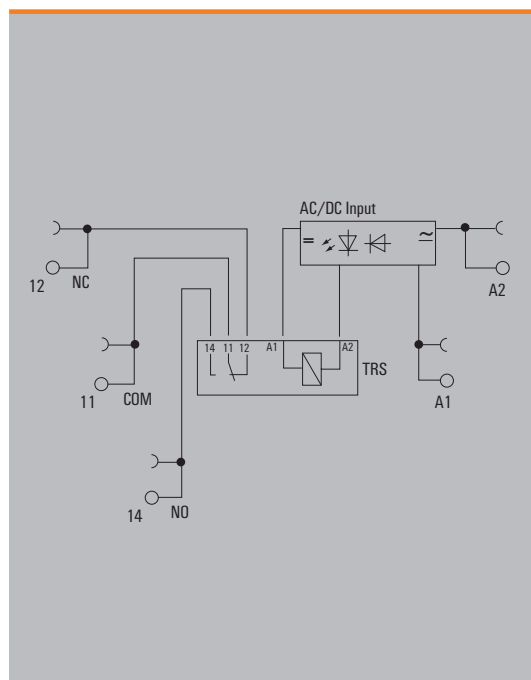
Ordering data		5 V DC	12 V DC	24 V DC	24 V UC	48 V UC
Input						
Rated control voltage		5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	24 V UC $\pm 10\%$	48 V UC $\pm 10\%$
Rated current AC					10.1 mA	8 mA
Rated current DC		35.8 mA	18 mA	10 mA	6.4 mA	7 mA
Power rating		200 mW	210 mW	240 mW	270 mVA / 154 mW	240 mVA / 192 mW
AC Response/dropout Volt					16.6 V / 5 V	29 V / 10 V
DC Response/dropout Volt		3.3 V / 1 V	8 V / 2 V	16.6 V / 5 V	16.6 V / 5 V	29 V / 10 V
AC pickup/dropout current					4 mA / 1 mA	4 mA / 1.3 mA
DC pickup/dropout current		21.6 mA / 8 mA	9 mA / 3 mA	7 mA / 2 mA	4 mA / 1.2 mA	4 mA / 1.2 mA
Free-wheel diode		Yes	Yes	Yes	No	No
Output						
Switch-on delay		< 7 ms	< 7 ms	< 6 ms	< 4 ms	< 8 ms
Switch-off delay		< 4 ms	< 8 ms	< 7 ms	< 1.2 ms	< 4 ms
Ordering data						
Screw connection	Type	TRS 5VDC 1CO AU	TRS 12VDC 1CO AU	TRS 24VDC 1CO AU	TRS 24VUC 1CO AU	TRS 48VUC 1CO AU
	Order No.	1122980000	1122990000	1123000000	1123010000	1123020000
Tension clamp conn.	Type	TRZ 5VDC 1CO AU	TRZ 12VDC 1CO AU	TRZ 24VDC 1CO AU	TRZ 24VUC 1CO AU	TRZ 48VUC 1CO AU
	Order No.	1123100000	1123110000	1123120000	1123130000	1123140000
Note		Spare relay Type: RSS112005 Orderno.: 1174540000	Spare relay Type: RSS112012 Orderno.: 1220670000	Spare relay Type: RSS112024 Orderno.: 4061590000	Spare relay Type: RSS112024 Orderno.: 4061590000	Spare relay Type: RSS112024 Orderno.: 4061590000
Ordering data		60 V UC	120 V UC	230 V UC	120 V AC RC	230 V AC RC
Input						
Rated control voltage		60 V UC $\pm 10\%$	120 V UC $\pm 10\%$	230 V UC $\pm 10\%$	120 V AC $\pm 10\%$	230 V AC $\pm 10\%$
Rated current AC		6.1 mA	4 mA	3.5 mA	7 mA	10.1 mA
Rated current DC		3.3 mA	3.5 mA	2.9 mA		
Power rating		360 mW	0.48 VA, 420 mW	0.8 VA, 700 mW	0.84 VA	2.3 VA
AC Response/dropout Volt		35 V / 11 V	79 V / 60 V	159 V / 100 V	79 V / 60 V	145 V / 90 V
DC Response/dropout Volt		40 V / 10 V		159 V / 99 V		
AC pickup/dropout current			4 mA / 2.5 mA	2.2 mA / 1.3 mA	4 mA / 2.5 mA	9.13 mA / 4.78 mA
DC pickup/dropout current				1.7 mA / 0.7 mA		
Free-wheel diode		No	No	No	No	No
Output						
Switch-on delay		< 6 ms	< 8 ms	< 22 ms	< 5.3 ms	< 22 ms
Switch-off delay		< 6.5 ms	< 7 ms	< 30 ms	< 4 ms	< 30 ms
Ordering data						
Screw connection	Type	TRS 60VUC 1CO AU	TRZ 120VUC 1CO AU	TRS 230VUC 1CO AU	TRS 120VAC RC 1CO AU	TRS 230VAC RC 1CO AU
	Order No.	1123030000	1123170000	1123050000	1123070000	1123080000
Tension clamp conn.	Type	TRZ 60VUC 1CO AU	TRS 120VUC 1CO AU	TRZ 230VUC 1CO AU	TRZ 120VAC RC 1CO AU	TRZ 230VAC RC 1CO AU
	Order No.	1123150000	1123040000	1123180000	1123190000	1123200000
Note		Spare relay Type: RSS112060 Orderno.: 4061600000	Spare relay Type: RSS112060 Orderno.: 4061600000	Spare relay Type: RSS112060 Orderno.: 4061600000	Spare relay Type: RSS112060 Orderno.: 4061600000	Spare relay Type: RSS112060 Orderno.: 4061600000

TERMSERIES - Relay modules

1 CO contact

Variable-voltage input

- Space saving, just 6.4 mm modular width
- AgNi contact
- Screw and tension clamp connection
- Multi-voltage input: 24 to 230 V UC in one module



Technical data

Output	
Max. switching voltage, AC / Continuous current	250 V / 6 A
Min. switching power	100 mA / 5 V
Contact material	AgNi
Mechanical service life	20 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	Green LED / No
Reverse polarity protection	Yes
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp connection
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 6.4 / 90	88 / 6.4 / 90

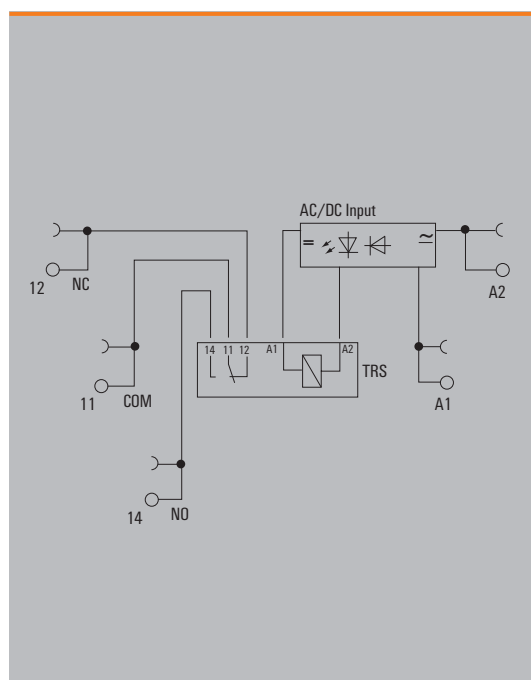
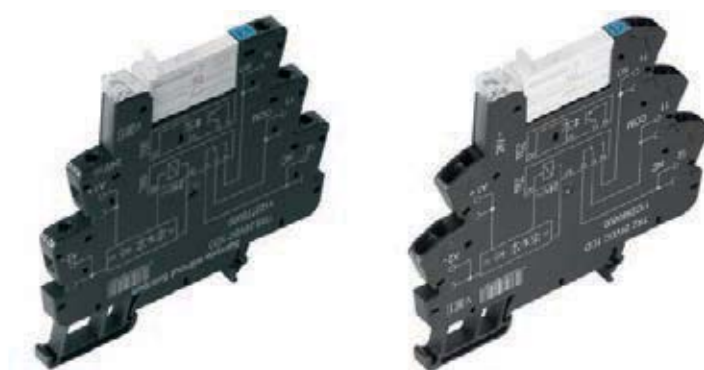
Note	Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.
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Ordering data

Input	
Rated control voltage	24...230 V UC ±10 %
Rated current AC	4 mA @ 230 V AC ±10 %, 28 mA @ 24 V AC ±10 %
Rated current DC	22 mA @ 24 V DC ±10 %
Power rating	530 mW @ 24 V DC, 930 mVA @ 230 V AC
AC Response/dropout Volt	11 V / 6 V
DC Response/dropout Volt	11 V / 5 V
AC pickup/dropout current	
DC pickup/dropout current	
Output	
Switch-on delay	< 22 ms
Switch-off delay	< 100 ms
Ordering data	
Screw connection	Type TRS 24-230VUC 1CO
Order No.	1122850000
Tension clamp conn.	Type TRZ 24-230VUC 1CO
Order No.	1122970000
Note	
Spare relay Type: RSS113024 Orderno.: 4060120000	

1 CO contact with hard gold-plated contacts**Variable-voltage input**

- Space saving, just 6.4 mm modular width
- AgNi contact with gold plating
- Screw and tension clamp connection
- Multi-voltage input: 24 to 230 V UC in one module

**Technical data**

Output	
Max. switching voltage, AC / Continuous current	250 V / 6 A
Min. switching power	1 V / 1 mA
Contact material	AgNi 5µm Au
Mechanical service life	20 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	Green LED / No
Reverse polarity protection	Yes
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp connection
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 6.4 / 90	88 / 6.4 / 90
Note Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

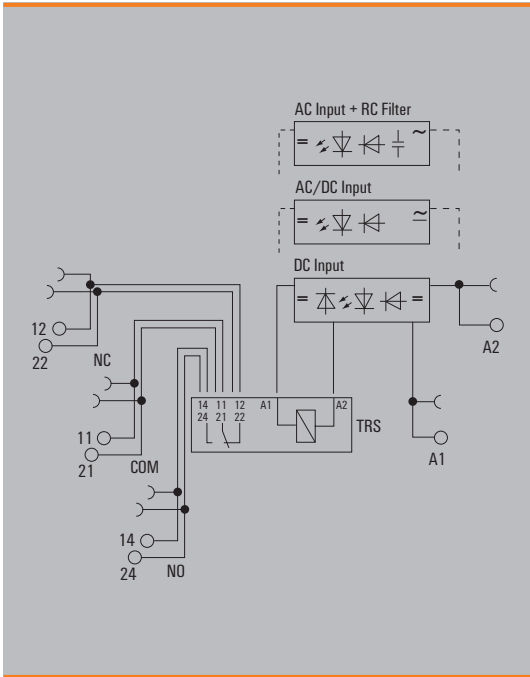
Ordering data

Input		24 V - 230 V UC
Rated control voltage		24...230 V UC ±10 %
Rated current AC		4 mA @ 230 V AC ±10 %, 28 mA @ 24 V AC ±10 %
Rated current DC		22 mA @ 24 V DC ±10 %
Power rating		530 mW @ 24 V DC, 930 mVA @ 230 V AC
AC Response/dropout Volt		11 V / 6 V
DC Response/dropout Volt		11 V / 5 V
AC pickup/dropout current		
DC pickup/dropout current		
Output		
Switch-on delay		< 22 ms
Switch-off delay		< 100 ms
Ordering data		
Screw connection	Type	TRS 24-230VUC 1CO AU
	Order No.	1123090000
Tension clamp conn.	Type	TRZ 24-230VUC 1CO AU
	Order No.	1123210000
Note		Spare relay Type: RSS112024 Orderno.: 4061590000

TERMSERIES - Relay modules

2 CO contacts
AC/DC/UC coil

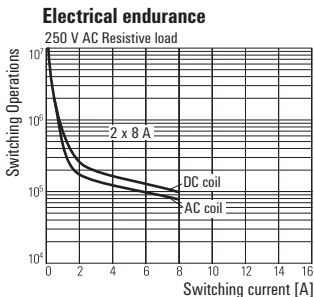
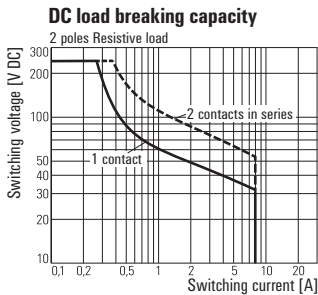
- Space saving, just 12.8 mm modular width
- AgNi contact
- Screw and tension clamp connection



Technical data

Output		
Max. switching voltage, AC / Continuous current	250 V / 8 A	
Min. switching power	10 V / 10 mA	
Contact material	AgNi	
Mechanical service life	30 x 10 ⁶ switching cycles	
Max. switching frequency at rated load	0.1 Hz	
Rated data		
Status indicator	Green LED	
Reverse polarity protection	Yes	
Ambient temperature (operational)	-40 °C...+60 °C	
Storage temperature	-40 °C...+85 °C	
Humidity	5...95 % rel. humidity	
	T _a = 40 °C, no condensation	
Approvals	CE	
Insulation coordination (EN 50 178)		
Rated voltage	300 V	
Impulse withstand voltage	6 kV (1.2/50 µs)	
Clearance and creepage distances for control side - load side	≥ 5.5 mm	
Surge voltage category	III	
Pollution severity	2	
Dimensions		
Clamping range (nominal / min. / max.)	mm ²	1.5 / 0.14 / 1.5
Length x width x height	mm	88 / 12.8 / 90
		88 / 12.8 / 90
Note		
Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

Applications



2 CO contacts AC/DC/UC coil

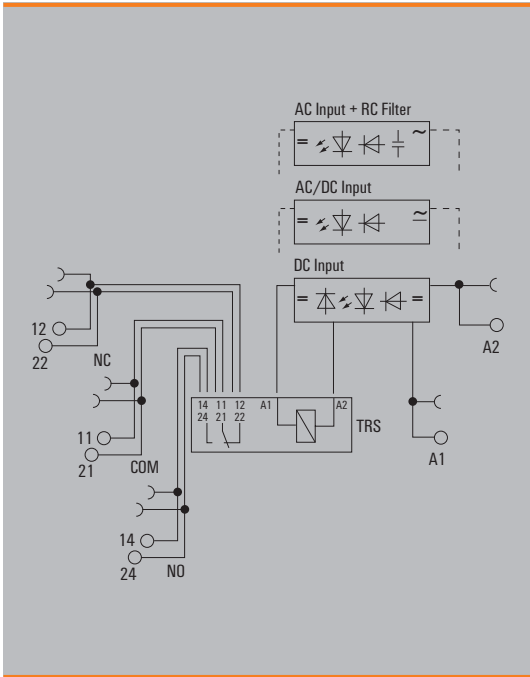
Ordering data		5 V DC	12 V DC	24 V DC	24 V UC	48 V UC
Input						
Rated control voltage		5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	24 V UC $\pm 10\%$	48 V UC $\pm 10\%$
Rated current AC					16 mA	9 mA
Rated current DC		80 mA	33.3 mA	16 mA	14 mA	7 mA
Power rating		400 mW	420 mW	384 mW	390 mVA / 350 mW	340 mW / 0.4 VA
AC Response/dropout Volt					16 V / 9 V	29 V / 11 V
DC Response/dropout Volt		3.2 V / 1.6 V	8.5 V / 3 V	16.6 V / 3.5 V	18 V / 8 V	33 V / 12 V
AC pickup/dropout current					11 mA / 4 mA	6.3 mA / 4.3 mA
DC pickup/dropout current		21.6 mA / 8 mA	21 mA / 5 mA	10 mA / 2 mA	10 mA / 2 mA	5 mA / 2 mA
Free-wheel diode		Yes	Yes	Yes	No	No
Output						
Switch-on delay		< 7 ms	< 7 ms	< 8 ms	< 4 ms	< 8 ms
Switch-off delay		< 4 ms	< 8 ms	< 10 ms	< 1.2 ms	< 4 ms
Ordering data						
Screw connection	Type	TRS 5VDC 2CO	TRS 12VDC 2CO	TRS 24VDC 2CO	TRS 24VUC 2CO	TRS 48VUC 2CO
	Order No.	1123470000	1123480000	1123490000	1123500000	1123510000
Tension clamp conn.	Type	TRZ 5VDC 2CO	TRZ 12VDC 2CO	TRZ 24VDC 2CO	TRZ 24VUC 2CO	TRZ 48VUC 2CO
	Order No.	1123590000	1123600000	1123610000	1123620000	1123630000
Note		Spare relay Type: RCL424005 Orderno.: 8693790000	Spare relay Type: RCL424012 Orderno.: 4058560000	Spare relay Type: RCL424024 Orderno.: 4058570000	Spare relay Type: RCL424024 Orderno.: 4058570000	Spare relay Type: RCL424048 Orderno.: 4058750000

Ordering data		60 V UC	120 V UC	230 V UC	120 V AC RC	230 V AC RC
Input						
Rated control voltage		60 V UC $\pm 10\%$	120 V UC $\pm 10\%$	230 V UC $\pm 5\%$	120 V AC $\pm 10\%$	230 V AC $\pm 5\%$
Rated current AC		8 mA	3.5 mA	4 mA	6.1 mA	10.1 mA
Rated current DC		6.1 mA	3.5 mA	4 mA		
Power rating		480 mVA / 360 mW	420 mVA / 420 mW	920 mVA / 920 mW	0.73 VA	2.3 VA
AC Response/dropout Volt		36 V / 13 V	64 V / 26 V	112 V / 43 V	65 V / 23 V	112 V / 45 V
DC Response/dropout Volt		40 V / 14 V	69 V / 22 V	129 V / 36 V		
AC pickup/dropout current		5 mA / 2.5 mA	2 mA / 1 mA	2 mA / 1 mA	3.6 mA / 1.3 mA	5 mA / 2.5 mA
DC pickup/dropout current		4 mA / 1.2 mA	2 mA / 1 mA	2 mA / 1 mA		
Free-wheel diode		No	No	No	No	No
Output						
Switch-on delay		< 6 ms	< 8 ms	< 14 ms	< 5 ms	< 14 ms
Switch-off delay		< 7 ms	< 7 ms	< 22 ms	< 4 ms	< 12 ms
Ordering data						
Screw connection	Type	TRS 60VUC 2CO	TRS 120VUC 2CO	TRS 230VUC 2CO	TRS 120VAC RC 2CO	TRS 230VAC RC 2CO
	Order No.	1123520000	1123530000	1123540000	1123550000	1123570000
Tension clamp conn.	Type	TRZ 60VUC 2CO	TRZ 120VUC 2CO	TRZ 230VUC 2CO	TRZ 120VAC RC 2CO	TRZ 230VAC RC 2CO
	Order No.	1123640000	1123650000	1123670000	1123680000	1123690000
Note		Spare relay Type: RCL424060 Orderno.: 4058760000	Spare relay Type: RCL424110 Orderno.: 4058590000	Spare relay Type: RCL424110 Orderno.: 4058590000	Spare relay Type: RCL424110 Orderno.: 4058590000	Spare relay Type: RCL424110 Orderno.: 4058590000

TERMSERIES - Relay modules

2 CO contact with hard gold-plated contacts
AC/DC/UC coil

- Space saving, just 12.8 mm modular width
- AgNi contact with gold plating
- Screw and tension clamp connection

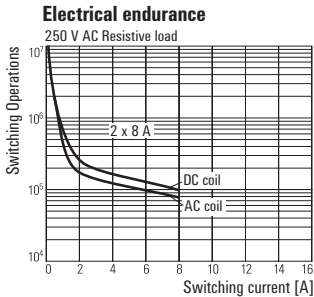
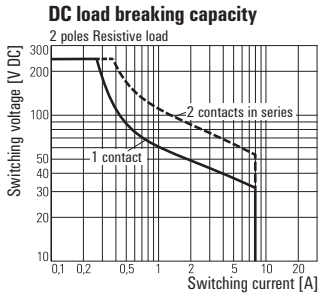


Technical data

Output	
Max. switching voltage, AC / Continuous current	250 V / 8 A
Min. switching power	1 V / 1 mA
Contact material	AgNi 5µm Au
Mechanical service life	30 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator	Green LED
Reverse polarity protection	Yes
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _g = 40 °C, no condensation
Approvals	
CE	
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp connection
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 12.8 / 90	88 / 12.8 / 90
Note		
Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

Applications



2 CO contact with hard gold-plated contacts AC/DC/UC coil

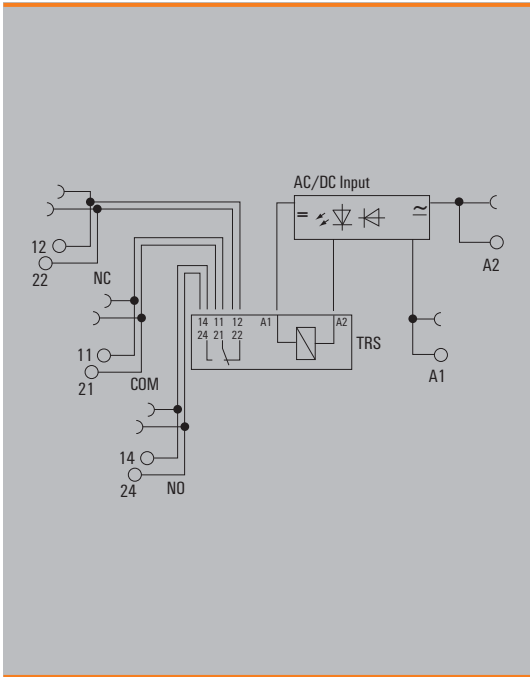
Ordering data		5 V DC	12 V DC	24 V DC	24 V UC	48 V UC
Input						
Rated control voltage		5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	24 V UC $\pm 10\%$	48 V UC $\pm 10\%$
Rated current AC					16 mA	9 mA
Rated current DC		80 mA	33.3 mA	16 mA	14 mA	7 mA
Power rating		400 mW	420 mW	384 mW	390 mVA / 350 mW	340 mW / 0.4 VA
AC Response/dropout Volt					16 V / 9 V	29 V / 11 V
DC Response/dropout Volt		3.2 V / 1.6 V	8.5 V / 3 V	16.6 V / 3.5 V	18 V / 8 V	33 V / 12 V
AC pickup/dropout current					11 mA / 4 mA	6.3 mA / 4.3 mA
DC pickup/dropout current		21.6 mA / 8 mA	21 mA / 5 mA	10 mA / 2 mA	10 mA / 2 mA	5 mA / 2 mA
Free-wheel diode		Yes	Yes	Yes	No	No
Output						
Switch-on delay		< 7 ms	< 7 ms	< 8 ms	< 4 ms	< 8 ms
Switch-off delay		< 4 ms	< 8 ms	< 10 ms	< 1.2 ms	< 4 ms
Ordering data						
Screw connection	Type	TRS 5VDC 2CO AU	TRS 12VDC 2CO AU	TRS 24VDC 2CO AU	TRS 24VUC 2CO AU	TRS 48VUC 2CO AU
	Order No.	1123710000	1123720000	1123730000	1123740000	1123750000
Tension clamp conn.	Type	TRZ 5VDC 2CO AU	TRZ 12VDC 2CO AU	TRZ 24VDC 2CO AU	TRZ 24VUC 2CO AU	TRZ 48VUC 2CO AU
	Order No.	1123830000	1123840000	1123850000	1123870000	1123880000
Note		Spare relay Type: RCL425005 Orderno.: 1174490000	Spare relay Type: RCL425012 Orderno.: 4074580000	Spare relay Type: RCL425024 Orderno.: 4058580000	Spare relay Type: RCL425024 Orderno.: 4058580000	Spare relay Type: RCL425048 Orderno.: 1201230000
Ordering data		60 V UC	120 V UC	230 V UC	120 V AC RC	230 V AC RC
Input						
Rated control voltage		60 V UC $\pm 10\%$	120 V UC $\pm 10\%$	230 V UC $\pm 5\%$	120 V AC $\pm 10\%$	230 V AC $\pm 5\%$
Rated current AC		8 mA	3.5 mA	4 mA	6.1 mA	10.1 mA
Rated current DC		6.1 mA	3.5 mA	4 mA		
Power rating		480 mVA / 360 mW	420 mVA / 420 mW	920 mVA / 920 mW	0.73 VA	2.3 VA
AC Response/dropout Volt		36 V / 13 V	64 V / 26 V	112 V / 43 V	65 V / 23 V	112 V / 45 V
DC Response/dropout Volt		40 V / 14 V	69 V / 22 V	129 V / 36 V		
AC pickup/dropout current		5 mA / 2.5 mA	2 mA / 1 mA	2 mA / 1 mA	3.6 mA / 1.3 mA	5 mA / 2.5 mA
DC pickup/dropout current		4 mA / 1.2 mA	2 mA / 1 mA	2 mA / 1 mA		
Free-wheel diode		No	No	No	No	No
Output						
Switch-on delay		< 6 ms	< 8 ms	< 14 ms	< 5 ms	< 14 ms
Switch-off delay		< 7 ms	< 7 ms	< 22 ms	< 4 ms	< 12 ms
Ordering data						
Screw connection	Type	TRS 60VUC 2CO AU	TRS 120VUC 2CO AU	TRS 230VUC 2CO AU	TRS 120VAC RC 2CO AU	TRS 230VAC RC 2CO AU
	Order No.	1123770000	1123780000	1123790000	1123800000	1123810000
Tension clamp conn.	Type	TRZ 60VUC 2CO AU	TRZ 120VUC 2CO AU	TRZ 230VUC 2CO AU	TRZ 120VAC RC 2CO AU	TRZ 230VAC RC 2CO AU
	Order No.	1123890000	1123900000	1123910000	1123920000	1123930000
Note		Spare relay Type: RCL425060 Orderno.: 1201260000	Spare relay Type: RCL425110 Orderno.: 8828370000	Spare relay Type: RCL425110 Orderno.: 8828370000	Spare relay Type: RCL425110 Orderno.: 8828370000	Spare relay Type: RCL425110 Orderno.: 8828370000

TERMSERIES - Relay modules

2 CO contacts

Variable-voltage input

- Space saving, just 12.8 mm modular width
- AgNi contact
- Screw and tension clamp connection
- Multi-voltage input: 24 to 230 V UC in one module



Technical data

Output	
Max. switching voltage, AC / Continuous current	250 V / 8 A
Min. switching power	10 V / 10 mA
Contact material	AgNi
Mechanical service life	30 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	Green LED / No
Reverse polarity protection	Yes
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

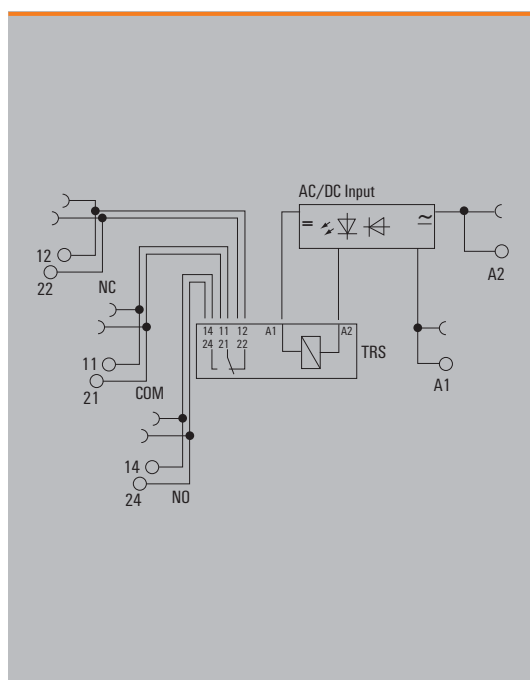
Dimensions		Screw connection	Tension clamp connection
Clamping range (nominal / min. / max.)	mm ²	1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm	88 / 12.8 / 90	88 / 12.8 / 90
Note		Approvals: GL from March 2012, eULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.	

Ordering data

Input		24 V - 230 V UC
Rated control voltage		24...230 V UC ±10 %
Rated current AC		6 mA @ 230 V AC
Rated current DC		45 mA @ 24V DC
Power rating		530 mW @ 24 V DC, 930 mVA @ 230 V AC
AC Response/dropout Volt		16.6 V / 5 V
DC Response/dropout Volt		16.6 V / 5 V
AC pickup/dropout current		
DC pickup/dropout current		
Output		
Switch-on delay		< 22 ms
Switch-off delay		< 100 ms
Ordering data		
Screw connection	Type	TRS 24-230VUC 2CO
	Order No.	1123580000
Tension clamp conn.	Type	TRZ 24-230VUC 2CO
	Order No.	1123700000
Note		Spare relay Type: RCL424024 Orderno.: 4058570000

2 CO contact with hard gold-plated contacts**Variable-voltage input**

- Space saving, just 12.8 mm modular width
- AgNi contact with gold plating
- Screw and tension clamp connection
- Multi-voltage input: 24 to 230 V UC in one module

**Technical data**

Output	
Max. switching voltage, AC / Continuous current	250 V / 8 A
Min. switching power	1 V / 1 mA
Contact material	AgNi 5µm Au
Mechanical service life	30 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	Green LED / No
Reverse polarity protection	Yes
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp connection
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 12.8 / 90	88 / 12.8 / 90
Note Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

Ordering data

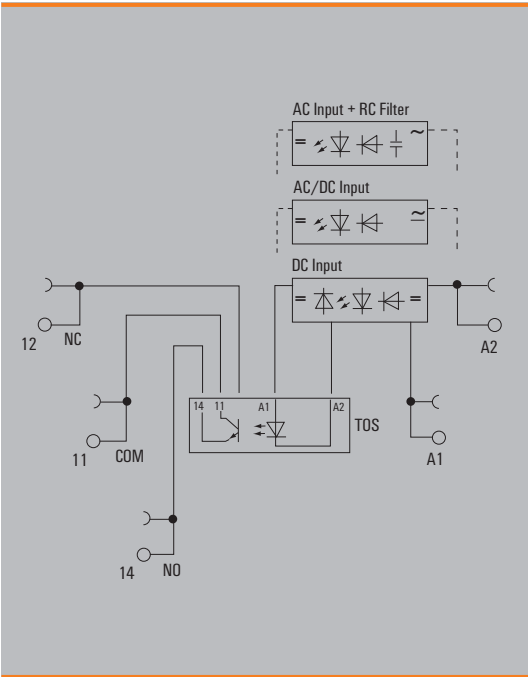
Input	
Rated control voltage	24...230 V UC ±10 %
Rated current AC	6 mA @ 230 V AC
Rated current DC	45 mA @ 24V DC
Power rating	530 mW @ 24 V DC, 930 mVA @ 230 V AC
AC Response/dropout Volt	16.6 V / 5 V
DC Response/dropout Volt	16.6 V / 5 V
AC pickup/dropout current	
DC pickup/dropout current	
Output	
Switch-on delay	< 22 ms
Switch-off delay	< 100 ms
Ordering data	
Screw connection Type	TRS 24-230VUC 2CO AU
Order No.	1123820000
Tension clamp conn. Type	TRZ 24-230VUC 2CO AU
Order No.	1123940000
Note	
Spare relay Type: RCL425024 Orderno.: 4058580000	

TERMSERIES - Solid-state relays

Solid-state relays, 3 - 48 V DC / 100 mA

Output versions

- Space saving, just 6.4 mm modular width
- 5 cross-connection levels
- Screw and tension clamp connection



Technical data

Load side	
Solid-state type	Bipolar transistor
Nominal switching voltage / current	3 V...48 V DC / 100 mA
Voltage drop at max. load	≤ 1 V
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
Continuous current	100 mA
General data	
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _g = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp conn.
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 6.4 / 90	88 / 6.4 / 90
Note Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

Solid-state relays, 3 - 48 V DC / 100 mA

Output versions

Ordering data

Control side	5 V DC	12 V DC	24 V DC	24 V UC	48 V UC
Rated control voltage	5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	24 V UC $\pm 10\%$	48 V UC $\pm 10\%$
Nominal control current	7 mA DC ($\pm 20\%$)	9.6 mA DC ($\pm 20\%$)	10 mA DC $\pm 20\%$	10 mA AC $\pm 20\%$, 6 mA DC ($\pm 20\%$)	8 mA AC ($\pm 20\%$), 7 mA DC ($\pm 20\%$)
Power rating	35 mW	112 mW	240 mW	154 mW	290 mVA / 192 mW
Cut-in (switch-on) voltage	≥ 3 V DC	≥ 4 V DC	≥ 15 V DC	≥ 14.4 V AC, ≥ 11.2 V DC	≥ 28 V AC, ≥ 28 V DC
Dropout voltage	≤ 1.7 V DC	≤ 6 V DC	≤ 15 V DC	≤ 15.7 V AC, ≤ 15.7 V DC	≤ 24 V AC, ≤ 24 V DC
Input frequency	10 Hz	10 Hz	300 Hz	DC: 100 Hz / AC: 3 Hz	DC: 100 Hz / AC: 3 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Reverse polarity protection, Integrated free-wheel diode	Reverse polarity protection, Integrated free-wheel diode	Reverse polarity protection, Integrated free-wheel diode	Rectifier	Rectifier
Load side					
Switch-on delay	< 6.5 ms	< 6.5 ms	< 35 μ s	< 55 μ s	< 55 μ s
Switch-off delay	< 10 ms	< 10 ms	< 355 μ s	< 4 ms	< 4 ms

Ordering data						
Screw connection	Type	TOS 5VDC 48VDC0,1A	TOS 12VDC 48VDC0,1A	TOS 24VDC 48VDC0,1A	TOS 24VUC 48VDC0,1A	TOS 48VUC 48VDC0,1A
	Order No.	1126920000	1126930000	1126940000	1126950000	1126960000
Tension clamp conn.	Type	TOZ 5VDC 48VDC0,1A	TOZ 12VDC 48VDC0,1A	TOZ 24VDC 48VDC0,1A	TOZ 24VUC 48VDC0,1A	TOZ 48VUC 48VDC0,1A
	Order No.	1127030000	1127040000	1127050000	1127060000	1127070000
Note		Spare solid-state relay Type: SSS 5 V/24 V 0.1 A DC Orderno.: 4064320000	Spare solid-state relay Type: SSS 5 V/24 V 0.1 A DC Orderno.: 4064320000	Spare solid-state relay Type: SSS 24 V/24 V 0.1 A DC Orderno.: 4061180000	Spare solid-state relay Type: SSS 24 V/24 V 0.1 A DC Orderno.: 4061180000	Spare solid-state relay Type: SSS 24 V/24 V 0.1 A DC Orderno.: 4061180000

Ordering data

Control side	60 V UC	120 V UC	230 V UC	120 V AC RC	230 V AC RC
Rated control voltage	60 V UC $\pm 10\%$	120 V UC $\pm 10\%$	230 V UC $\pm 10\%$	120 V AC $\pm 10\%$	230 V AC $\pm 10\%$
Nominal control current	5 mA AC ($\pm 20\%$), 3 mA DC ($\pm 20\%$)	5 mA AC ($\pm 30\%$), 3 mA DC ($\pm 30\%$)	3.5 mA AC ($\pm 30\%$), 3 mA DC ($\pm 30\%$)	7 mA AC ($\pm 20\%$)	9 mA AC
Power rating	< 300 mW	0.48 VA	0.8 VA / 660 mW	0.84 VA	2.1 VA
Cut-in (switch-on) voltage	≥ 28 V AC, ≥ 28 V DC	≥ 65 V AC, ≥ 63 V DC	≥ 130 V AC, ≥ 107 V DC	≥ 65 V AC	≥ 103 V AC
Dropout voltage	≤ 24 V AC, ≤ 31.2 V DC	≤ 78 V AC, ≤ 89 V DC	≤ 126 V AC, ≤ 153 V DC	≤ 71.5 V AC	≤ 109 V AC
Input frequency	DC: 10 Hz / AC: 3 Hz	3 Hz	3 Hz	3 Hz	3 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Rectifier	Rectifier	Rectifier	RC element	RC element
Load side					
Switch-on delay	< 6.5 ms	< 6.5 ms	< 7 ms	< 6.5 ms	< 7 ms
Switch-off delay	< 10 ms	< 10 ms	< 10 ms	< 10 ms	< 10 ms

Ordering data						
Screw connection	Type	TOS 60VUC 48VDC0,1A	TOS 120VUC 48VDC0,1A	TOS 230VUC 48VDC0,1A	TOS 120VAC RC 48VDC0,1A	TOS 230VAC RC 48VDC0,1A
	Order No.	1126970000	1126980000	1126990000	1127000000	1127010000
Tension clamp conn.	Type	TOZ 60VUC 48VDC0,1A	TOZ 120VUC 48VDC0,1A	TOZ 230VUC 48VDC0,1A	TOZ 120VAC RC 48VDC0,1A	TOZ 230VAC RC 48VDC0,1A
	Order No.	1127080000	1127090000	1127100000	1127110000	1127120000
Note		Spare solid-state relay Type: SSS 60 V/24 V 0.1 A DC Orderno.: 4061230000	Spare solid-state relay Type: SSS 60 V/24 V 0.1 A DC Orderno.: 4061230000	Spare solid-state relay Type: SSS 60 V/24 V 0.1 A DC Orderno.: 4061230000	Spare solid-state relay Type: SSS 60 V/24 V 0.1 A DC Orderno.: 4061230000	Spare solid-state relay Type: SSS 60 V/24 V 0.1 A DC Orderno.: 4061230000

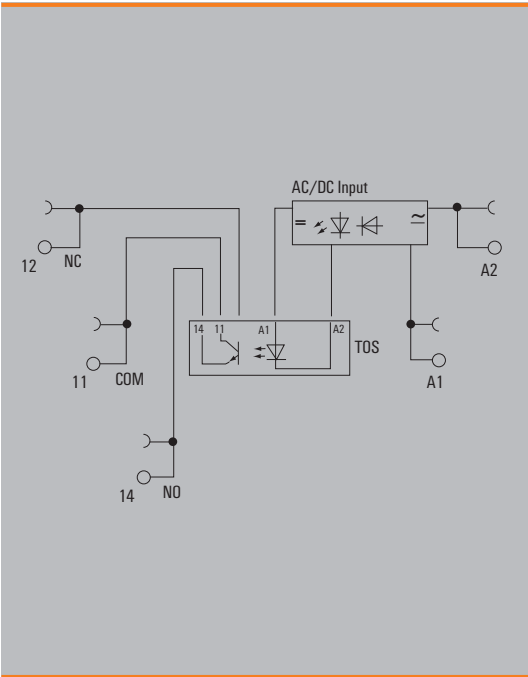
TERMSERIES - Solid-state relays

Solid-state relays, 3 - 48 V DC / 100 mA

Output versions,

Variable-voltage input

- Space saving, just 6.4 mm modular width
- 5 cross-connection levels
- Screw and tension clamp connection
- Multi-voltage input: 24 to 230 V UC in one module



Technical data

Load side	
Solid-state type	Bipolar transistor
Nominal switching voltage / current	3 V...48 V DC / 100 mA
Voltage drop at max. load	≤ 1 V
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
Continuous current	100 mA
General data	
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _g = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp conn.
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 6.4 / 90	88 / 6.4 / 90
Note	Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.	

Ordering data

Control side	
Rated control voltage	24...230 V UC ±10 %
Nominal control current	22 mA @ 24 V DC, 4 mA @ 230 V AC
Power rating	530 mW @ 24 V DC, 930 mVA @ 230 V AC
Cut-in (switch-on) voltage	≥ 9.6 V AC, ≥ 9.6 V DC
Dropout voltage	≤ 7.5 V AC, ≤ 6 V DC
Input frequency	3 Hz
Status indicator	Green LED
Protective circuit	Rectifier

Load side	
Switch-on delay	< 20 ms
Switch-off delay	< 100 ms

Ordering data	
Screw connection	Type TOS 24-230VUC 48VDC0,1A
Order No.	1127020000
Tension clamp conn.	Type TOZ 24-230VUC 48VDC0,1A
Order No.	1127130000

Note	Spare solid-state relay Type: SSS 24 V/24 V 0.1A DC Orderno.: 4061180000
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24 V - 230 V UC

Rated control voltage	24...230 V UC ±10 %
Nominal control current	22 mA @ 24 V DC, 4 mA @ 230 V AC
Power rating	530 mW @ 24 V DC, 930 mVA @ 230 V AC
Cut-in (switch-on) voltage	≥ 9.6 V AC, ≥ 9.6 V DC
Dropout voltage	≤ 7.5 V AC, ≤ 6 V DC
Input frequency	3 Hz
Status indicator	Green LED
Protective circuit	Rectifier

Switch-on delay	< 20 ms
Switch-off delay	< 100 ms

Screw connection	Type TOS 24-230VUC 48VDC0,1A
Order No.	1127020000
Tension clamp conn.	Type TOZ 24-230VUC 48VDC0,1A
Order No.	1127130000

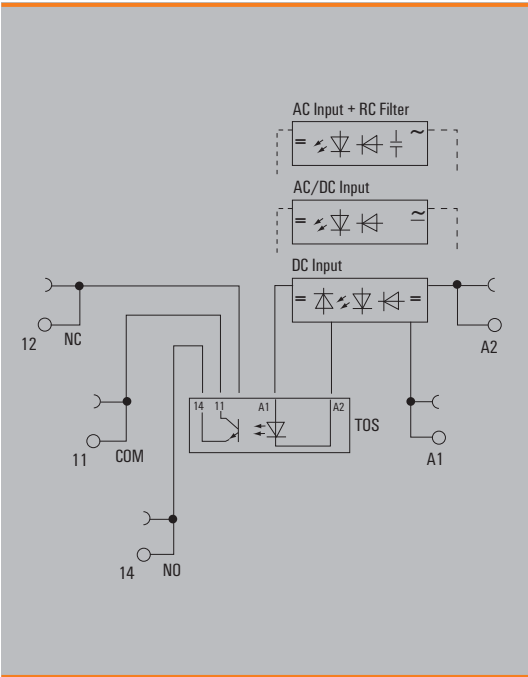
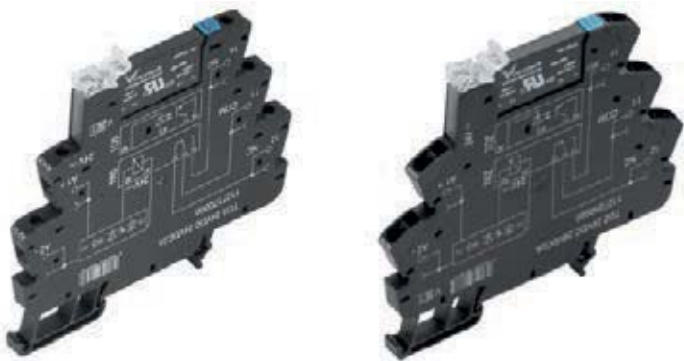
Note	Spare solid-state relay Type: SSS 24 V/24 V 0.1A DC Orderno.: 4061180000
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TERMSERIES - Solid-state relays

Solid-state relays, 3 - 33 V DC / 2 A

Output versions

- Space saving, just 6.4 mm modular width
- 5 cross-connection levels
- Screw and tension clamp connection



Technical data

Load side	
Solid-state type	POWER MOS-FET
Nominal switching voltage / current	3 V...33 V DC / 2 A
Voltage drop at max. load	≤ 120 mV
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
Continuous current	2 A
General data	
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _u = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp conn.
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 6.4 / 90	88 / 6.4 / 90
Note		Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.

Solid-state relays, 3 - 33 V DC / 2 A

Output versions

Ordering data

Control side	5 V DC	12 V DC	24 V DC	24 V UC	48 V UC
Rated control voltage	5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	24 V UC $\pm 10\%$	48 V UC $\pm 10\%$
Nominal control current	10 mA DC $\pm 20\%$	9.6 mA DC ($\pm 20\%$)	10 mA DC $\pm 20\%$	10 mA AC $\pm 20\%$, 6 mA DC ($\pm 20\%$)	8 mA AC ($\pm 20\%$), 7 mA DC ($\pm 20\%$)
Power rating	50 mW	112 mW	240 mW	154 mW	290 mVA / 192 mW
Cut-in (switch-on) voltage	≥ 3 V DC	≥ 4 V DC	≥ 15 V DC	≥ 14.4 V AC, ≥ 11.2 V DC	≥ 28 V AC, ≥ 28 V DC
Dropout voltage	≤ 1.7 V DC	≤ 6 V DC	≤ 15 V DC	≤ 15.7 V AC, ≤ 15.7 V DC	≤ 24 V AC, ≤ 24 V DC
Input frequency	300 Hz	300 Hz	300 Hz	DC: 10 Hz / AC: 3 Hz	DC: 10 Hz / AC: 3 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Reverse polarity protection, Integrated free-wheel diode	Reverse polarity protection, Integrated free-wheel diode	Reverse polarity protection, Integrated free-wheel diode	Rectifier	Rectifier
Load side					
Switch-on delay	$< 55 \mu\text{s}$	$< 55 \mu\text{s}$	$< 55 \mu\text{s}$	< 6.5 ms	< 6.5 ms
Switch-off delay	< 1 ms	< 1.2 ms	< 1.2 ms	< 10 ms	< 10 ms

Ordering data					
Screw connection	TOS 5VDC 24VDC2A	TOS 12VDC 24VDC2A	TOS 24VDC 24VDC2A	TOS 24VUC 24VDC2A	TOS 48VUC 24VDC2A
Order No.	1127140000	1127150000	1127170000	1127180000	1127190000
Tension clamp conn.	TOZ 5VDC 24VDC2A	TOZ 12VDC 24VDC2A	TOZ 24VDC 24VDC2A	TOZ 24VUC 24VDC2A	TOZ 48VUC 24VDC2A
Order No.	1127270000	1127280000	1127290000	1127300000	1127310000
Note	Spare solid-state relay Type: SSS 5 V/24 V 2 A DC Order no.: 4064310000	Spare solid-state relay Type: SSS 5 V/24 V 2 A DC Order no.: 4064310000	Spare solid-state relay Type: SSS 24 V/24 V 2 A DC Order no.: 4061190000	Spare solid-state relay Type: SSS 24 V/24 V 2 A DC Order no.: 4061190000	Spare solid-state relay Type: SSS 24 V/24 V 2 A DC Order no.: 4061190000

Ordering data

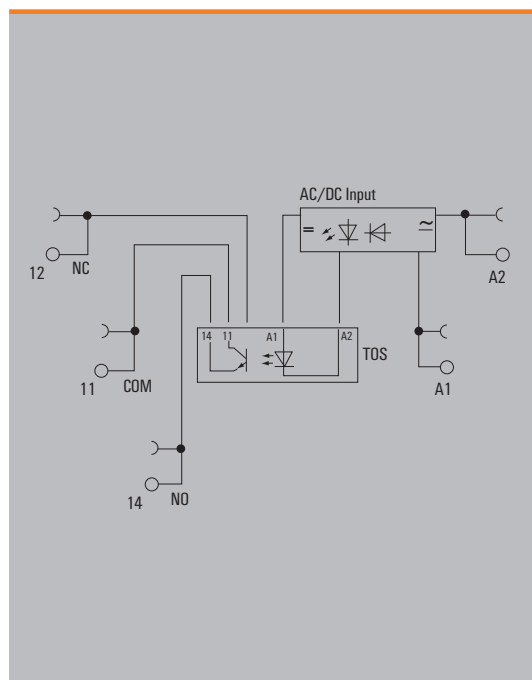
Control side	60 V UC	120 V UC	230 V UC	120 V AC RC	230 V AC RC
Rated control voltage	60 V UC $\pm 10\%$	120 V UC $\pm 10\%$	230 V UC $\pm 10\%$	120 V AC $\pm 10\%$	230 V AC $\pm 10\%$
Nominal control current	5 mA AC ($\pm 20\%$), 3 mA DC ($\pm 20\%$)	5 mA AC ($\pm 30\%$), 3 mA DC ($\pm 30\%$)	3.5 mA AC ($\pm 30\%$), 3 mA DC ($\pm 30\%$)	7 mA AC ($\pm 20\%$)	9 mA AC
Power rating	< 300 mW	0.48 VA	0.8 VA / 660 mW	0.84 VA	2.1 VA
Cut-in (switch-on) voltage	≥ 28 V AC, ≥ 28 V DC	≥ 65 V AC, ≥ 63 V DC	≥ 130 V AC, ≥ 107 V DC	≥ 65 V AC	≥ 103 V AC
Dropout voltage	≤ 24 V AC, ≤ 31.2 V DC	≤ 78 V AC, ≤ 89 V DC	≤ 126 V AC, ≤ 153 V DC	≤ 71.5 V AC	≤ 109 V AC
Input frequency	DC: 10 Hz / AC: 3 Hz	3 Hz	3 Hz	3 Hz	3 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Rectifier	Rectifier	Rectifier	RC element	RC element
Load side					
Switch-on delay	< 6.5 ms	< 6.5 ms	< 7 ms	< 6.5 ms	< 7 ms
Switch-off delay	< 10 ms	< 10 ms	< 10 ms	< 10 ms	< 10 ms

Ordering data					
Screw connection	TOS 60VUC 24VDC2A	TOS 120VUC 24VDC2A	TOS 230VUC 24VDC2A	TOS 120VAC RC 24VDC2A	TOS 230VAC RC 24VDC2A
Order No.	1127200000	1127210000	1127220000	1127230000	1127240000
Tension clamp conn.	TOZ 60VUC 24VDC2A	TOZ 120VUC 24VDC2A	TOZ 230VUC 24VDC2A	TOZ 120VAC RC 24VDC2A	TOZ 230VAC RC 24VDC2A
Order No.	1127320000	1127330000	1127340000	1127350000	1127370000
Note	Spare solid-state relay Type: SSS 60 V/24 V 2 A DC Order no.: 4061200000	Spare solid-state relay Type: SSS 60 V/24 V 2 A DC Order no.: 4061200000	Spare solid-state relay Type: SSS 60 V/24 V 2 A DC Order no.: 4061200000	Spare solid-state relay Type: SSS 60 V/24 V 2 A DC Order no.: 4061200000	Spare solid-state relay Type: SSS 60 V/24 V 2 A DC Order no.: 4061200000

TERMSERIES - Solid-state relays

Solid-state relays, 3 - 33 V DC / 2 A output versions, variable-voltage input

- Space saving, just 6.4 mm modular width
- 5 cross-connection levels
- Screw and tension clamp connection
- Multi-voltage input: 24 to 230 V UC in one module



Technical data

Load side	
Solid-state type	POWER MOS-FET
Nominal switching voltage / current	3 V...33 V DC / 2 A
Voltage drop at max. load	≤ 120 mV
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
Continuous current	2 A
General data	
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _u = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp conn.
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 6.4 / 90	88 / 6.4 / 90
Note Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

Ordering data

Control side	
Rated control voltage	24...230 V UC ±10 %
Nominal control current	22 mA @ 24 V DC, 4 mA @ 230 V AC
Power rating	530 mW @ 24 V DC, 930 mVA @ 230 V AC
Cut-in (switch-on) voltage	≥ 9.6 V AC, ≥ 9.6 V DC
Dropout voltage	≤ 7.5 V AC, ≤ 6 V DC
Input frequency	3 Hz
Status indicator	Green LED
Protective circuit	Rectifier
Load side	
Switch-on delay	< 20 ms
Switch-off delay	< 100 ms

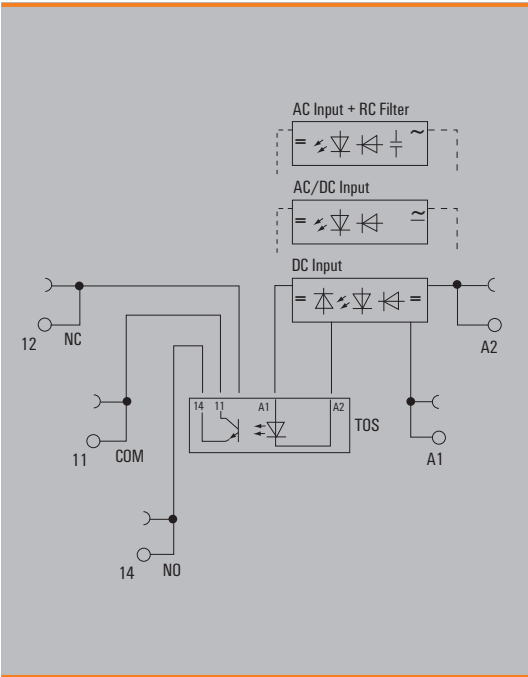
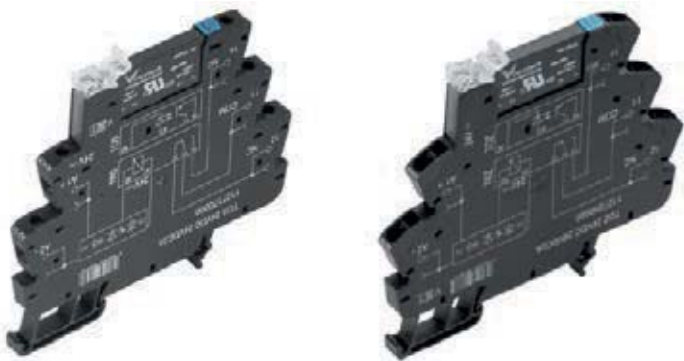
Ordering data	
Screw connection	Type TOS 24-230VUC 24VDC2A
Order No.	1127250000
Tension clamp conn.	Type TOZ 24-230VUC 24VDC2A
Order No.	1127380000
Note	
Spare solid-state relay Type: SSS 24 V/24 V 2 A DC Orderno.: 4061190000	

TERMSERIES - Solid-state relays

Solid-state relays, 24 - 230 V AC / 1 A

Output versions

- Space saving, just 6.4 mm modular width
- 5 cross-connection levels
- Screw and tension clamp connection



Technical data

Load side	
Solid-state type	Triac
Nominal switching voltage / current	24 V AC ... 250 V AC / min. 20 mA / max. 1 A
Voltage drop at max. load	≤ 1.6 V
Short-circuit-proof / Protective circuit, load side	No / No
Continuous current	1 A
General data	
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _u = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp conn.
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 6.4 / 90	88 / 6.4 / 90
Note Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

Solid-state relays, 24 - 230 V AC / 1 A

Output versions

Ordering data

Control side	5 V DC	12 V DC	24 V DC	24 V UC	48 V UC
Rated control voltage	5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	24 V UC $\pm 10\%$	48 V UC $\pm 10\%$
Nominal control current	15 mA DC ($\pm 20\%$)	9.6 mA DC ($\pm 20\%$)	10 mA DC $\pm 20\%$	10 mA AC $\pm 20\%$, 6 mA DC ($\pm 20\%$)	6 mA AC ($\pm 20\%$), 4 mA DC ($\pm 20\%$)
Power rating	75 mW	112 mW	260 mW	154 mW	290 mVA / 192 mW
Cut-in (switch-on) voltage	≥ 3 V DC	≥ 4 V DC	≥ 15 V DC	≥ 14.4 V AC, ≥ 11.2 V DC	≥ 28 V AC, ≥ 28 V DC
Dropout voltage	≤ 1.7 V DC	≤ 6 V DC	≤ 15 V DC	≤ 15.7 V AC, ≤ 15.7 V DC	≤ 24 V AC, ≤ 24 V DC
Input frequency	3 Hz	3 Hz	3 Hz	3 Hz	3 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Reverse polarity protection, Integrated free-wheel diode	Reverse polarity protection, Integrated free-wheel diode	Reverse polarity protection, Integrated free-wheel diode	Rectifier	Rectifier
Load side					
Switch-on delay	< 12 ms	< 12 ms	< 11 ms	< 11 ms	< 11 ms
Switch-off delay	< 12 ms	< 12 ms	< 11 ms	< 11 ms	< 11 ms

Ordering data						
Screw connection	Type	TOS 5VDC 230VAC1A	TOS 12VDC 230VAC1A	TOS 24VDC 230VAC1A	TOS 24VUC 230VAC1A	TOS 48VUC 230VAC1A
	Order No.	1127390000	1127400000	1127410000	1127420000	1127430000
Tension clamp conn.	Type	TOZ 5VDC 230VAC1A	TOZ 12VDC 230VAC1A	TOZ 24VDC 230VAC1A	TOZ 24VUC 230VAC1A	TOZ 48VUC 230VAC1A
	Order No.	1127510000	1127520000	1127530000	1127540000	1127550000
Note		Spare solid-state relay Type: SSS 5 V/230 V 1 A AC Orderno.: 1132260000	Spare solid-state relay Type: SSS 5 V/230 V 1 A AC Orderno.: 1132260000	Spare solid-state relay Type: SSS 24 V/230 V 1 A AC Orderno.: 4061210000	Spare solid-state relay Type: SSS 24 V/230 V 1 A AC Orderno.: 4061210000	Spare solid-state relay Type: SSS 24 V/230 V 1 A AC Orderno.: 4061210000

Ordering data

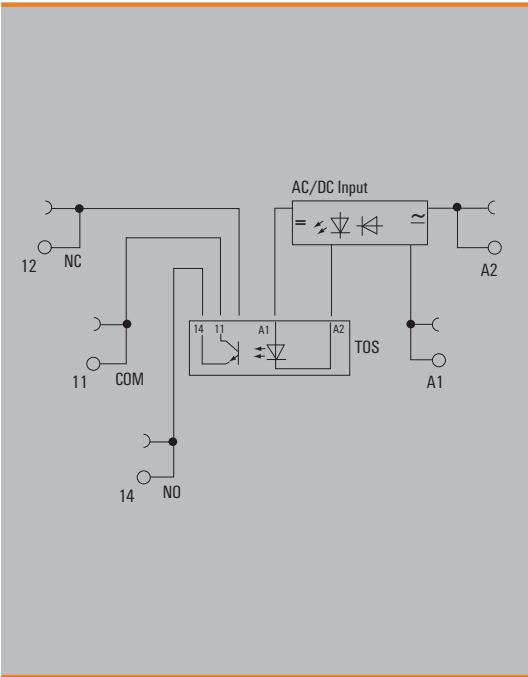
Control side	60 V UC	120 V UC	230 V UC	120 V AC RC	230 V AC RC
Rated control voltage	60 V UC $\pm 10\%$	120 V UC $\pm 10\%$	230 V UC $+5\%$ / -10%	120 V AC $\pm 10\%$	230 V AC $+5\%$ / -10%
Nominal control current	5 mA AC ($\pm 20\%$), 3 mA DC ($\pm 20\%$)	5 mA AC ($\pm 30\%$), 3 mA DC ($\pm 30\%$)	3.5 mA AC ($\pm 30\%$), 3 mA DC ($\pm 30\%$)	7 mA AC ($\pm 20\%$)	9 mA AC
Power rating	< 300 mW	0.48 VA	0.8 VA / 660 mW	0.84 VA	2.1 VA
Cut-in (switch-on) voltage	≥ 28 V AC, ≥ 28 V DC	≥ 65 V AC, ≥ 63 V DC	≥ 130 V AC, ≥ 107 V DC	≥ 65 V AC	≥ 103 V AC
Dropout voltage	≤ 22 V AC, ≤ 28.6 V DC	≤ 78 V AC, ≤ 89 V DC	≤ 126 V AC, ≤ 153 V DC	≤ 71.5 V AC	≤ 109 V AC
Input frequency	3 Hz	3 Hz	3 Hz	3 Hz	3 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Rectifier	Rectifier	Rectifier	RC element	RC element
Load side					
Switch-on delay	< 11 ms	< 11 ms	< 20 ms	< 11 ms	< 20 ms
Switch-off delay	< 11 ms	< 11 ms	< 20 ms	< 11 ms	< 20 ms

Ordering data						
Screw connection	Type	TOS 60VUC 230VAC1A	TOS 120VUC 230VAC1A	TOS 230VUC 230VAC1A	TOS 120VAC RC 230VAC1A	TOS 230VAC RC 230VAC1A
	Order No.	1127440000	1127450000	1127470000	1127480000	1127490000
Tension clamp conn.	Type	TOZ 60VUC 230VAC1A	TOZ 120VUC 230VAC1A	TOZ 230VUC 230VAC1A	TOZ 120VAC RC 230VAC1A	TOZ 230VAC RC 230VAC1A
	Order No.	1127570000	1127580000	1127590000	1127600000	1127610000
Note		Spare solid-state relay Type: SSS 60 V/230 V 1 A AC Orderno.: 4061220000	Spare solid-state relay Type: SSS 60 V/230 V 1 A AC Orderno.: 4061220000	Spare solid-state relay Type: SSS 60 V/230 V 1 A AC Orderno.: 4061220000	Spare solid-state relay Type: SSS 60 V/230 V 1 A AC Orderno.: 4061220000	Spare solid-state relay Type: SSS 60 V/230 V 1 A AC Orderno.: 4061220000

TERMSERIES - Solid-state relays

Solid-state relays, 24 - 230 V AC / 1 A output versions,
variable-voltage input

- Space saving, just 6.4 mm modular width
- 5 cross-connection levels
- Screw and tension clamp connection
- Multi-voltage input: 24 to 230 V UC in one module



Technical data

Load side	
Solid-state type	Triac
Nominal switching voltage / current	24...230 V AC / min. 20 mA / max. 1 A
Voltage drop at max. load	≤ 1 V
Short-circuit-proof / Protective circuit, load side	No / No
Continuous current	1 A
General data	
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _u = 40 °C, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	Tension clamp conn.
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5	1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 6.4 / 90	88 / 6.4 / 90
Note Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.		

Ordering data

Control side	
Rated control voltage	24...230 V UC ±10 %
Nominal control current	22 mA @ 24 V DC, 4 mA @ 230 V AC
Power rating	530 mW @ 24 V DC, 930 mVA @ 230 V AC
Cut-in (switch-on) voltage	≥ 9.6 V AC, ≥ 9.6 V DC
Dropout voltage	≤ 7.5 V AC, ≤ 6 V DC
Input frequency	3 Hz
Status indicator	Green LED
Protective circuit	Rectifier

Load side	
Switch-on delay	< 20 ms
Switch-off delay	< 100 ms

Ordering data	
Screw connection	Type TOS 24-230VUC 230VAC1A
Order No.	1127500000
Tension clamp conn.	Type TOZ 24-230VUC 230VAC1A
Order No.	1127620000

Note	
Spare solid-state relay Type: SSS 24 V/230 V 1 A AC Orderno.: 4061210000	

24 V - 230 V UC

Rated control voltage	24...230 V UC ±10 %
Nominal control current	22 mA @ 24 V DC, 4 mA @ 230 V AC
Power rating	530 mW @ 24 V DC, 930 mVA @ 230 V AC
Cut-in (switch-on) voltage	≥ 9.6 V AC, ≥ 9.6 V DC
Dropout voltage	≤ 7.5 V AC, ≤ 6 V DC
Input frequency	3 Hz
Status indicator	Green LED
Protective circuit	Rectifier

Switch-on delay	< 20 ms
Switch-off delay	< 100 ms

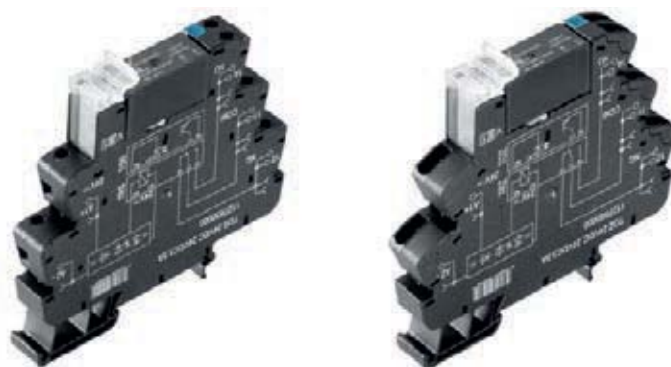
Screw connection	Type TOS 24-230VUC 230VAC1A
Order No.	1127500000
Tension clamp conn.	Type TOZ 24-230VUC 230VAC1A
Order No.	1127620000

Note	Spare solid-state relay Type: SSS 24 V/230 V 1 A AC Orderno.: 4061210000
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Solid-state relays, 0 - 33 V DC / 3.5 A

Output versions

- Space saving, just 12.8 mm modular width
- 5 cross-connection levels
- Screw and tension clamp connection



Technical data

Load side	
Solid-state type	Bipolar transistor
Nominal switching voltage / current	3...33 V DC / 3.5 A
Voltage drop at max. load	≤ 0.3 V
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
Continuous current	3.5 A
General data	
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity T _g = 40 °C, no condensation
Approvals	
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	6 kV (1.2/50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 12.8 / 90
Note Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.	

Ordering data

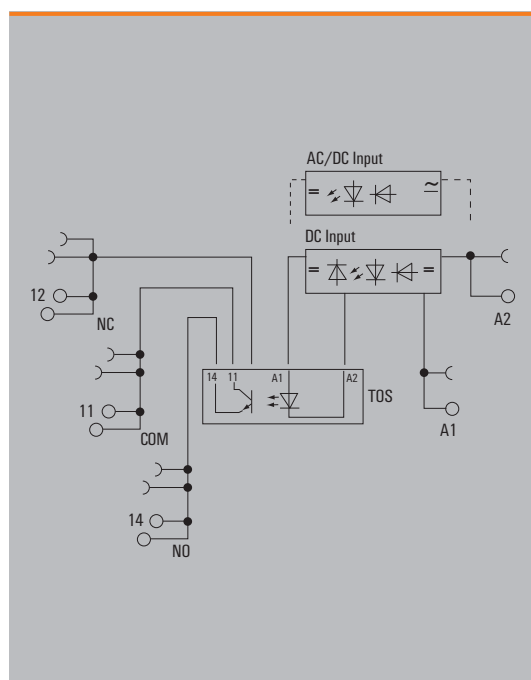
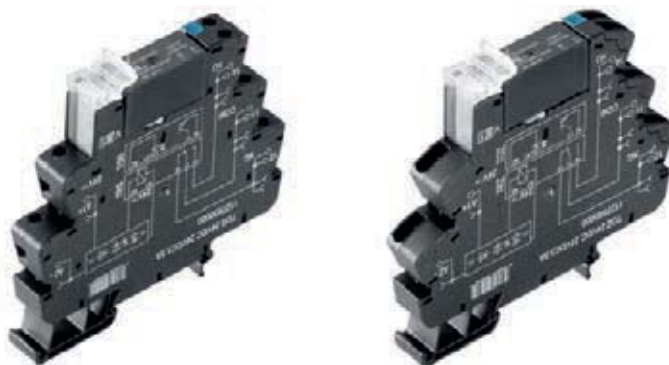
Control side	24 V DC	24 V - 230 V UC
Rated control voltage	24 V DC ±20 %	24...230 V UC ±10 %
Nominal control current	8 mA DC (±20 %)	22 mA @ 24 V DC, 4 mA @ 230 V AC
Power rating	≤ 200 mW	530 mW @ 24 V DC, 930 mVA @ 230 V AC
Cut-in (switch-on) voltage	≥ 11.2 V DC	≥ 9.6 V AC, ≥ 9.6 V DC
Dropout voltage	≤ 13 V DC	≤ 7.5 V AC, ≤ 6 V DC
Input frequency	300 Hz	3 Hz
Status indicator	Green LED	Green LED
Protective circuit	Reverse polarity protection, Integrated free-wheel diode	Rectifier
Load side		
Switch-on delay	< 50 µs	< 20 ms
Switch-off delay	< 250 µs	< 100 ms

Ordering data		
Screw connection	Type	TOS 24VDC 24VDC3,5A
	Order No.	1127630000
Tension clamp conn.	Type	TOZ 24VDC 24VDC3,5A
	Order No.	1127650000
Note		Spare solid-state relay Type: SSR 10-32 V DC/0-35 V DC 5 A Orderno.: 1132310000

Solid-state relays, 12 - 275 V AC / 1 A

Output versions

- Space saving, just 12.8 mm modular width
- 5 cross-connection levels
- Screw and tension clamp connection



Technical data

Load side	
Solid-state type	Triac
Nominal switching voltage / current	12...275 V AC / 1 A
Voltage drop at max. load	≤ 1.1 V
Short-circuit-proof / Protective circuit, load side	No / No
Continuous current	1 A
General data	
Ambient temperature (operational)	-40 °C...+60 °C
Storage temperature	-40 °C...+85 °C
Humidity	5...95 % rel. humidity $T_g = 40 °C$, no condensation
Approvals	
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	6 kV (1.2/50 μs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.14 / 1.5
Length x width x height	mm 88 / 12.8 / 90
Note	Approvals: GL from March 2012, cULus pending. Accessories and dimensional drawings: refer to the TERMSERIES Accessories page.

Ordering data

Control side		24 V DC	24 V - 230 V UC
Rated control voltage		24 V DC ±20 %	24...230 V UC ±10 %
Nominal control current		8 mA DC (±20 %)	22 mA @ 24 V DC, 4 mA @ 230 V AC
Power rating		≤ 200 mW	530 mW @ 24 V DC, 930 mVA @ 230 V AC
Cut-in (switch-on) voltage		≥ 11.2 V DC	≥ 9.6 V AC, ≥ 9.6 V DC
Dropout voltage		≤ 13 V DC	≤ 7.5 V AC, ≤ 6 V DC
Input frequency		300 Hz	3 Hz
Status indicator		Green LED	Green LED
Protective circuit		Reverse polarity protection, Integrated free-wheel diode	Rectifier
Load side			
Switch-on delay		< 50 μs	< 20 ms
Switch-off delay		< 250 μs	< 100 ms

Ordering data			
Screw connection	Type	TOS 24VDC 230VAC1A	TOS 24-230VUC 230VAC1A
	Order No.	1127680000	1127690000
Tension clamp conn.	Type	TOZ 24VDC 230VAC1A	TOZ 24-230VUC 230VAC1A
	Order No.	1127700000	1127710000
Note		Spare solid-state relay Type: SSR 10 - 32 VDC/ 12 - 275 VAC 3A Orderno.: 1132290000	Spare solid-state relay Type: SSR 10 - 32 VDC/ 12 - 275 VAC 3A Orderno.: 1132290000

Empty socket 6.4 mm



Type / 1 CO, Screw connection	Input voltage	Qty.	Order No.
TRS 5VDC 1CO empty	5 V DC ¹⁾	10	1123220000
TRS 12VDC 1CO empty	12 V DC ²⁾	10	1123230000
TRS 24VDC 1CO empty	24 V DC ³⁾	10	1123240000
TRS 24VUC 1CO empty	24 V AC / DC ³⁾	10	1123250000
TRS 48VUC 1CO empty	48 V AC / DC ³⁾	10	1123270000
TRS 60VUC 1CO empty	60 V AC / DC ⁴⁾	10	1123280000
TRS 120VUC 1CO empty	120 V AC / DC ⁴⁾	10	1123290000
TRS 230VUC 1CO empty	230 V AC / DC ⁴⁾	10	1123300000
TRS 120VAC RC 1CO empty	120 V AC ⁴⁾	10	1123310000
TRS 230VAC RC 1CO empty	230 V AC ⁴⁾	10	1123320000
TRS 24-230VUC 1CO empty	24...230 V AC / DC ³⁾	10	1123330000
Type / 1 CO, Tension clamp connection			
TRZ 5VDC 1CO empty	5 V DC ¹⁾	10	1123340000
TRZ 12VDC 1CO empty	12 V DC ²⁾	10	1123350000
TRZ 24VDC 1CO empty	24 V DC ³⁾	10	1123370000
TRZ 24VUC 1CO empty	24 V AC / DC ³⁾	10	1123380000
TRZ 48VUC 1CO empty	48 V AC / DC ³⁾	10	1123390000
TRZ 60VUC 1CO empty	60 V AC / DC ⁴⁾	10	1123400000
TRZ 120VUC 1CO empty	120 V AC / DC ⁴⁾	10	1123410000
TRZ 230VUC 1CO empty	230 V AC / DC ⁴⁾	10	1123420000
TRZ 120VAC RC 1CO empty	120 V AC ⁴⁾	10	1123430000
TRZ 230VAC RC 1CO empty	230 V AC ⁴⁾	10	1123440000
TRZ 24-230VUC 1CO empty	24...230 V AC / DC ³⁾	10	1123450000
Useable with ¹⁾ RSS...005; SSS 5V... ²⁾ RSS...012 ³⁾ RSS...024; SSS 24V... ⁴⁾ RSS...060; SSS 60V...			

Empty socket 12.8 mm



Type / 1 CO, Screw connection	Input voltage	Qty.	Order No.
TOS 24VDC empty	24 V DC ¹⁾	10	1127720000
TOS 24-230VUC empty	24...230 V AC / DC ¹⁾	10	1127730000
Type / 2 CO, Screw connection			
TRS 5VDC 2CO empty	5 V DC ²⁾	10	1123950000
TRS 12VDC 2CO empty	12 V DC ³⁾	10	1123970000
TRS 24VDC 2CO empty	24 V DC ⁴⁾	10	1123980000
TRS 24VUC 2CO empty	24 V AC / DC ⁴⁾	10	1123990000
TRS 48VUC 2CO empty	48 V AC / DC ⁵⁾	10	1124000000
TRS 60VUC 2CO empty	60 V AC / DC ⁶⁾	10	1124010000
TRS 120VUC 2CO empty	120 V AC / DC ⁷⁾	10	1124020000
TRS 230VUC 2CO empty	230 V AC / DC ⁷⁾	10	1124030000
TRS 120VAC RC 2CO empty	120 V AC ⁷⁾	10	1124040000
TRS 230VAC RC 2CO empty	230 V AC ⁷⁾	10	1124050000
TRS 24-230VUC 2CO empty	24...230 V AC / DC ⁴⁾	10	1124070000
Type / 1 CO, Tension clamp connection			
TOZ 24VDC empty	24 V DC ¹⁾	10	1127740000
TOZ 24-230VUC empty	24...230 V AC / DC ¹⁾	10	1127750000
Type / 2 CO, Tension clamp connection			
TRZ 5VDC 2CO empty	5 V DC ²⁾	10	1124080000
TRZ 12VDC 2CO empty	12 V DC ³⁾	10	1124090000
TRZ 24VDC 2CO empty	24 V DC ⁴⁾	10	1124100000
TRZ 24VUC 2CO empty	24 V AC / DC ⁴⁾	10	1124110000
TRZ 48VUC 2CO empty	48 V AC / DC ⁵⁾	10	1124120000
TRZ 60VUC 2CO empty	60 V AC / DC ⁶⁾	10	1124130000
TRZ 120VUC 2CO empty	120 V AC / DC ⁷⁾	10	1124140000
TRZ 230VUC 2CO empty	230 V AC / DC ⁷⁾	10	1124150000
TRZ 120VAC RC 2CO empty	120 V AC ⁷⁾	10	1124170000
TRZ 230VAC RC 2CO empty	230 V AC ⁷⁾	10	1124180000
TRZ 24-230VUC 2CO empty	24...230 V AC / DC ⁴⁾	10	1124190000
Useable with ¹⁾ RCL31.024; SSR 10...32VDC/... ²⁾ RCL42.005 ³⁾ RCL42.012 ⁴⁾ RCL42.024 ⁵⁾ RCL42.048 ⁶⁾ RCL42.060 ⁷⁾ RCL42.110			

RSS relay module



Technical data
Type of contact / Number of contacts
Contact material
Max. switching voltage / current
Min. switching voltage / current
Min. mechanical lifetime
Min. electrical lifetime
Max. switch-on / switch-off delay
Ambient temperature (operational)
Making / Dropout voltage coil

Note

RSS113...	RSS112...
1 CO contact	1 CO contact
AgNi	AgNi 5uAu ³⁾
250 V / 6 A ¹⁾	250 V / 6 A ¹⁾
5 V / 100 mA ²⁾	1 V / 1 mA
5 x 10 ⁶ ¹⁾	5 x 10 ⁶ ¹⁾
NO: 5 x 10 ⁴ ; NC: 3 x 10 ⁴ ¹⁾	NO: 5 x 10 ⁴ ; NC: 3 x 10 ⁴ ¹⁾
8 / 4 ms	8 / 4 ms
-40...+85 °C	-40...+85 °C
typ. 70 % / 5 % U _{NOM}	typ. 70 % / 5 % U _{NOM}

¹⁾ At resistive load²⁾ 10 V / 10 mA; 24 V / 1 mA³⁾ Au-plate operate up to 0.25 W

Coil data
RSS...005
RSS...012
RSS...024
RSS...060

Nominal voltage / current
5 V DC / 34 mA
12 V DC / 14 mA
24 V DC / 7 mA
60 V DC / 3 mA

Order No.	Order No.
4061580000	1174540000
4061610000	1220670000
4060120000	4061590000
4061630000	4061600000

RCL relay module



Technical data
Type of contact / Number of contacts
Contact material
Max. switching voltage / current
Min. switching voltage / current
Min. mechanical lifetime
Min. electrical lifetime
Max. switch-on / switch-off delay
Ambient temperature (operational)
Making / Dropout voltage coil

Note

RCL424...	RCL425...
2 CO contacts	2 CO contacts
AgNi	AgNi 5uAu ³⁾
250 V / 8 A ¹⁾	250 V / 8 A ¹⁾
5 V / 100 mA ²⁾	1 V / 1 mA
30 x 10 ⁶ ¹⁾	30 x 10 ⁶ ¹⁾
10 x 10 ³ ¹⁾	10 x 10 ³ ¹⁾
8 / 6 ms	8 / 6 ms
-40...+85 °C	-40...+85 °C
typ. 70 % / 10 % U _{NOM}	typ. 70 % / 10 % U _{NOM}

¹⁾ At resistive load²⁾ 10 V / 10 mA; 24 V / 1 mA³⁾ Au-plate operate up to 0.25 W

Coil data
RCL...005
RCL...012
RCL...024
RCL...048
RCL...060
RCL...110

Nominal voltage / current	Nominal current
5 V DC / 80 mA	80 mA
12 V DC / 33 mA	33 mA
24 V DC / 16 mA	16 mA
48 V DC / 8 mA	8 mA
60 V DC / 6 mA	6 mA
110 V DC / 3 mA	3 mA

Order No.	Order No.
8693790000	1174490000
4058560000	4074580000
4058570000	4058580000
4058750000	1201230000
4058760000	1201260000
4058590000	8828370000

Small solid-state relay



Similar to illustration

Technical data
Output
Switching voltage
Continuous current
Peak reverse voltage
Forward voltage
Test voltage input / output
Ambient temperature (operational)
Storage temperature

Note

SSS...24 V 0.1 A DC

Bipolar transistor

0...48 V DC

100 mA

54 V

< 1 V DC

2.5 kV

-20...+60 °C

-40...+70 °C

SSS...24 V 2 A DC

MOS-FET

0...24 V DC

2 A

33 V

< 120 mV

2.5 kV

-20...+60 °C

-40...+70 °C

SSS...230 V 1 A AC

Triac

24...240 V AC

1 A

600 V

< 1 V

3.75 kV

-20...+60 °C

-40...+70 °C

Input
SSS 5 V...
SSS 24 V...
SSS 60 V...
SSS 5 V...
SSS 24 V...
SSS 60 V...
SSS 5 V...
SSS 24 V...
SSS 60 V...

Nominal voltage / current
2.5...6 V DC / 4 mA
16...30 V DC / 7 mA
52...72 V DC / 3 mA
2.5...6 V DC / 9 mA
18...30 V DC / 7 mA
40...72 V DC / 3 mA
2.5...6 V DC / 15 mA
18...30 V DC / 7 mA
40...72 V DC / 3 mA

Order No.

4064320000

4061180000

4061230000

-

-

-

-

-

-

-

Order No.

-

-

-

4064310000

4061190000

4061200000

-

-

-

-

Order No.

-

-

-

-

-

-

1132260000

4061210000

4061220000

Solid-state relay



Similar to illustration

Technical data
Output
Switching voltage
Continuous current
Peak reverse voltage
Forward voltage
Test voltage input / output
Ambient temperature (operational)
Storage temperature

Note

SSR.../0-35 V DC 5A

MOS-FET

0...33 V DC

1 mA...5 A

35 V

< 300 mV

2.5 kV

-20...+80 °C

-40...+100 °C

SSR.../12-275 V AC 3A

TRIAC, zero cross switch

12...275 V AC

50 mA...3 A

600 V

< 1.1 V

Coil data
SSR10...32 V DC/...

Nominal voltage / current
10...32 V/3...13 mA

Order No.

1132310000

Order No.

1132290000

Plug-in cross-connection

	Type	No. of poles / Pitch	Qty.	Order No.
	ZQV 1.5N/R6.4/2 GE	2 / 6.4	10	1193670000
	ZQV 1.5N/R6.4/10 GE	10 / 6.4	10	1193680000
	ZQV 1.5N/R6.4/19 GE	19 / 6.4	10	1193690000
	ZQV 1.5N/R12.8/10 GE	10 / 12.8	10	1193700000

Supply terminal

	Type	Connection technology	Qty.	Order No.
	TXS SUPPLY	Screw connection	10	1240780000
	TXZ SUPPLY	Tension clamp connection	10	1240790000

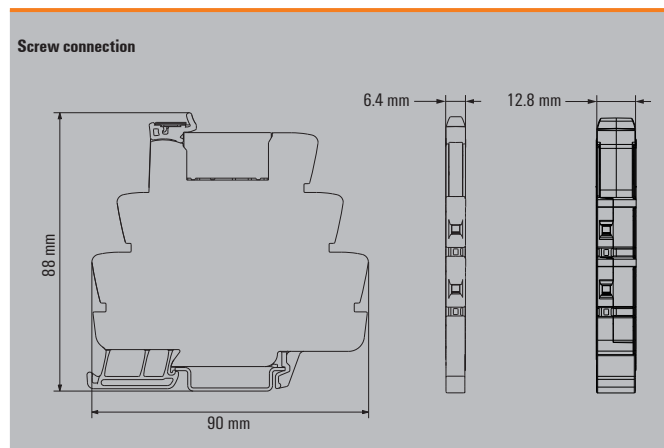
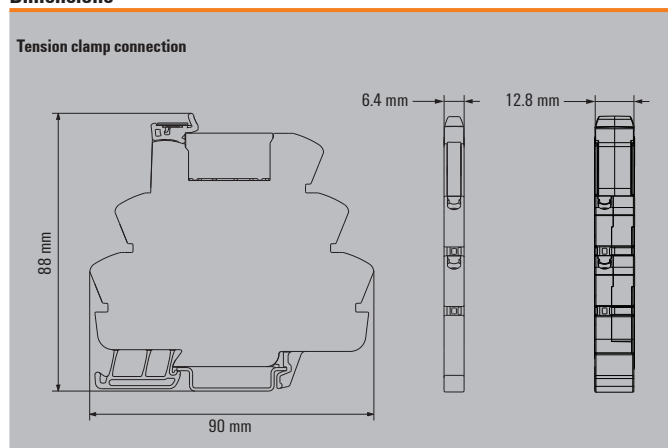
Other accessories

	Type / Isolation plate		Qty.	Order No.
	TW TXS/TXZ R3.2	Isolation plate 3.2 mm pitch	10	1240800000
	Markers			
	WS 10/6 MC Middle	10 x 6 mm	600	1818400000
	Screwdriver			
	SDK PH0	only screw connection	1	9008470000
	SD 0.6 x 3.5 x 100		1	9008330000
	SD TO 0.6 X 3.0	only tension clamp connection	1	1323880000
	End bracket			
	WEW35/2 SW		100	1061210000

Technical data

Conductor		Screw connection	Tension clamp connection
1 conductor			
Solid H07V-U	mm ²	0.14...2.5	0.14...1.5
Stranded H07V-K	mm ²	0.14...1.5	0.14...1.5
... with wire end ferrule	mm ²	0.25...1.5	0.14...1.5
... with wire end ferrule with plastic collar	mm ²	0.25...1.5	0.14...1.5
2 conductor with same size			
Solid H07V-U	mm ²	0.5...1.0	0.5...1.0
Stranded H07V-K	mm ²	0.5...1.0	0.5...1.0
... with twin wire end ferrule H...D ZH	mm ²	0.5...1.5	0.5...1.0
Clamping range AWG.../1	AWG	26...14	26...16
Clamping range AWG.../7	AWG	26...16	26...16
Clamping range AWG.../19	AWG	26...16	26...16
Plug gauge to IEC 60947-1	Size	A1 / B1	A1 / B1
General data			
Nominal torque	Nm	0.4	
Stripping length	mm	8	8
Continuous current ZQV 1.5N/R6.4	A	17.5; UL: 10	17.5; UL: 10
No. Contact durability relay / ZQV		10	10
Note			

Dimensions



No-wear isolation of potentials in terminal block design



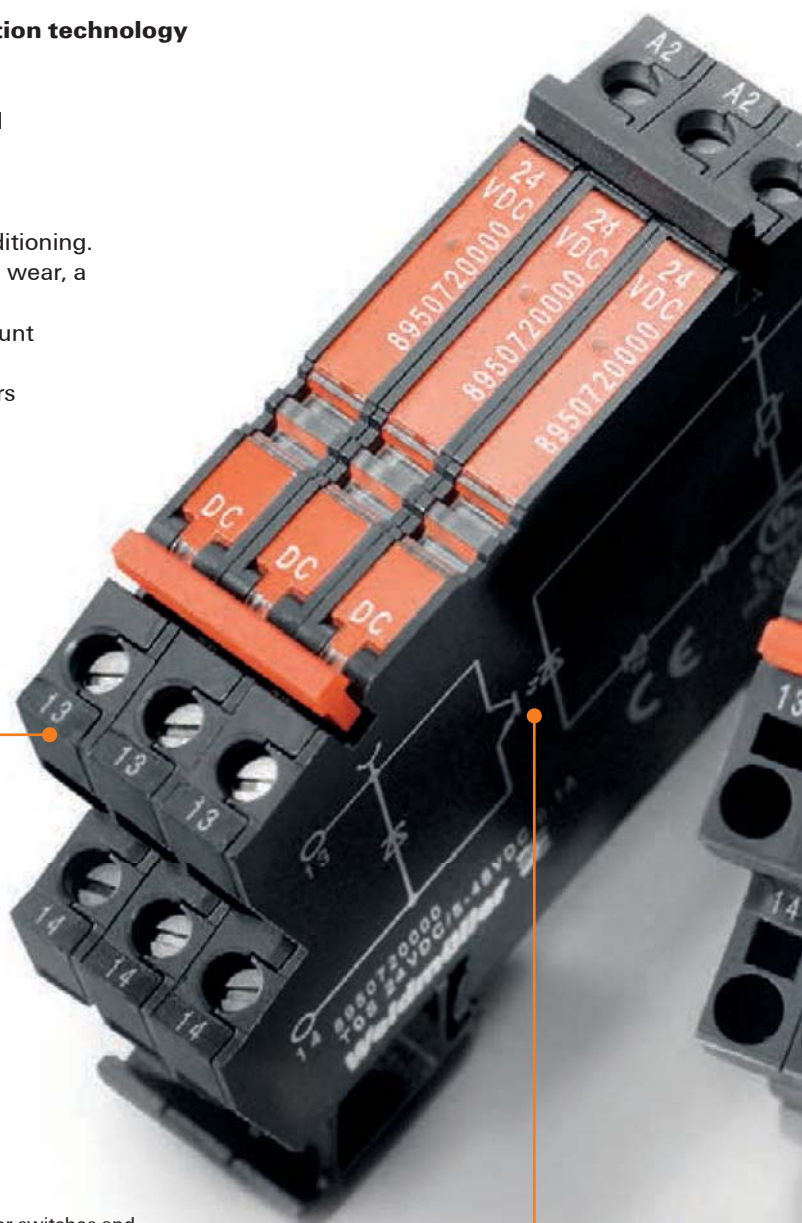
Space saving solid-state relay with “PUSH IN” connection technology

The TERMOPTO opto modules are characterised by a particularly compact design, pluggable cross-connections and an optimal price-performance ratio.

TERMOPTO offers a compact, electronic alternative to the electromechanical relay for electrical isolation and signal conditioning. Instead of an electromechanical solution that is susceptible to wear, a maintenance-free and compact terminal block with integrated electrical isolation is used. This saves space, reduces the amount of servicing and increases system availability. In addition, the overall accessory needs are reduced, because cross-connectors and markers from the terminal portfolio can be used.

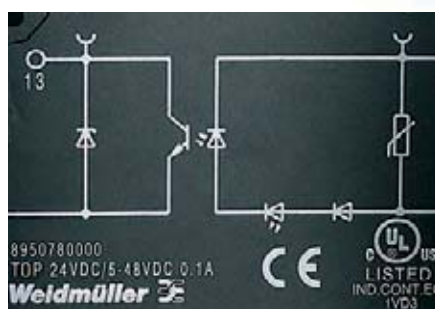
Compact

Compact design reduces space requirements in the switching cabinet by > 80 % compared to conventional relay solutions.



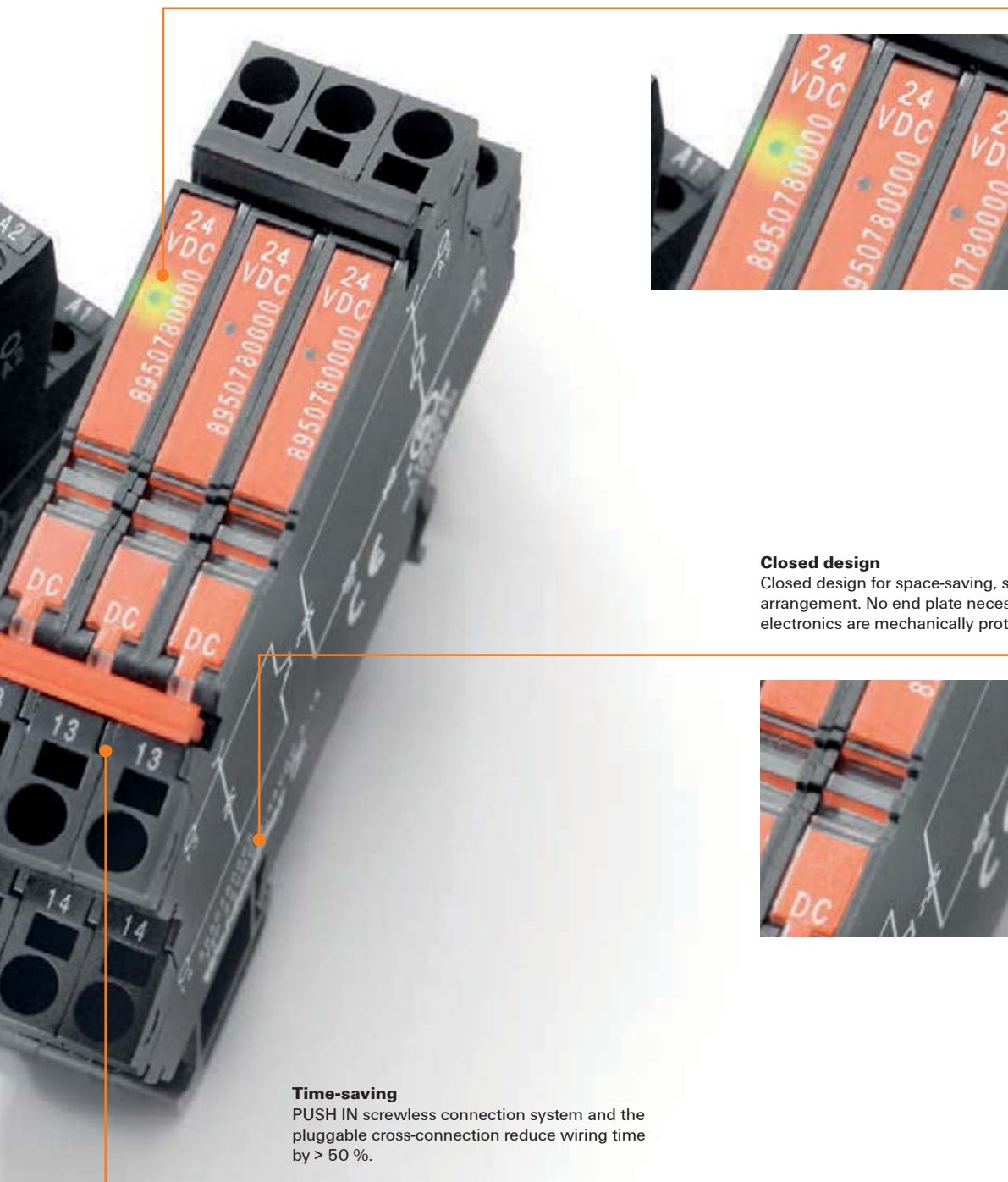
Long lifetime

Wear-free semiconductor switches and extensive protective circuits ensure long service life and reliable switching cycles.



Status indicator

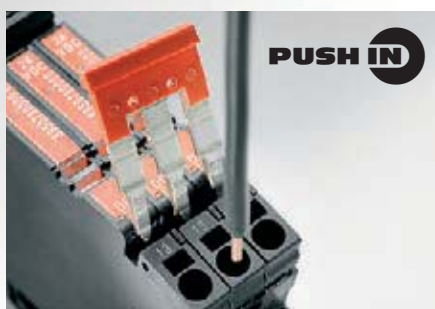
LED status indicator provides information on the switching state.

**Closed design**

Closed design for space-saving, side-by-side arrangement. No end plate necessary; the electronics are mechanically protected.

**Time-saving**

PUSH IN screwless connection system and the pluggable cross-connection reduce wiring time by > 50 %.



TERMOPTO - Solid-state relays

Solid-state relays 5 - 48 V DC / 100 mA

Output versions

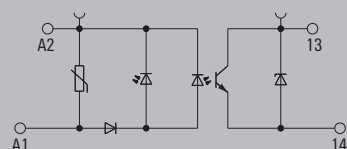
- Space-saving 6.1 mm width
- Plug-in cross-connections
- Screw and PUSH IN wire connection
- Enclosed design



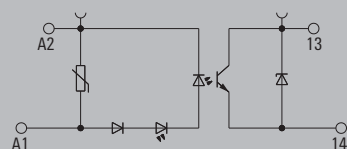
Technical data

Load side		
Solid-state type	Transistor	
Nominal switching voltage / current	5...48 V DC / 100 mA	
Voltage drop at max. load	< 1 V	
Leakage current	< 10 µA	
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode	
Continuous current	100 mA	
Load category	DC1	
General data		
Ambient temperature (operational)	-20 °C...+60 °C	
Storage temperature	-40 °C...+80 °C	
Flammability class UL94	V-0	
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation	
Approvals	CE; cULus; ROHS	
Standards	DIN EN 50178, IEC 62314, UL508	
Insulation coordination (EN 50 178)		
Rated voltage	300 V	
Rated impulse withstand voltage	4 kV (1.2 / 50 µs)	
Clearance and creepage distances for control side - load side	> 3 mm	
Surge voltage category	III	
Pollution severity	2	
Dimensions	Screw connection	PUSH IN connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 4	1.5 / 0.5 / 2.5
Length x width x height	mm 55 / 6.1 / 74.5	55 / 6.1 / 79.5
Note	Accessories and dimensional drawings: refer to the TERMOPTO Accessories page.	

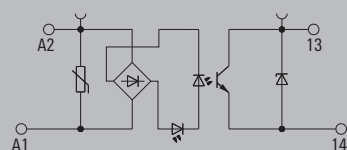
5 V DC



12...220 DC



24...230 V AC



Applications

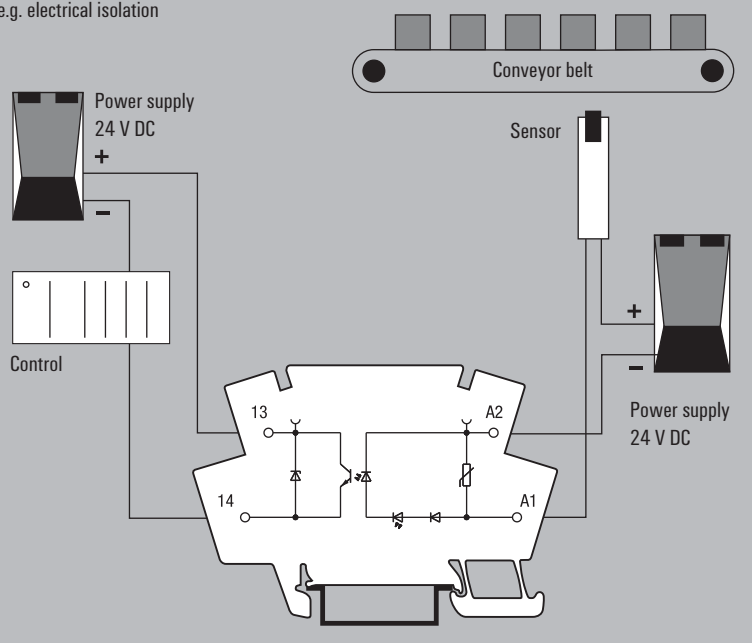
The **TERMOPTO** opto module is used in industrial applications in which electrical isolation and signal conditioning without switching amplification is sufficient.

The compact design in terminal-block format saves space on the rail and offers the option of a pluggable cross connection.

The choice between 10 input voltages and 3 output voltages as well as between screw or PUSH IN connection technology gives 60 variations for different applications.

The integrated protective circuit ensures sufficient protection in applications with resistive as well as slightly inductive and capacitive loads. For purely inductive, capacitive or comparable loads with high switch-on and switch-off peaks, such as solenoid valves or filament lamps, ensure that the module is dimensioned appropriately or an additional safeguard is used.

e.g. electrical isolation



Solid-state relays 5 - 48 V DC / 100 mA

Output versions

Ordering data

	5 V DC	12 V DC	24 V DC	48...60 V DC	110 V DC
Control side					
Rated control voltage	5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	48...60 V DC $\pm 20\%$	110 V DC $\pm 20\%$
Nominal control current	7.7 mA DC	7.8 mA DC	7 mA DC	4.3 mA DC	2.6 mA DC
Power rating	≤ 170 mW	< 95 mW	≤ 170 mW	< 200 mW	< 280 mW
Cut-in (switch-on) voltage	≥ 4 V DC	≥ 9.6 V DC	≥ 19.2 V DC	≥ 38.4 V AC	≥ 88 V DC
Dropout voltage	≤ 2 V DC	≤ 4.8 V DC	≤ 9.6 V DC	≤ 19.2 V DC	≤ 44 V DC
Input frequency	< 3000 Hz	< 3000 Hz	< 3000 Hz	< 500 Hz	< 500 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection
Load side					
Switch-off delay	< 42 μ s	< 42 μ s	< 42 μ s	< 310 μ s	< 310 μ s
Switch-on delay	< 13 μ s	< 13 μ s	< 13 μ s	< 170 μ s	< 170 μ s

Ordering data

Screw connection	Type	TOS 5VDC/48VDC 0,1A	TOS 12VDC/48VDC 0,1A	TOS 24VDC/48VDC 0,1A	TOS 48-60VDC/48VDC 0,1A	TOS 110VDC/48VDC 0,1A
	Order No.	8950700000	8950710000	8950720000	8950730000	8950740000
PUSH IN connection	Type	TOP 5VDC/48VDC 0,1A	TOP 12VDC/48VDC 0,1A	TOP 24VDC/48VDC 0,1A	TOP 48-60VDC/48VDC 0,1A	TOP 110VDC/48VDC 0,1A
	Order No.	8950760000	8950770000	8950780000	8950790000	8950800000
Note						

Ordering data

	220 V DC	24 V AC	48...60 V AC	120 V AC	230 V AC
Control side					
Rated control voltage	220 V DC $+10\%$ / -15%	24 V AC $\pm 20\%$	48...60 V AC $\pm 20\%$	120 V AC $\pm 20\%$	230 V AC $+10\%$ / -20%
Nominal control current	1.65 mA DC	7.4 mA AC	4.3 mA AC	2.9 mA AC	1.75 mA AC
Power rating	≤ 360 mW	< 0.18 VA	≤ 0.2 VA	≤ 0.3 VA	≤ 0.4 VA
Cut-in (switch-on) voltage	≥ 187 V DC	≥ 21.6 V AC	≥ 38.4 V AC	≥ 102 V AC	≥ 207 V AC
Dropout voltage	≤ 93.5 V DC	≤ 9.6 V AC	≤ 19.2 V AC	≤ 48 V AC	≤ 69 V AC
Input frequency	< 500 Hz	< 10 Hz	< 10 Hz	< 10 Hz	< 10 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Varistor, rev. polarity protection	Varistor	Varistor	Varistor	Varistor
Load side					
Switch-off delay	< 310 μ s	< 14 ms	< 14 ms	< 14 ms	< 14 ms
Switch-on delay	< 170 μ s	< 12 ms	< 12 ms	< 12 ms	< 12 ms

Ordering data

Screw connection	Type	TOS 220VDC/48VDC 0,1A	TOS 24VAC/48VDC 0,1A	TOS 48-60VAC/48VDC 0,1A	TOS 120VAC/48VDC 0,1A	TOS 230VAC/48VDC 0,1A
	Order No.	8950750000	8950820000	8950830000	8950840000	8950850000
PUSH IN connection	Type	TOP 220VDC/48VDC 0,1A	TOP 24VAC/48VDC 0,1A	TOP 48-60VAC/48VDC 0,1A	TOP 120VAC/48VDC 0,1A	TOP 230VAC/48VDC 0,1A
	Order No.	8950810000	8950860000	8950870000	8950880000	8950890000
Note						

TERMOPTO - Solid-state relays

Solid-state relays 5 - 48 V DC / 500 mA

Output versions

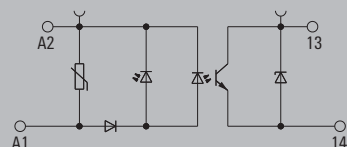
- Space-saving 6.1 mm width
- Plug-in cross-connections
- Screw and PUSH IN wire connection
- Enclosed design



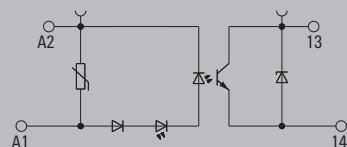
Technical data

Load side		
Solid-state type	Transistor	
Nominal switching voltage / current	5...48 V DC / 500 mA	
Voltage drop at max. load	< 1 V	
Leakage current	< 10 µA	
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode	
Continuous current	500 mA	
Load category	DC1	
General data		
Ambient temperature (operational)	-20 °C...+60 °C	
Storage temperature	-40 °C...+80 °C	
Flammability class UL94	V-0	
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation	
Approvals	CE; cULus; ROHS	
Standards	DIN EN 50178, IEC 62314, UL508	
Insulation coordination (EN 50 178)		
Rated voltage	300 V	
Rated impulse withstand voltage	4 kV (1.2 / 50 µs)	
Clearance and creepage distances for control side - load side	> 3 mm	
Surge voltage category	III	
Pollution severity	2	
Dimensions	Screw connection	PUSH IN connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 4	1.5 / 0.5 / 2.5
Length x width x height	mm 55 / 6.1 / 74.5	55 / 6.1 / 79.5
Note	Accessories and dimensional drawings: refer to the TERMOPTO Accessories page.	

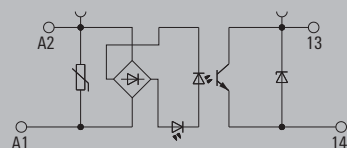
5 V DC



12...220 DC



24...230 V AC



Applications

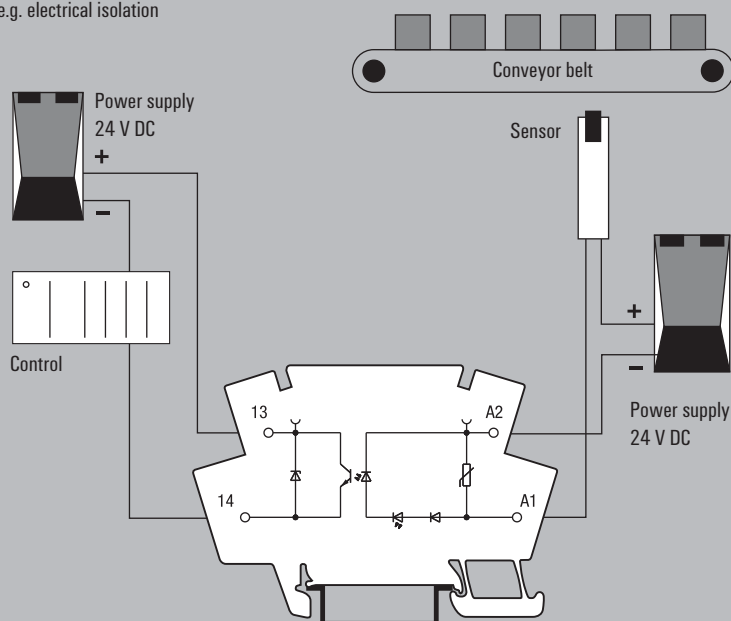
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e.g. electrical isolation



Solid-state relays 5 - 48 V DC / 500 mA

Output versions

Ordering data

	5 V DC	12 V DC	24 V DC	48...60 V DC	110 V DC
Control side					
Rated control voltage	5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	48...60 V DC $\pm 20\%$	110 V DC $\pm 20\%$
Nominal control current	7.7 mA DC	7.8 mA DC	7 mA DC	4.3 mA DC	2.6 mA DC
Power rating	< 40 mW	< 95 mW	≤ 170 mW	≤ 200 mW	≤ 280 mW
Cut-in (switch-on) voltage	≥ 4 V DC	≥ 9.6 V DC	≥ 19.2 V DC	≥ 38.4 V DC	≥ 88 V DC
Dropout voltage	≤ 2 V DC	≤ 4.8 V DC	≤ 9.6 V DC	≤ 19.2 V DC	≤ 44 V DC
Input frequency	< 200 Hz	< 200 Hz	< 200 Hz	< 200 Hz	< 200 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection
Load side					
Switch-off delay	< 26 μ s	< 200 μ s	< 200 μ s	< 340 μ s	< 340 μ s
Switch-on delay	< 5 μ s	< 20 μ s	< 20 μ s	< 18 μ s	< 18 μ s

Ordering data

Screw connection	Type	TOS 5VDC/48VDC 0,5A	TOS 12VDC/48VDC 0,5A	TOS 24VDC/48VDC 0,5A	TOS 48-60VDC/48VDC 0,5A	TOS 110VDC/48VDC 0,5A
	Order No.	8950900000	8950910000	8950920000	8950930000	8950940000
PUSH IN connection	Type	TOP 5VDC/48VDC 0,5A	TOP 12VDC/48VDC 0,5A	TOP 24VDC/48VDC 0,5A	TOP 48-60VDC/48VDC 0,5A	TOP 110VDC/48VDC 0,5A
	Order No.	8950960000	8950970000	8950980000	8950990000	8951000000

Note

Ordering data

	220 V DC	24 V AC	48...60 V AC	120 V AC	230 V AC
Control side					
Rated control voltage	220 V DC $+10\%$ / -15%	24 V AC $\pm 20\%$	48...60 V AC $\pm 20\%$	120 V AC $\pm 20\%$	230 V AC $+10\%$ / -20%
Nominal control current	1.65 mA DC	7.4 mA AC	4.3 mA AC	2.9 mA AC	1.75 mA AC
Power rating	≤ 360 mW	< 0.18 VA	≤ 0.2 VA	≤ 0.3 VA	≤ 0.4 VA
Cut-in (switch-on) voltage	≥ 187 V DC	≥ 21.6 V AC	≥ 38.4 V AC	≥ 102 V AC	≥ 207 V AC
Dropout voltage	≤ 88 V DC	≤ 9.6 V AC	≤ 19.2 V AC	≤ 48 V AC	≤ 69 V AC
Input frequency	< 200 Hz	< 10 Hz	< 10 Hz	< 10 Hz	< 10 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Varistor, rev. polarity protection	Varistor	Varistor	Varistor	Varistor
Load side					
Switch-off delay	< 340 μ s	< 14 ms	< 14 ms	< 14 ms	< 14 ms
Switch-on delay	< 18 μ s	< 12 ms	< 12 ms	< 12 ms	< 12 ms

Ordering data

Screw connection	Type	TOS 220VDC/48VDC 0,5A	TOS 24VAC/48VDC 0,5A	TOS 48-60VAC/48VDC 0,5A	TOS 120VAC/48VDC 0,5A	TOS 230VAC/48VDC 0,5A
	Order No.	8950950000	8951020000	8951030000	8951040000	8951050000
PUSH IN connection	Type	TOP 220VDC/48VDC 0,5A	TOP 24VAC/48VDC 0,5A	TOP 48-60VAC/48VDC 0,5A	TOP 120VAC/48VDC 0,5A	TOP 230VAC/48VDC 0,5A
	Order No.	8951010000	8951060000	8951070000	8951080000	8951090000

Note

TERMOPTO - Solid-state relays

Solid-state relays 24 - 230 VAC / 100 mA

Output versions

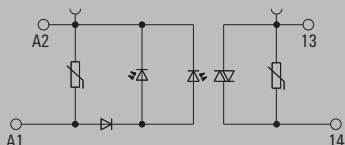
- Space-saving 6.1 mm width
- Plug-in cross-connections
- Screw and PUSH IN wire connection
- Enclosed design



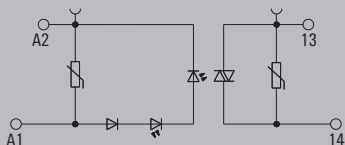
Technical data

Load side		
Solid-state type	Triac	
Nominal switching voltage / current	24...230 V AC / 100 mA	
Voltage drop at max. load	< 1.8 V	
Leakage current	< 10 µA	
Short-circuit-proof / Protective circuit, load side	No / Varistor	
Continuous current	100 mA	
Load category	AC1	
General data		
Ambient temperature (operational)	-20 °C...+60 °C	
Storage temperature	-40 °C...+80 °C	
Flammability class UL94	V-0	
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation	
Approvals	CE; cULus; ROHS	
Standards	DIN EN 50178, IEC 62314, UL508	
Insulation coordination (EN 50 178)		
Rated voltage	300 V	
Rated impulse withstand voltage	4 kV (1.2 / 50 µs)	
Clearance and creepage distances for control side - load side	> 3 mm	
Surge voltage category	III	
Pollution severity	2	
Dimensions	Screw connection	PUSH IN connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 4	1.5 / 0.5 / 2.5
Length x width x height	mm 55 / 6.1 / 74.5	55 / 6.1 / 79.5
Note	Accessories and dimensional drawings: refer to the TERMOPTO Accessories page.	

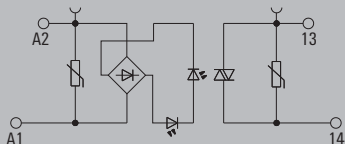
5 V DC



12...220 DC



24...230 V AC



Applications

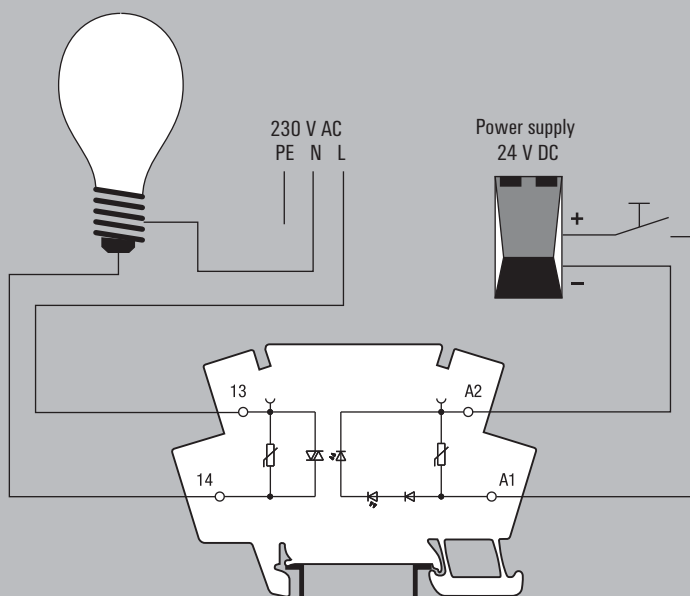
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E.g. signal conditioning



Solid-state relays 24 - 230 VAC / 100 mA

Output versions

Ordering data

	5 V DC	12 V DC	24 V DC	48...60 V DC	110 V DC
Control side					
Rated control voltage	5 V DC $\pm 20\%$	12 V DC $\pm 20\%$	24 V DC $\pm 20\%$	48...60 V DC $\pm 20\%$	110 V DC $\pm 20\%$
Nominal control current	7.8 mA DC	3.6 mA DC	3.6 mA DC	3.7 mA DC	3.6 mA DC
Power rating	< 40 mW	< 45 mW	≤ 80 mW	≤ 170 mW	≤ 360 mW
Cut-in (switch-on) voltage	≥ 4 V DC	≥ 9.6 V DC	≥ 19.2 V DC	≥ 38.4 V DC	≥ 88 V DC
Dropout voltage	≤ 2 V DC	≤ 4.8 V DC	≤ 9.6 V DC	≤ 19.2 V DC	≤ 44 V DC
Input frequency	< 10 Hz	< 10 Hz	< 10 Hz	< 10 Hz	< 10 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection	Varistor, rev. polarity protection
Load side					
Switch-off delay	< 12 ms	< 12 ms	< 12 ms	< 12 ms	< 12 ms
Switch-on delay	≤ 10 ms	≤ 10 ms	≤ 10 ms	≤ 10 ms	≤ 10 ms

Ordering data					
Screw connection Type	TOS 5VDC/230VAC 0,1A	TOS 12VDC/230VAC 0,1A	TOS 24VDC/230VAC 0,1A	TOS 48-60VDC/230VAC 0,1A	TOS 110VDC/230VAC 0,1A
Order No.	8951100000	8951110000	8951120000	8951130000	8951140000
PUSH IN connection Type	TOP 5VDC/230VAC 0,1A	TOP 12VDC/230VAC 0,1A	TOP 24VDC/230VAC 0,1A	TOP 48-60VDC/230VAC 0,1A	TOP 110VDC/230VAC 0,1A
Order No.	8951160000	8951170000	8951180000	8951190000	8951200000
Note					

Ordering data

	220 V DC	24 V AC	48...60 V AC	120 V AC	230 V AC
Control side					
Rated control voltage	220 V DC $+10\%$ / -15%	24 V AC $\pm 20\%$	48...60 V AC $\pm 20\%$	120 V AC $\pm 20\%$	230 V AC $+10\%$ / -20%
Nominal control current	2.9 mA DC	8.8 mA AC	6.4 mA AC	8.5 mA AC	7.7 mA AC
Power rating	≤ 640 mW	≤ 0.2 VA	≤ 0.3 VA	≤ 1 VA	≤ 1.7 VA
Cut-in (switch-on) voltage	≥ 187 V DC	≥ 19.2 V AC	≥ 38.4 V AC	≥ 96 V AC	≥ 184 V AC
Dropout voltage	≤ 88 V DC	≤ 9.6 V AC	≤ 19.2 V AC	≤ 48 V AC	≤ 92 V AC
Input frequency	< 10 Hz	< 10 Hz	< 10 Hz	< 10 Hz	< 10 Hz
Status indicator	Green LED	Green LED	Green LED	Green LED	Green LED
Protective circuit	Varistor, rev. polarity protection	Varistor	Varistor	Varistor	Varistor
Load side					
Switch-off delay	< 12 ms	< 16 ms	< 16 ms	< 18 ms	< 18 ms
Switch-on delay	≤ 10 ms	< 14 ms	< 14 ms	< 22 ms	< 22 ms

Ordering data					
Screw connection Type	TOS 220VDC/230VAC 0,1A	TOS 24VAC/230VAC 0,1A	TOS 48-60VAC/230VAC 0,1A	TOS 120VAC/230VAC 0,1A	TOS 230VAC/230VAC 0,1A
Order No.	8951150000	8951220000	8951230000	8951240000	8951250000
PUSH IN connection Type	TOP 220VDC/230VAC 0,1A	TOP 24VAC/230VAC 0,1A	TOP 48-60VAC/230VAC 0,1A	TOP 120VAC/230VAC 0,1A	TOP 230VAC/230VAC 0,1A
Order No.	8951210000	8951260000	8951270000	8951280000	8951290000
Note					

TERMOPTO - Solid-state relays

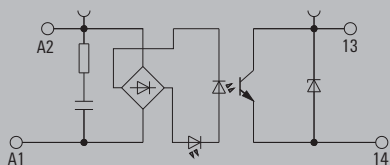
Solid-state relays 5 - 48 V DC / 500 mA

Output versions with RC element

- Space-saving 6.1 mm width
- Plug-in cross-connections
- Screw and PUSH IN wire connection
- Enclosed design
- RC input circuitry for improved interference immunity



120 V...230 V AC



Technical data

Load side		
Solid-state type	Transistor	
Nominal switching voltage / current	5...48 V DC / 500 mA	
Voltage drop at max. load	< 1 V	
Leakage current	< 10 µA	
Short-circuit-proof / Protective circuit, load side	No / Diode	
Continuous current	500 mA	
Load category	DC1	
General data		
Ambient temperature (operational)	-20 °C...+60 °C	
Storage temperature	-40 °C...+80 °C	
Flammability class UL94	V-0	
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation	
Approvals	CE; ROHS	
Standards	DIN EN 50178, IEC 62314, UL508	
Insulation coordination (EN 50 178)		
Rated voltage	300 V	
Rated impulse withstand voltage	4 kV (1.2 / 50 µs)	
Clearance and creepage distances for control side - load side	> 3 mm	
Surge voltage category	III	
Pollution severity	2	
Dimensions	Screw connection	PUSH IN connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 4	1.5 / 0.5 / 2.5
Length x width x height	mm 55 / 6.1 / 74.5	55 / 6.1 / 79.5
Note	Accessories and dimensional drawings: refer to the TERMOPTO Accessories page.	

Ordering data

Control side		120 V AC	230 V AC
Rated control voltage		120 V AC ±20 %	230 V AC +10 % / -15 %
Nominal control current		6.4 mA AC	6.4 mA AC
Power rating		≤ 0.61 VA	≤ 1.5 VA
Cut-in (switch-on) voltage		≥ 102 V AC	≥ 207 V AC
Dropout voltage		≤ 48 V AC	≤ 69 V AC
Input frequency		< 10 Hz	< 10 Hz
Status indicator		Green LED	Green LED
Protective circuit		RC element	RC element
Load side		120 V AC	230 V AC
Switch-off delay		< 20.8 ms	< 14 ms
Switch-on delay		< 12.6 ms	< 12 ms

Ordering data		120 V AC	230 V AC
Screw connection	Type	TOS 120VAC/48VDC 0.5A RC	TOS 230VAC/48VDC 0.5A RC
	Order No.	1180290000	1189270000
PUSH IN connection	Type	TOP 120VAC/48VDC 0.5A RC	TOP 230VAC/48VDC 0.5A RC
	Order No.	1188830000	1189260000
Note			

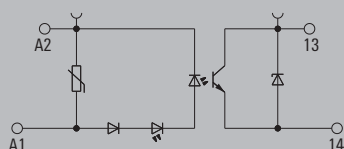
Solid-state relays 3 - 33 V DC / 4 A

Output versions

- Space-saving 6.1 mm width
- Plug-in cross-connections
- Screw and PUSH IN wire connection
- Enclosed design



24 V DC



Technical data

Load side	
Solid-state type	Transistor
Nominal switching voltage / current	3...33 V DC / 4 A
Voltage drop at max. load	90 mV
Leakage current	< 10 µA
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
Continuous current	4 A
Load category	DC1
General data	
Ambient temperature (operational)	-20 °C...+60 °C
Storage temperature	-40 °C...+80 °C
Flammability class UL94	V-0
Humidity	5...95 % rel. humidity T _a = 40 °C, no condensation
Approvals	CE; ROHS
Standards	DIN EN 50178, IEC 62314, UL508
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	> 3 mm
Surge voltage category	III
Pollution severity	2

Dimensions		
	Screw connection	PUSH IN connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 4	1.5 / 0.5 / 2.5
Length x width x height	mm 55 / 6.1 / 74.5	55 / 6.1 / 79.5
Note	Accessories and dimensional drawings: refer to the TERMOPTO Accessories page	

Ordering data

Control side	
Rated control voltage	24 V DC ±20 %
Nominal control current	7 mA DC
Power rating	≤ 170 mW
Cut-in (switch-on) voltage	≥ 16.8 V DC
Dropout voltage	≤ 9.6 V DC
Input frequency	≤ 10 Hz
Status indicator	Green LED
Protective circuit	Varistor, rev. polarity protection
Load side	
Switch-off delay	< 200 µs
Switch-on delay	< 13 µs

Ordering data	
Screw connection	Type TOS 24VDC/24VDC 4A
Order No.	1275100000
PUSH IN connection	Type TOP 24VDC/24VDC 4A
Order No.	1254880000
Note	

Accessories



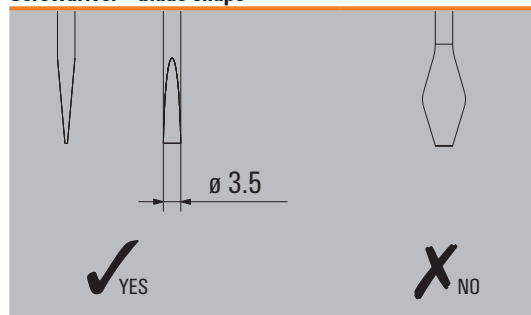
Plug-in cross-connection

Type	No. of poles	Qty.	Order No.
yellow			
ZQV 4N / 2 GE	2	60	1758250000
ZQV 4N / 3 GE	3	60	1762630000
ZQV 4N / 4 GE	4	60	1762620000
ZQV 4N / 10 GE	10	20	1758260000
ZQV 4N / 20 GE	20	20	1909020000
red			
ZQV 4N / 2 RT	2	60	1793950000
ZQV 4N / 3 RT	3	60	1793980000
ZQV 4N / 4 RT	4	60	1794010000
ZQV 4N / 10 RT	10	20	1794040000
ZQV 4N / 20 RT	20	20	1909150000
blue			
ZQV 4N / 2 BL	2	60	1793960000
ZQV 4N / 3 BL	3	60	1793990000
ZQV 4N / 4 BL	4	60	1794020000
ZQV 4N / 10 BL	10	20	1794050000
ZQV 4N / 20 BL	20	20	1909100000
black			
ZQV 4N / 2 SW	2	60	1793970000
ZQV 4N / 3 SW	3	60	1794000000
ZQV 4N / 4 SW	4	60	1794030000
ZQV 4N / 10 SW	10	20	1794060000
ZQV 4N / 20 SW	20	20	1909120000

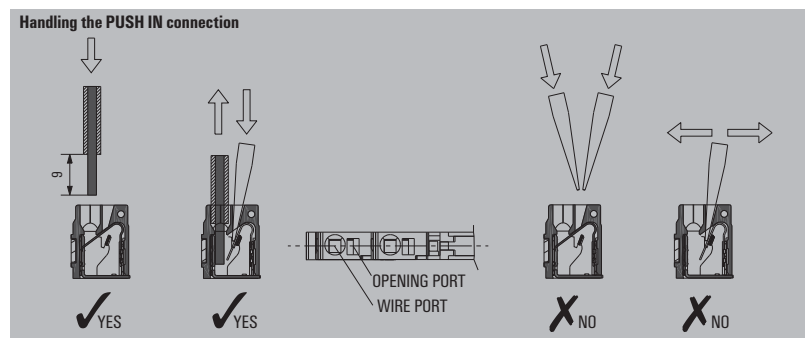
Other accessories

Type		Qty.	Order No.
Markers			
WS 12/6	12 x 6 mm	600	1609900000
Labels, Lasermark			
LM MT 300 15/6 ge	484 labels/sheet	10	1686360000
Screwdriver			
SD 0.6 x 3.5 x 100		10	9008330000

Screwdriver – blade shape



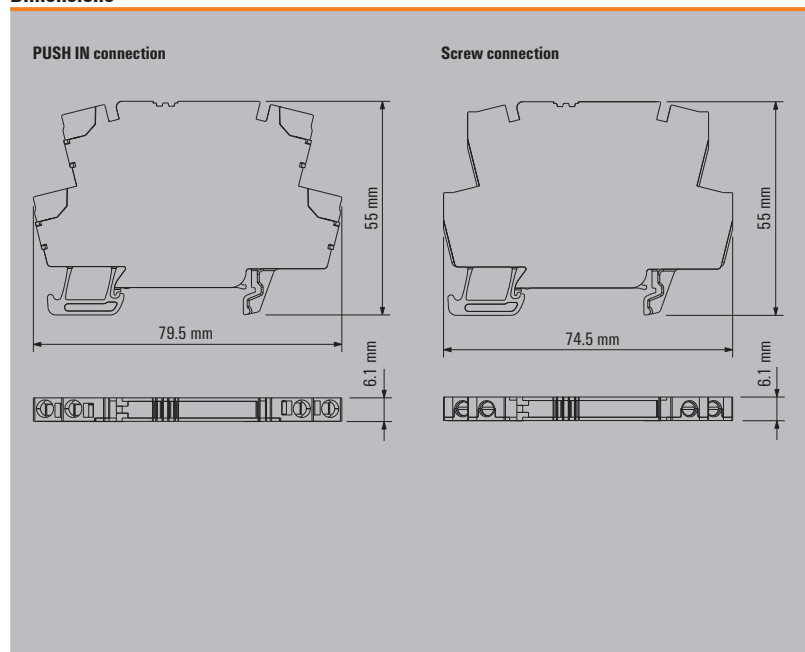
General data – TERMOPTO



Technical data

Conductor		PUSH IN connection	Screw-connection
Solid H07V-U	mm ²	0.5...1.5	0.5...2.5
Stranded H07V-K	mm ²	0.5...1.5	0.5...2.5
"f" with wire end ferrules to DIN 46228-1	mm ²	0.5...1.5	0.5...1.5
"f" with wire end ferrules with plastic collar	mm ²	0.5...1.5	0.5...1.5
Max. clamping range	mm ²	0.13...1.5	0.13...2.5
Plug gauge to IEC 60947-1	Size	A 2	A 3
General technical data			
Nominal torque	Nm	-	0.6
Continuous current for 2-pole cross-connection	A	10	10
Continuous current for multi-pole cross-connection	A	10	10
Stripping length	mm	10	9
Ingress protection class		IP 20	IP 20
Housing material		Wemid	Wemid
UL94 flammability rating		V-0	V-0
Nominal current	A	6	6
Nominal voltage	V	250	250

Dimensions



Short-circuit-proof switching amplifier for inductive loads up to 10 A

Powerful, compact solid-state relay with error signalling contact

The MICROOPTO family offers the customer high-quality optos and solid-state relays for application-oriented problem solutions. All products are designed in the space-saving 6 mm terminal size. The new solid-state relay can be connected in the output circuits of control systems and feedback control modules for selective activation of inductive loads up to 24 V DC / 10 A, such as solenoid valves, contactors etc. The error controlled output monitors short-circuits and, if necessary, switched off; a potential-free signalling contact provides feedback to the control system – the system can be shut down in a controlled manner for error rectification.

The powerful output of the MICROOPTO SOLENOID switches 10 A at 55 °C. The product can be used worldwide thanks to international approvals: CE, cULus and GL.

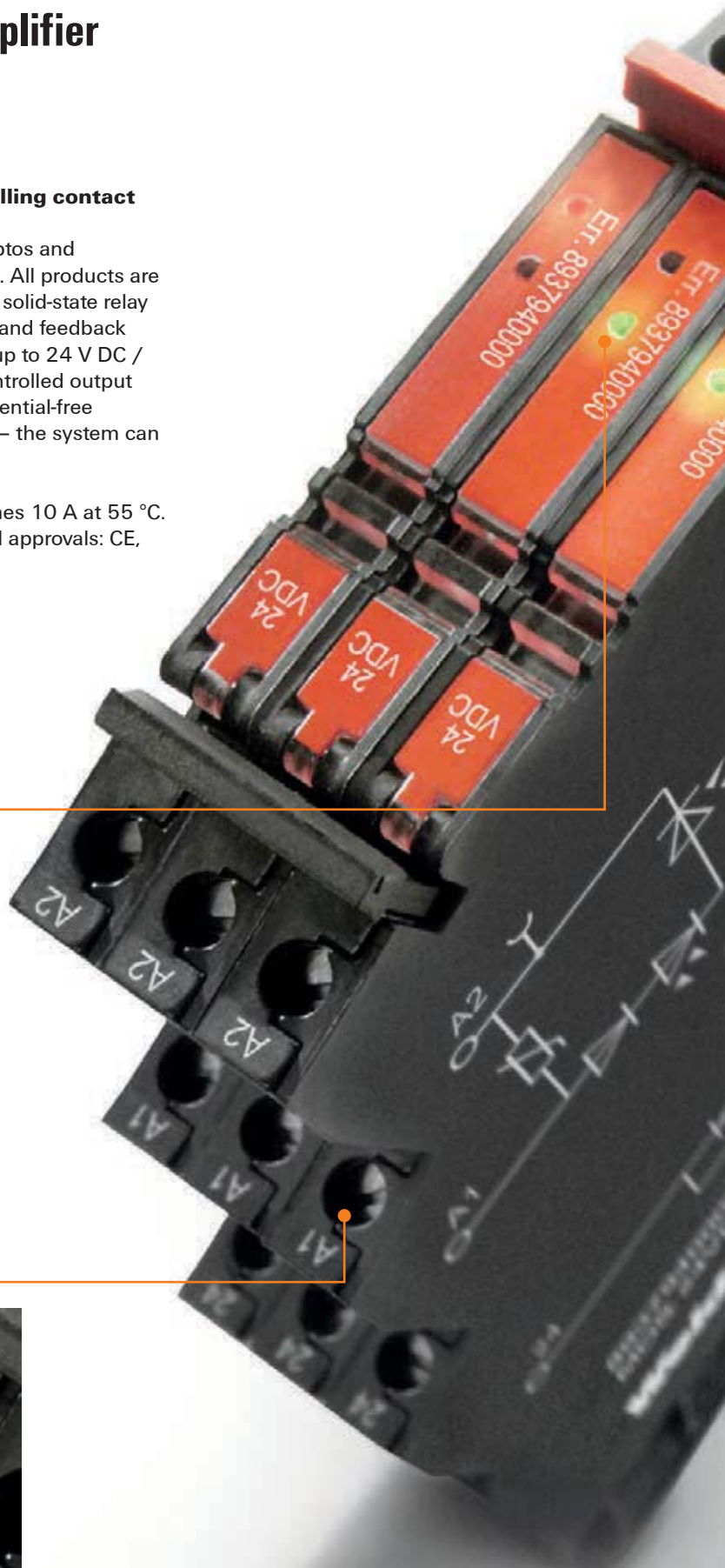
Alarm function

Clear condition display through status and error LEDs in the output.



Space-saving

Space-saving 6 mm modular width.



Not sensitive

Protected by suppressor circuit on input and output circuits.

**Tough and sturdy**

With a short-circuit-proof output.

**Auxiliary contact**

An auxiliary contact issues alerts in event of short circuits.

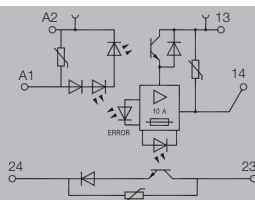


MICROOPTO - Solid-state relays

For switching valves up to 24 V DC 10 A

- Only 6 mm modular width
- Plug-in cross-connection
- For mounting on TS 35
- Status display and error signalling contact if an error in the output

24 V DC / 5-33 V DC 10 A



Technical data

Control side

Rated control voltage
Power rating
Cut-in (switch-on) voltage
Dropout voltage
Input frequency
Status indicator
Protective circuit

Load side

Solid-state type
Rated switching voltage
Rated switching current
Voltage drop at max. load
Leakage current
Short-circuit-proof / Protective circuit, load side

Switch-on delay / Switch-off delay
Continuous current
Pulse load, max. current
Load category

General data

Alarm contact
Ambient temperature (text)
Storage temperature
Flammability class UL94
Humidity
Approvals
Standards

Insulation coordination (EN 50 178)

Rated voltage
Rated impulse withstand voltage
Clearance and creepage distances for control side - load side
Surge voltage category
Pollution severity

Dimensions

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

Note

24 V DC $\pm 20\%$
400 mW
> 18 V
< 13 V
50 Hz
Error LED red; Status LED green
Varistor, rev. polarity protection

POWER MOS-FET
5...33 V DC
10 A
approx. 100 mV
< 1 mA
Resistance / Current sensor, Varistor, integrated free-wheel diode

typical. 250 μ s / typical. 700 μ s
10 A

LC A

5...48 V DC / 0.1 A
-25 °C...+60 °C
-40 °C...+60 °C
V-0
40 °C / 93 % rel. humidity, no condensation
CE; cULus; GL
DIN EN 50178, GL 2003-VI-Abs. 9, IEC 62314, UL508

300 V
4 kV (1.2 / 50 μ s)
> 3 mm

III
2

Screw connection

2.5 / 0.5 / 4
98 / 6.1 / 88

Suppressor circuitry for inductive loads, 10-cm installation clearance to inductive switching devices

Ordering data

Screw connection

Note

Accessories

Note

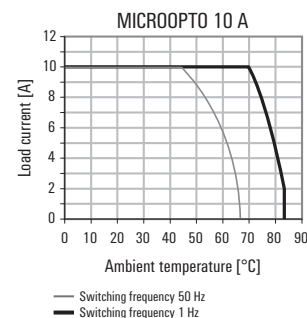
Type	Qty.	Order No.
MOS 24VDC/5-33VDC 10A	1	8937940000

Accessories and dimensional drawings: refer to the MICROOPTO Accessories page

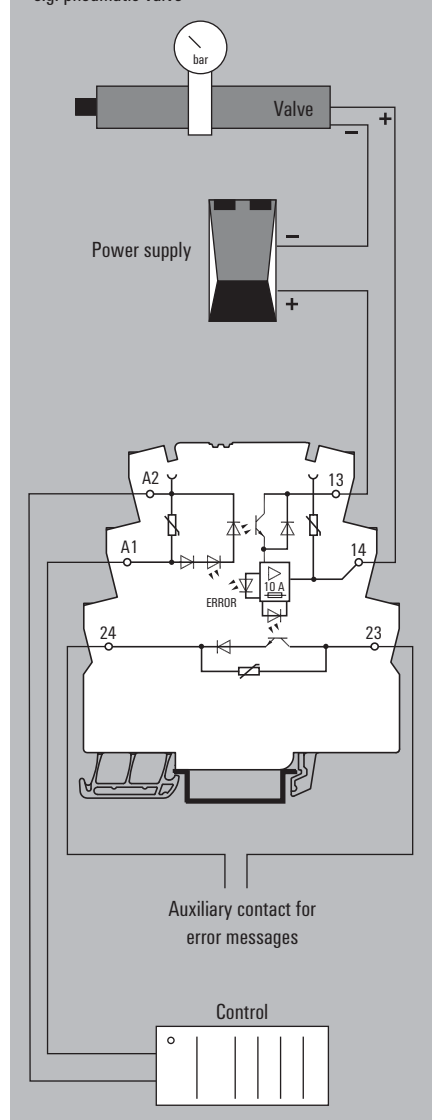
The **MICROOPTO SOLENOID** solid-state relay is used specifically as a switching amplifier for actuators up to 24 V DC and 10 A with inductive loads such as solenoid valves and contactors.

A potential-free signalling contact transmits errors, such as short circuits, to the controller.

The **MICROOPTO SOLENOID** solid-state relay is short-circuit-proof and protected against power-related transients and voltage peaks by extensive protective circuits. The closed housing also offers a high level of protection against contact.



e.g. pneumatic valve



For direct connection of actuators up to 24 V DC, 2 A

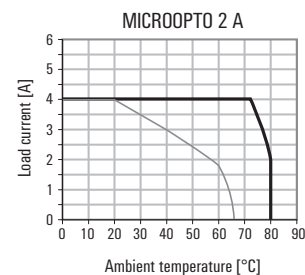
- Only 6 mm modular width
- Plug-in cross-connection
- PE connection direct to mounting rail
- Status display when error in output

8...30 V DC 2 A



The solid-state relay **MICROOPTO ACTOR** has been specifically designed as a switching amplifier for actuators up to 24 V DC and 2 A with inductive loads such as solenoid valves and contactors. 3-wire actuators can be connected directly to the module.

This is short-circuit proof and protected against application-related transients and spikes by extensive protective circuitry.



Technical data

Control side

Rated control voltage
Power rating
Cut-in (switch-on) voltage
Dropout voltage
Input frequency
Protective circuit

Load side

Solid-state type
Rated switching voltage
Rated switching current
Voltage drop at max. load
Leakage current
Short-circuit-proof / Protective circuit, load side
Switch-on delay / Switch-off delay
Continuous current
Pulse load, max. current
Load category
Status indicator

General data

Ambient temperature (text)
Storage temperature
Flammability class UL94
Humidity

Approvals
Standards

Insulation coordination (EN 50 178)

Rated voltage
Rated impulse withstand voltage
Clearance and creepage distances for control side - load side
Surge voltage category
Pollution severity

Dimensions

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

Note

Ordering data

Screw connection

Note

Accessories

Note

24 V DC $\pm 20\%$

≤ 170 mW

> 13.8 V

< 13.6 V

125 Hz

Varistor, rev. polarity protection

Intelligent POWER MOS-FET

8...30 V DC

4 A

≤ 50 mV

< 10 μ A

Yes (thermal cut-out) / Varistor, integrated free-wheel diode

0.1 ms / < 0.5 ms

2 A

LC A

Error indication LED red; status LED green

-40 $^{\circ}$ C... $+80$ $^{\circ}$ C

V-0

5...95 % RH

T_{H} = 55 $^{\circ}$ C, no condensation

CE; cULus; GL

DIN EN 50178, GL 2003-VI-Abs. 9, IEC 62314, UL508

30 V

500 V (1.2 / 50 μ s)

II

2

Screw connection

2.5 / 0.5 / 4

98 / 6.1 / 88

Type

MOS 24VDC/8-30VDC 2A

Qty.

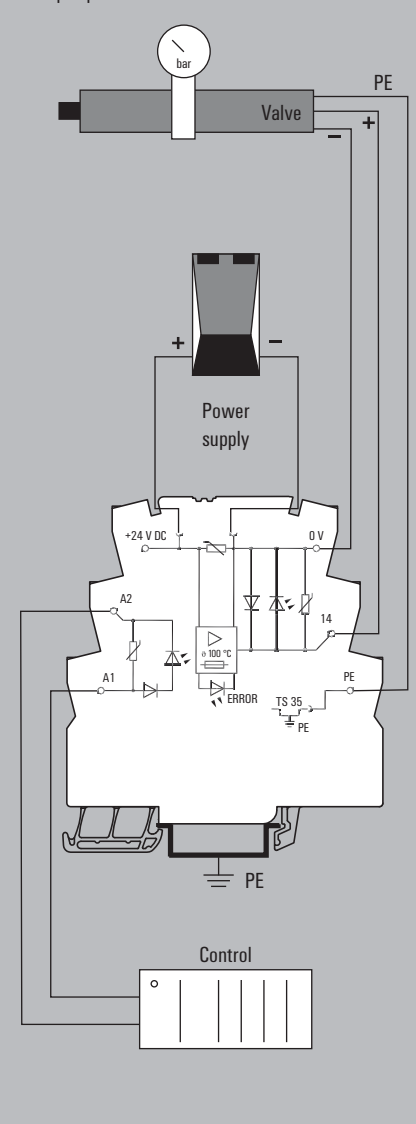
1

Order No.

8937970000

Accessories and dimensional drawings: refer to the MICROOPTO Accessories page

Example: pneumatic valve



For DC loads up to 300 V DC and 1 A

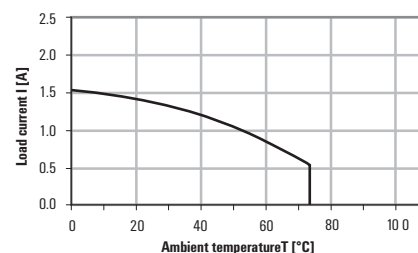
- Only 6 mm modular width
- Plug-in cross-connection
- Power Boost: 20 A / 20 ms, 5 A / 1 sec

12...300 V DC 1 A



The solid-state relay **MICROOPTO 300 V DC** has been developed as a switching amplifier for high inductive loads up to 300 V DC and 1 A in motor brakes and contactors.

A power boost in the load circuit compensates transient overloads (20 A for 20 ms / 5 A for 1 s) such as making or breaking spikes. Additional protective circuits counter higher overloads.



Technical data

Control side

Rated control voltage
Power rating
Cut-in (switch-on) voltage
Dropout voltage
Input frequency
Status indicator
Protective circuit

24 V DC $\pm 20\%$
0.36 W
> 18.8 V
< 14.7 V
50...60 Hz
Green LED
Varistor, rev. polarity protection

Load side

Solid-state type
Rated switching voltage
Rated switching current
Voltage drop at max. load
Leakage current
Short-circuit-proof / Protective circuit, load side
Switch-on delay / Switch-off delay
Continuous current
Pulse load, max. current
Load category

POWER MOS-FET
12...300 V DC
1.3 A
 ≤ 0.4 V
< 1 μ A
No / Varistor, integrated free-wheel diode
< 18 μ s / < 1 ms
1 A
27 A (10 ms)
LC A

General data

Ambient temperature (text)
Storage temperature
Flammability class UL94
Humidity

-40 °C...+80 °C
V-0
5...95 % RH
 $T_H = 55$ °C, no condensation
CE; cULus; GL
DIN EN 50178, GL 2003-VI-Abs. 9, IEC 62314, UL508

Approvals
Standards

Insulation coordination (EN 50 178)

Rated voltage
Rated impulse withstand voltage
Clearance and creepage distances for control side - load side
Surge voltage category
Pollution severity

300 V
2.5 kV (1.2 / 50 μ s)
> 3 mm
II
2

Dimensions

Clamping range (nominal / min. / max.)
Length x width x height

mm²
mm

Note

Screw connection

2.5 / 0.5 / 4
98 / 6.1 / 88

Ordering data

Screw connection

Type	Qty.	Order No.
MOS 24VDC/12-300VDC 1A	1	8937830000

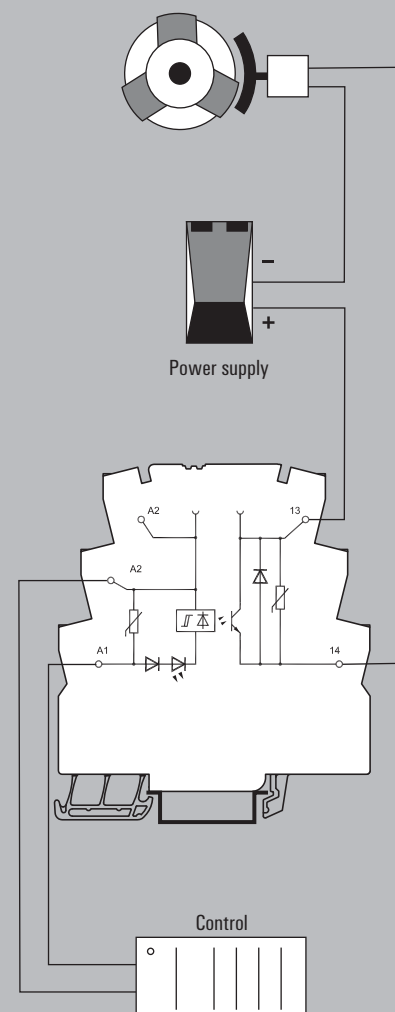
Note

Accessories

Note

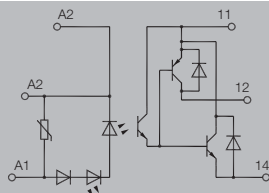
Accessories and dimensional drawings: refer to the MICROOPTO Accessories page

z. B. Example: motor brake



For electronically switching
or inverting signals

24 V DC / 5-48 V DC 0.5 A



Electronic CO contacts are used anywhere output signals need to be changed over.

For this purpose, the input signal is directly switched through to the output side and inverted; as a result, the opto module can also be used as a pure inverter.

The advantage over electromechanical relays lies in the wear-free switching and the possibility of realising high switching frequencies.

Technical data

Control side

Rated control voltage
Power rating
Cut-in (switch-on) voltage
Dropout voltage
Input frequency
Status indicator
Protective circuit

24 V DC $\pm 20\%$
160 mW
> 18.8 V

1 kHz
Green status LED
Varistor, rev. polarity protection

Load side

Solid-state type
Rated switching voltage
Rated switching current
Voltage drop at max. load
Leakage current
Short-circuit-proof / Protective circuit, load side
Switch-on delay / Switch-off delay
Continuous current
Pulse load, max. current
Load category

Transistor
5...48 V DC
500 mA
Max. 1 V
< 1.5 mA
No / Integrated free-wheel diode
< 30 μ s / < 50 μ s
500 mA

General data

Ambient temperature (operational)
Storage temperature
Flammability class UL94
Humidity
Approvals
Standards

LC A
-25 °C...+60 °C
-40 °C...+60 °C
V-0
40 °C / 93 % rel. humidity, no condensation
CE; cULus; GL
DIN EN 50178, GL 2003-VI-Abs. 9, IEC 62314, UL508

Insulation coordination (EN 50 178)

Rated voltage
Rated impulse withstand voltage
Clearance and creepage distances for control side - load side
Surge voltage category
Pollution severity

300 V
4 kV (1.2 / 50 μ s)
> 3 mm
III
2

Dimensions

Clamping range (nominal / min. / max.)
Length x width x height

mm²
mm

Note

Screw connection

2.5 / 0.5 / 4
98 / 6.1 / 88

Ordering data

Screw connection

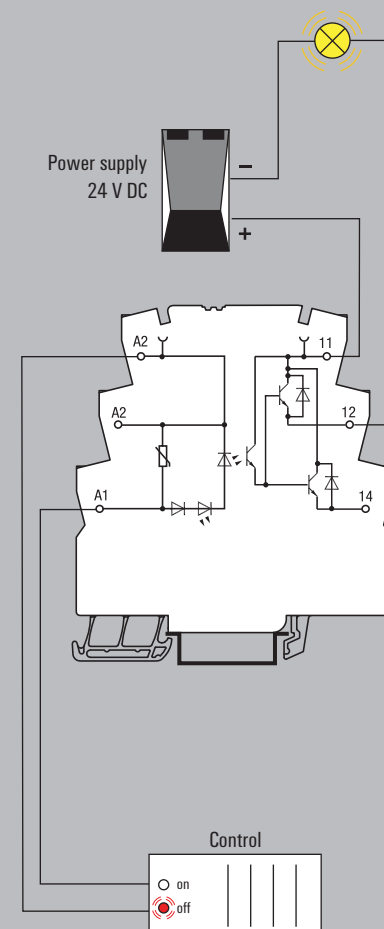
Note

Accessories

Note

Accessories and dimensional drawings: refer to the MICROOPTO Accessories page

e.g. Inverter



MICROOPTO - Solid-state relays

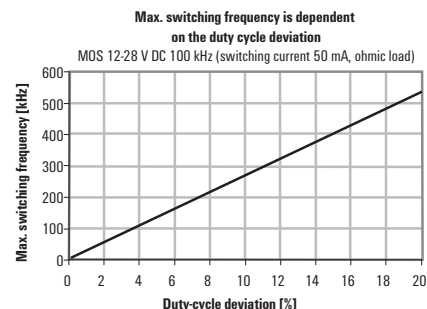
For high switching frequencies
up to 100 kHz

- Only 6 mm modular width
- Plug-in cross-connection
- For mounting on TS 35

12...28 V DC 100 kHz



A special interior circuit in the opto module **MICROOPTO 100 kHz** ensures that rapidly transmitted signals are isolated from one another and that they can be transferred practically without delay. This allows switching frequencies up to 100 kHz to be achieved. Comprehensive suppressor circuits safeguard the module against conducted transients and voltage spikes.



Technical data

Control side

Rated control voltage
Power rating
Cut-in (switch-on) voltage
Dropout voltage
Input frequency
Status indicator
Protective circuit

Load side

Solid-state type
Rated switching voltage
Rated switching current
Voltage drop at max. load
Leakage current
Short-circuit-proof / Protective circuit, load side
Switch-on delay / Switch-off delay
Continuous current
Pulse load, max. current
Load category

General data

Ambient temperature (operational)
Storage temperature
Flammability class UL94
Humidity

Approvals
Standards

Insulation coordination (EN 50 178)

Rated voltage
Rated impulse withstand voltage
Clearance and creepage distances for control side - load side
Surge voltage category
Pollution severity

12 V DC...28 V DC

≤ 280 mW

> 5.6 V

≤ 15 V DC

100 kHz

Green LED

Varistor, rev. polarity protection

Transistor

19.6...28.8 V

50 mA

≤ 2 V

No / Varistor, rev. polarity protection

< 200 ns / < 400 ns

max. 50 mA

0.6 A (20 ms)

LC A

-20 °C...+60 °C

-40 °C...+80 °C

V-0

5...95 % RH

T_a = 55 °C, no condensation

CE; cULus; GL

DIN EN 50178, GL 2003-VI-Abs. 9, IEC 62314, UL508

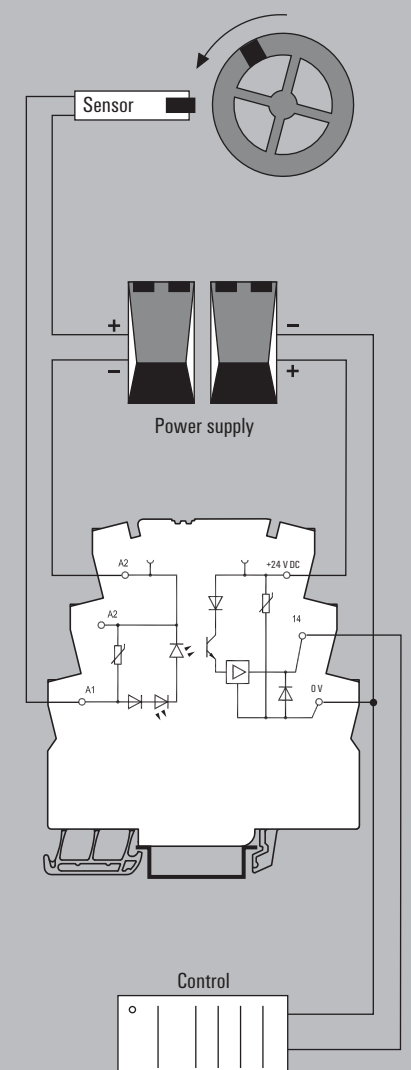
30 V

500 V (1.2 / 50 µs)

II

2

For example rotational speed measurement



Dimensions

Clamping range (nominal / min. / max.)
Length x width x height

mm²

mm

Note

Screw connection

2.5 / 0.5 / 4
98 / 6.1 / 88

Ordering data

Screw connection

Note

Accessories

Note

Accessories and dimensional drawings: refer to the MICROOPTO Accessories page

For adjusting TTL signals

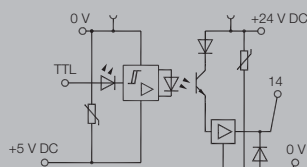
5 V TTL / 24 V DC 0.1 A



To adjust sensitive TTL signals to the typical voltage level of 24 V DC used in industrial automation applications, the **MICROOPTO TTL** modules are used.

For the protection of the electronics, the sensitive TTL signals require electrical isolation from the 24 V world.

To control the optical coupler circuit via the 5 V TTL signal, an additional auxiliary voltage is fed in.



Technical data

Control side	
Rated control voltage	5 V TTL
Power rating	< 0.5 mW
Cut-in (switch-on) voltage	approx. 2 V
Dropout voltage	ca. 1 V
Input frequency	100 kHz
Status indicator	Green status LED
Protective circuit	Varistor, rev. polarity protection
Rated auxiliary voltage	5 V DC $\pm 5\%$
Load side	
Solid-state type	TTL
Rated switching voltage	24 V DC $\pm 20\%$
Rated switching current	100 mA
Voltage drop at max. load	< 1 V
Leakage current	< 20 μ A
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
Switch-on delay / Switch-off delay	< 1.3 μ s / < 1 μ s
Continuous current	100 mA
Pulse load, max. current	
Load category	LC A
General data	
Ambient temperature (operational)	-25 °C...+60 °C
Storage temperature	-40 °C...+60 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	cULus
Standards	DIN EN 50178, GL 2003-VI-Abs. 9, IEC 62314, UL508
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	4 kV (1.2 / 50 μ s)
Clearance and creepage distances for control side - load side	> 3 mm
Surge voltage category	III
Pollution severity	2

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Ordering data

Type	Qty.	Order No.
MOS 5VTTL/24VDC 0,1A	1	8937920000

Note

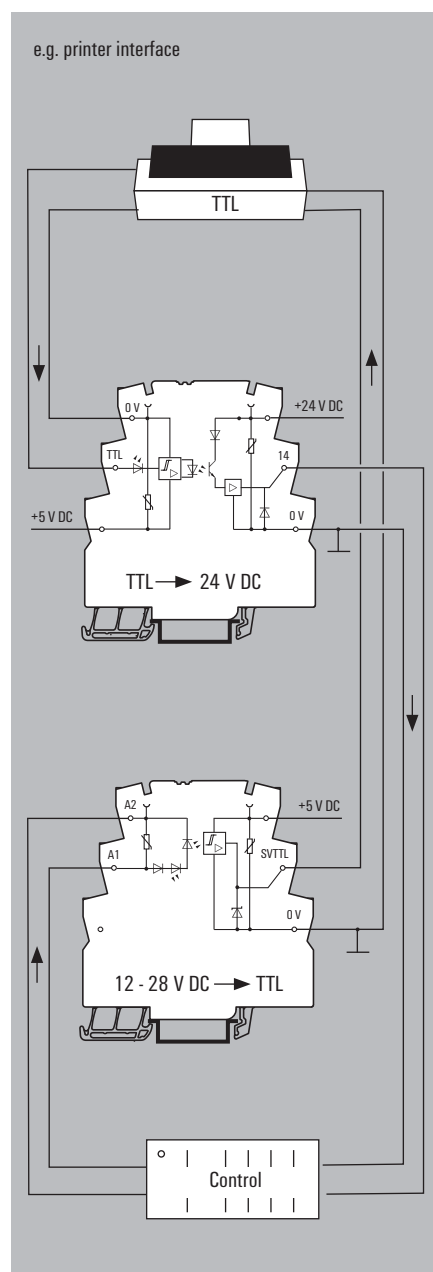
Accessories

Note

Screw connection	
2.5 / 0.5 / 4	
98 / 6.1 / 88	

Type	Qty.	Order No.
MOS 5VTTL/24VDC 0,1A	1	8937920000

Accessories and dimensional drawings: refer to the MICROOPTO Accessories page



For adjusting TTL signals

12-28 V DC / 5 V TTL



To adjust sensitive TTL signals to the typical voltage level of 24 V DC used in industrial automation applications, the **MICROOPTO TTL** modules are used.

For the protection of the electronics, the sensitive TTL signals require electrical isolation from the 24 V world.

To control the optical coupler circuit via the 5 V TTL signal, an additional auxiliary voltage is fed in.

Technical data

Control side

Rated control voltage
Power rating
Cut-in (switch-on) voltage
Dropout voltage
Input frequency
Status indicator
Protective circuit

12 V DC...28 V DC
150 mW
> 10.7 V
< 10.6 V
100 kHz
Green status LED
Varistor, rev. polarity protection

Load side

Solid-state type
Rated switching voltage
Rated switching current
Voltage drop at max. load
Leakage current
Short-circuit-proof / Protective circuit, load side
Switch-on delay / Switch-off delay
Continuous current
Pulse load, max. current
Load category
Rated auxiliary voltage

TTL
5 V TTL
50 mA
90 mV

No / Varistor
typical. < 1 µs / typical. < 4 µs
max. 50 mA

General data

Ambient temperature (operational)
Storage temperature
Flammability class UL94
Humidity
Approvals
Standards

LC A
5 V DC ±5 %

-25 °C...+60 °C
-40 °C...+60 °C
V-0
40 °C / 93 % rel. humidity, no condensation
CE: cULus
DIN EN 50178, GL 2003-VI-Abs. 9, IEC 62314, UL508

Insulation coordination (EN 50 178)

Rated voltage
Rated impulse withstand voltage
Clearance and creepage distances for control side - load side
Surge voltage category
Pollution severity

300 V
4 kV (1.2 / 50 µs)
> 3 mm
III
2

Dimensions

Clamping range (nominal / min. / max.)
Length x width x height

mm²
mm

Note

Screw connection

2.5 / 0.5 / 4
98 / 6.1 / 88

Ordering data

Screw connection

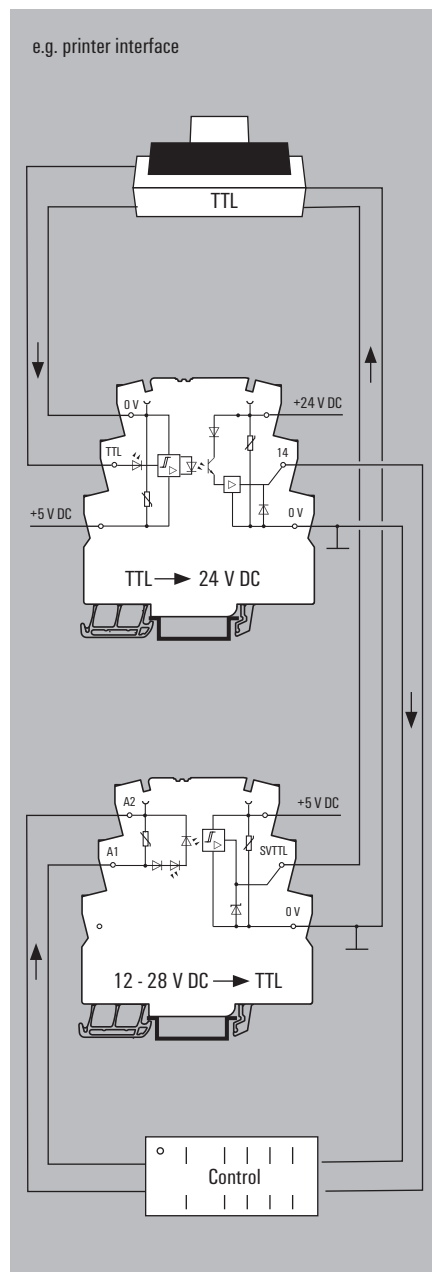
Type	Qty.	Order No.
MOS 12-28VDC/5VTTL	1	8937930000

Note

Accessories

Note

Accessories and dimensional drawings: refer to the MICROOPTO Accessories page



Accessories

General data – MICROOPTO



Plug-in cross-connection

Type	No. of poles	Qty.	Order No.
yellow			
ZQV 4N / 2 GE	2	60	1758250000
ZQV 4N / 3 GE	3	60	1762630000
ZQV 4N / 4 GE	4	60	1762620000
ZQV 4N / 10 GE	10	20	1758260000
ZQV 4N / 20 GE	20	20	1909020000
red			
ZQV 4N / 2 RT	2	60	1793950000
ZQV 4N / 3 RT	3	60	1793980000
ZQV 4N / 4 RT	4	60	1794010000
ZQV 4N / 10 RT	10	20	1794040000
ZQV 4N / 20 RT	20	20	1909150000
blue			
ZQV 4N / 2 BL	2	60	1793960000
ZQV 4N / 3 BL	3	60	1793990000
ZQV 4N / 4 BL	4	60	1794020000
ZQV 4N / 10 BL	10	20	1794050000
ZQV 4N / 20 BL	20	20	1909100000
black			
ZQV 4N / 2 SW	2	60	1793970000
ZQV 4N / 3 SW	3	60	1794000000
ZQV 4N / 4 SW	4	60	1794030000
ZQV 4N / 10 SW	10	20	1794060000
ZQV 4N / 20 SW	20	20	1909120000

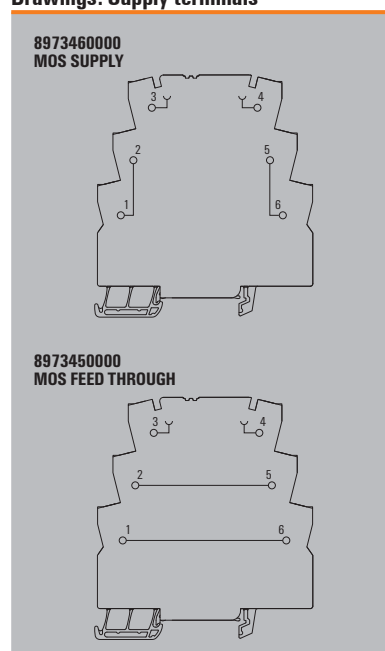
Technical data

Conductor		Screw-connection
Solid H07V-U	mm ²	0.5 ... 4.0
Stranded H07V-K	mm ²	0.5 ... 2.5
"f" with wire end ferrules to DIN 46228-1	mm ²	0.5 ... 1.5
"f" with wire end ferrules with plastic collar	mm ²	0.5 ... 1.5
Max. clamping range	mm ²	0.13 ... 4.0
Plug gauge to IEC 60947-1	Size	A 3
General technical data		
Nominal torque	Nm	0.6
Continuous current for 2-pole cross-connection	A	10
Continuous current for multi-pole cross-connection	A	10
Stripping length	mm	7
Ingress protection class		IP 20
Housing material		Wemid
UL 94 flammability rating		V-0
Nominal current	A	6
Nominal voltage	V	250

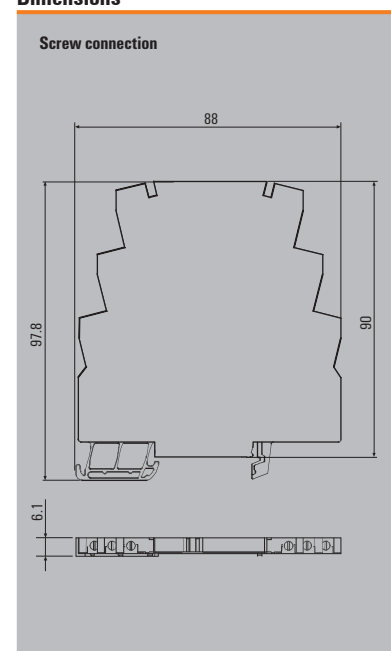
Other accessories

Type	Qty.	Order No.
Supply terminals		
MOS SUPPLY	1	8973460000
MOS FEED THROUGH	1	8973450000
Markers		
WS 12/6	12 x 6 mm	600
Labels, Lasermark		
LM MT 300 15/6 ge	484 labels / sheet	10
Screwdriver		
SD 0.6 x 3.5 x 100		10
Cross-connector for plugging into the clamping point		
QB 75/6.2/15		10
Coloured insulating profile for QB		
ISPF QB75 black		10
ISPF QB75 blue		10
ISPF QB75 red		10
End bracket		
WEW 35/2		100

Drawings: Supply terminals



Dimensions



MCZ-SERIES - Relay modules

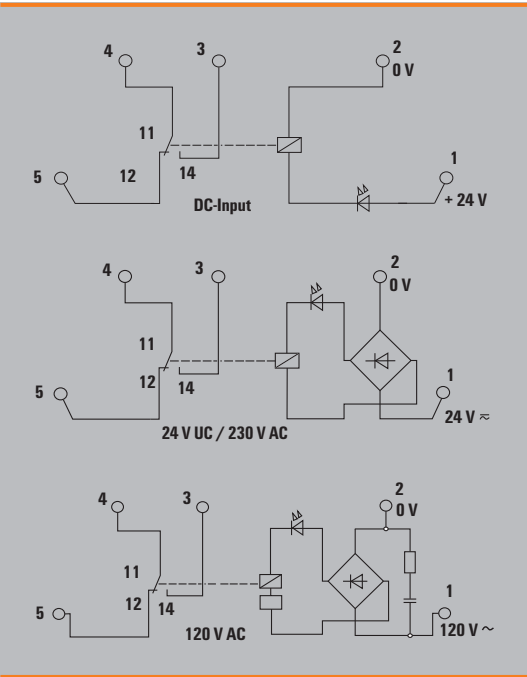
Mini-conditioner MCZ R

1 CO contact

AC/ DC/ UC coil

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

- Reduced installation and commissioning costs, thanks to the use of the proven tension-spring connection system.
- Pluggable cross-connection at input and output minimises the wiring workload.
- 6 mm modular wide
- For mounting on TS 35

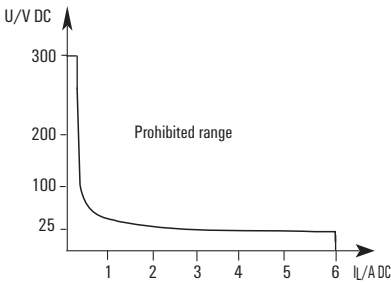


Technical data

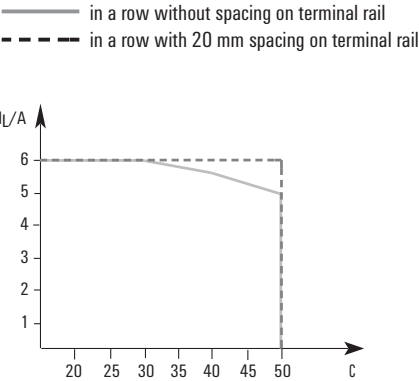
Output	
Max. switching voltage, AC / Continuous current	400 V / 6 A
Min. switching power	12 V / 10 mA
Contact material	AgSnO2
Mechanical service life	20 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	Green LED / Yes
Reverse polarity protection	Available
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GL; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Impulse withstand voltage	4 kV (1.2 / 50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2
Dimensions	
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.5 / 2.5
Length x width x height	mm 64 / 6 / 91
Note	
End plate AP MCZ 1.5: 8389030000 Accessories and dimensional drawings: refer to the MCZ Accessories page	

Applications

Limit curve



Derating curve



Mini-conditioner MCZ R

1 CO contact

AC/ DC/ UC coil

Ordering data

Input		24 V DC 1 CO	24 V DC 1 CO Au	24 V UC 1 CO	110 V DC 1 CO
Rated control voltage		24 V DC $\pm 20\%$	24 V DC $\pm 20\%$	24 V UC $\pm 10\%$	110 V DC $\pm 10\%$
Rated current AC				11 mA	
Rated current DC		6.3 mA	6.3 mA	6.4 mA	2.85 mA
Power rating		156 mW	156 mW	160 mVA / 150 mW	340 mW
AC Response/dropout Volt				approx. 17 V / approx. 7 V	
DC Response/dropout Volt		19 V / 4 V	19 V / 4 V	approx. 19 V / approx. 4 V	approx. 68 V / approx. 19 V
AC pickup/dropout current					
DC pickup/dropout current			5.7 mA	9 mA / 5 mA	1,6 mA / 0,4 mA
Load side					
Switch-on delay		< 5 ms	< 5 ms	6 ms	< 6 ms
Switch-off delay		≤ 11 ms	≤ 10 ms	< 35 ms	< 15 ms
Ordering data					
Complete module					
CO contact	Type	MCZ R 24VDC	MCZ R 24VDC 5uAu	MCZ R 24VUC	MCZ R 110VDC
	Order No.	8365980000	8442960000	8390590000	8467470000
	Type				
	Order No.				

Note

Can safely switch a load of:
1...60 V AC/DC, 1...300 mA.
If higher loads are switched
this can damage the gold plating.

Ordering data

Input		120 V AC 1 CO	230 V AC 1 CO
Rated control voltage		120 V AC -15 % / +10 %	230 V AC $\pm 10\%$
Rated current AC		7 mA	9.5 mA
Rated current DC			
Power rating		0.85 VA	2.1 VA
AC Response/dropout Volt		85 V / 17 V	150 V / 60 V
DC Response/dropout Volt			
AC pickup/dropout current		4 mA // 1.3 mA	5 mA / 2.5 mA
DC pickup/dropout current			
Load side			
Switch-on delay		< 17 ms	< 11 ms
Switch-off delay		< 35 ms	< 35 ms
Ordering data			
Complete module			
CO contact	Type	MCZ R 120VAC	MCZ R 230VAC
	Order No.	8420880000	8237710000
	Type		
	Order No.		

Note

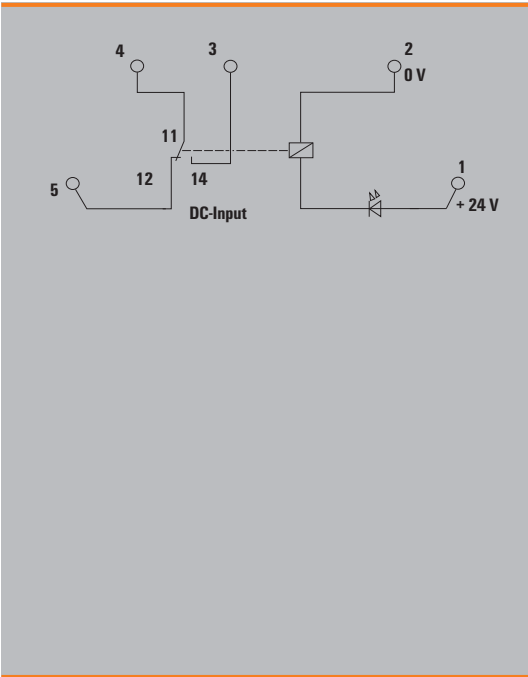
MCZ-SERIES - Relay modules

MCZ R TRAK

1 CO contact or 1 NO contact

DC coil

- 1 CO contact
- Component for rail industry applications
- Vibration requirements according to EN 61373, requirements category 1 class B
- Voltage fluctuations -30 %/+25 % and ± 40 % for 0.1 sec
- Voltage interruptions at input up to 10 ms
- Condensation permissible

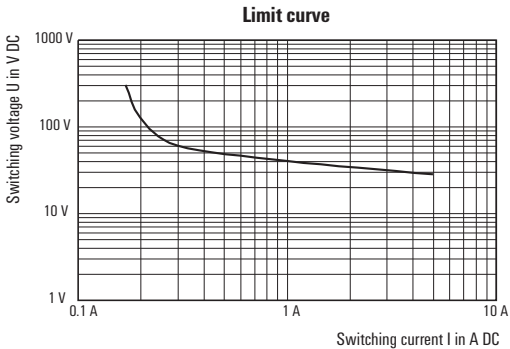
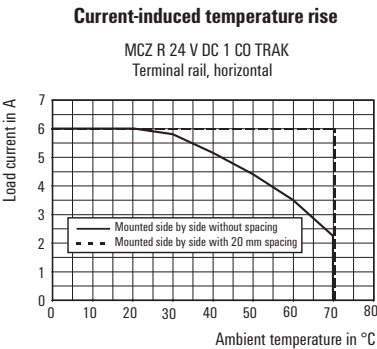


Technical data

Output	
Max. switching voltage, AC / Continuous current	400 V / 6 A
Min. switching power	12 V / 10 mA
Contact material	AgSnO
Mechanical service life	20 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	Green LED / Yes
Reverse polarity protection	Available
Ambient temperature (operational)	-25 °C...+70 °C / +85 °C for 10 minutes
Storage temperature	-40 °C...+85 °C
Humidity	95 % for 30 days, minimal condensation to EN 50155
Approvals	CE; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178, DIN EN 50155
Rated voltage	300 V
Impulse withstand voltage	4 kV (1.2 / 50 μ s)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions		Tension clamp connection	
Clamping range (nominal / min. / max.)	mm ²	1.5 / 0.5 / 2.5	
Length x width x height	mm	64 / 6 / 91	
Note		End plate AP MCZ 1.5: 8389030000 Accessories and dimensional drawings: refer to the MCZ Accessories page	

Applications



MCZ R TRAK**1 CO contact or 1 NO contact****DC coil****Ordering data**

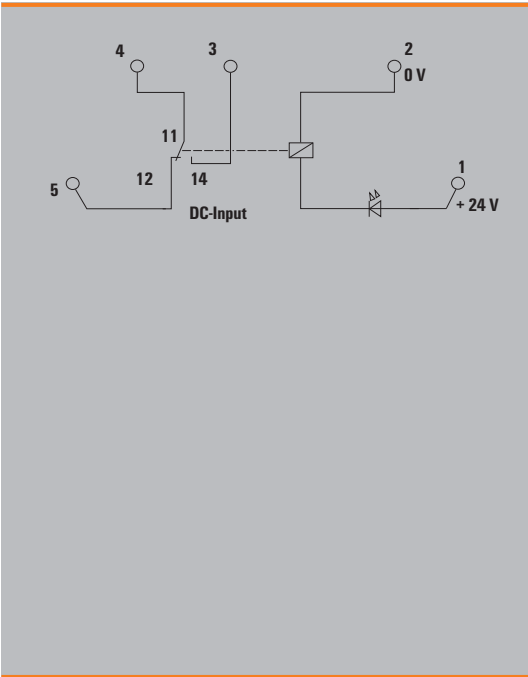
Input		24 V DC TRAK	36 V DC TRAK	48...110 V DC TRAK
Rated control voltage		24 V DC +25 % / -30 %	36 V DC +25 % / -30 %	48...110 V DC +25 % / -30 %
Rated current AC				
Rated current DC		11.5...16.5 mA	8...12 mA	< 3 mA
Power rating		195...500 mW	200...540 mW	< 300 mW
AC Response/dropout Volt				
DC Response/dropout Volt		14 V / 3 V	18 V / 4.5 V	< 25 V / < 6 V
AC pickup/dropout current				
DC pickup/dropout current				
Load side				
Switch-on delay		< 11 ms	< 6 ms	< 4 ms
Switch-off delay		< 50 ms	< 70 ms	< 100 ms
Ordering data				
Complete module				
CO contact	Type	MCZ R 24Vdc 1CO TRAK	MCZ R 36Vdc 1CO TRAK	MCZ R 48...110Vdc 1CO TRAK
	Order No.	8713890000	8713900000	8713910000
NO contact	Type	MCZ R 24Vdc 1NO TRAK		MCZ R 48...110Vdc 1NO TRAK
	Order No.	8499550000		8574070000

Note

MCZ-SERIES - Relay modules

MCZ R TRAK Au
1 CO contact or 1 NO contact
DC coil

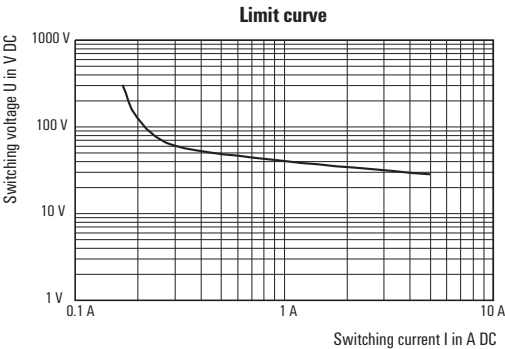
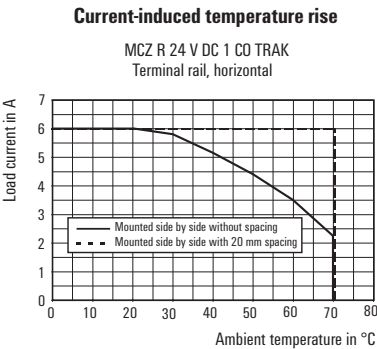
- 1 CO with hard gold-plated contacts
- Component for rail industry applications
- Vibration requirements according to EN 61373, requirements category 1 class B
- Voltage fluctuations -30 %/+25 % and ± 40 % for 0.1 sec
- Voltage interruptions at input up to 10 ms
- Condensation permissible



Technical data

Output	
Max. switching voltage, AC / Continuous current	400 V / 6 A
Min. switching power	1 V / 1 mA
Contact material	AgSnO 5µm Au
Mechanical service life	20 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	Green LED / Yes
Reverse polarity protection	Available
Ambient temperature (operational)	-25 °C...+70 °C / +85 °C for 10 minutes
Storage temperature	-40 °C...+85 °C
Humidity	95 % for 30 days, minimal condensation to EN 50155
Approvals	CE; GOSTME25
Insulation coordination (EN 50 178)	
Standards	
Rated voltage	300 V
Impulse withstand voltage	4 kV (1.2 / 50 µs)
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2
Dimensions	
Clamping range (nominal / min. / max.)	mm ² 1.5 / 0.5 / 2.5
Length x width x height	mm 64 / 6 / 91
Note	
End plate AP MCZ 1.5: 8389030000 Accessories and dimensional drawings: refer to the MCZ Accessories page	

Applications



MCZ R TRAK Au**1 CO contact or 1 NO contact****DC coil****Ordering data**

		24 V DC TRAK Au	36 V DC TRAK Au	48...110 V DC TRAK Au
Input				
Rated control voltage		24 V DC +25 % / -30 %	36 V DC +25 % / -30 %	48...110 V DC +25 % / -30 %
Rated current AC				
Rated current DC		11.5...16.5 mA	8...12 mA	< 3 mA
Power rating		195...500 mW	200...540 mW	< 300 mW
AC Response/dropout Volt				
DC Response/dropout Volt		14 V / 3 V	18 V / 4.5 V	< 25 V / < 6 V
AC pickup/dropout current				
DC pickup/dropout current				
Load side				
Switch-on delay		11 ms	typically 4.7 ms	< 4 ms
Switch-off delay		50 ms	typical. 44 ms	< 100 ms
Ordering data				
CO contact	Type	MCZ R 24VDC 1CO AU TRAK	MCZ R 36VDC 1CO AU TRAK	MCZ R 48...110VDC 1CO AU TRAK
	Order No.	8790520000	8790510000	8790500000
	Type			
	Order No.			

Note

Can safely switch a load of:
1...60 V AC/DC, 1...300 mA.
If higher loads are switched
this can damage the gold plating.

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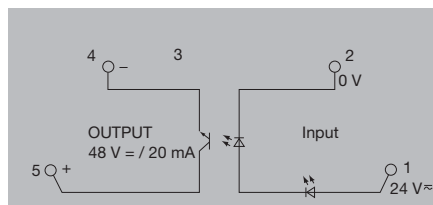
MCZ SERIES - Solid-state relays

MiniConditioner MCZ O

- Universal interface between controller and sensor/ actuator
- Tension-clamp connection system
- Plug-in cross-connection
- 6 mm modular wide

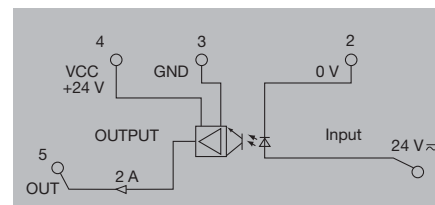
24 V UC

Connection system



24 V UC / 24 V 2 A

Connection system



Technical data

Control side	
Rated control voltage	24 V UC ±20 %
Power rating	230 mW / 280 mVA
Input frequency	AC: 5 Hz / DC: 10 Hz
Rated auxiliary voltage	No
Status indicator	Green LED
Load side	
Rated switching voltage	5...48 V DC
Rated switching current	20 mA
Voltage drop at max. load	≤ 1 V
Switch-on delay	AC: 10 ms / DC: 20 ms
Switch-off delay	AC: 45 ms / DC: 40 ms
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
General data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	24 V UC ±20 %
Power rating	230 mW / 280 mVA
Input frequency	AC: 5 Hz / DC: 10 Hz
Rated auxiliary voltage	No
Status indicator	Green LED
Load side	
Rated switching voltage	5...48 V DC
Rated switching current	20 mA
Voltage drop at max. load	≤ 1 V
Switch-on delay	AC: 10 ms / DC: 20 ms
Switch-off delay	AC: 45 ms / DC: 40 ms
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
General data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	24 V UC ±20 %
Power rating	195 mW / 220 mVA
Input frequency	AC: 10 Hz / DC: 30 Hz
Rated auxiliary voltage	No
Status indicator	LED
Load side	
Rated switching voltage	24 V DC ± 20 %
Rated switching current	2 A
Switch-on delay	
Switch-off delay	
Short-circuit-proof / Protective circuit, load side	Yes / Varistor
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Tension clamp connection	
1.5 / 0.5 / 1.5	
64 / 6 / 91	
Note	

Tension clamp connection	
1.5 / 0.5 / 1.5	
64 / 6 / 91	
Note	
* Status indicator: green = OK, yellow = partial short circuit, blinking red = short circuit	

Ordering data

Type	Qty.	Order No.
MCZ O 24VUC	10	8365940000

Type	Qty.	Order No.
MCZ O 24VUC	10	8287730000

Note

Note

Accessories

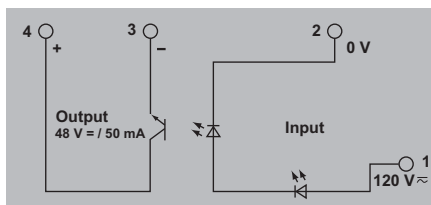
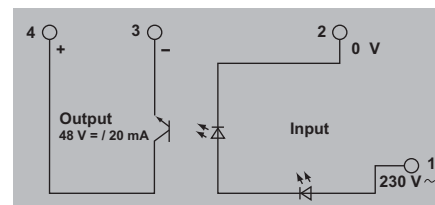
Note

End plate AP MCZ 1.5: 8389030000
Accessories and dimensional drawings: refer to the MCZ Accessories page

End plate AP MCZ 1.5: 8389030000
Accessories and dimensional drawings: refer to the MCZ Accessories page

MiniConditioner MCZ 0

- Universal interface between controller and sensor/ actuator
- Tension-clamp connection system
- Plug-in cross-connection
- 6 mm modular wide

120 V UC**Connection system****230 V AC****Connection system****Technical data**

Control side	
Rated control voltage	120 V UC +5 / -15 %
Power rating	350 mW / 400 mVA
Input frequency	AC: 5 Hz duty factor 1:2, DC: 20 Hz duty factor 1:2
Rated auxiliary voltage	No
Status indicator	Green LED
Load side	
Rated switching voltage	5...48 V DC
Rated switching current	50 mA
Voltage drop at max. load	1.6 V
Switch-on delay	≤ 30 ms
Switch-off delay	≤ 40 ms
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	230 V AC +5 % / -15 %
Power rating	2.3 VA
Input frequency	AC: 5 Hz duty factor 1:2
Rated auxiliary voltage	No
Status indicator	Green LED
Load side	
Rated switching voltage	5...48 V DC
Rated switching current	20 mA
Voltage drop at max. load	1.6 V
Switch-on delay	≤ 30 ms
Switch-off delay	≤ 40 ms
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	230 V AC +5 % / -15 %
Power rating	2.3 VA
Input frequency	AC: 5 Hz duty factor 1:2
Rated auxiliary voltage	No
Status indicator	Green LED
Load side	
Rated switching voltage	5...48 V DC
Rated switching current	20 mA
Voltage drop at max. load	1.6 V
Switch-on delay	≤ 30 ms
Switch-off delay	≤ 40 ms
Short-circuit-proof / Protective circuit, load side	No / Integrated free-wheel diode
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Tension clamp connection	
1.5 / 0.5 / 1.5	
64 / 6 / 91	
Note	

Tension clamp connection	
1.5 / 0.5 / 1.5	
64 / 6 / 91	
Note	

Ordering data

Type	Qty.	Order No.
MCZ 0 120VUC	10	8421060000

Type	Qty.	Order No.
MCZ 0 230VAC	10	8421380000

Note

Note

Accessories

Note

End plate AP MCZ 1.5: 8389030000
Accessories and dimensional drawings: refer to the MCZ Accessories page

End plate AP MCZ 1.5: 8389030000
Accessories and dimensional drawings: refer to the MCZ Accessories page

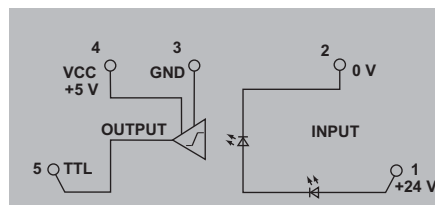
MCZ SERIES - Solid-state relays

MiniConditioner MCZ 0

- Universal interface between controller and sensor/ actuator
- Tension-clamp connection system
- Plug-in cross-connection
- 6 mm modular wide

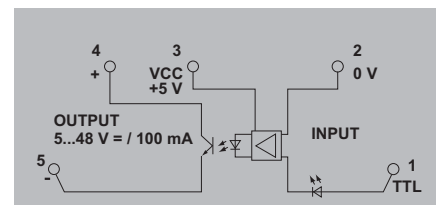
24 V DC / 5 V TTL

Connection system



5 V TTL / 5...48 V DC

Connection system



Technical data

Control side	
Rated control voltage	24 V DC $\pm 16\%$
Power rating	112 mW
Input frequency	100 kHz duty factor 1:2, 50 kHz duty factor 1:10
Rated auxiliary voltage	No
Status indicator	Green LED
Load side	
Rated switching voltage	5 V TTL
Rated switching current	8 mA, fan out = 20 LS-TTL
Voltage drop at max. load	1 μ s (at 20 V DC)
Switch-on delay	2.5 μ s (at 28 V DC)
Switch-off delay	No / Diode
Short-circuit-proof / Protective circuit, load side	No / Diode
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	24 V DC $\pm 16\%$
Power rating	112 mW
Input frequency	100 kHz duty factor 1:2, 50 kHz duty factor 1:10
Rated auxiliary voltage	No
Status indicator	Green LED
Load side	
Rated switching voltage	5 V TTL
Rated switching current	8 mA, fan out = 20 LS-TTL
Voltage drop at max. load	1 μ s (at 20 V DC)
Switch-on delay	2.5 μ s (at 28 V DC)
Switch-off delay	No / Diode
Short-circuit-proof / Protective circuit, load side	No / Diode
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	5 V TTL
Power rating	10 mW
Input frequency	2.4 kHz
Rated auxiliary voltage	5 V
Status indicator	Green LED
Load side	
Rated switching voltage	5...48 V DC
Rated switching current	100 mA
Voltage drop at max. load	≤ 1.8 V
Switch-on delay	
Switch-off delay	
Short-circuit-proof / Protective circuit, load side	No / Diode
General data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Tension clamp connection	
1.5 / 0.5 / 1.5	
64 / 6 / 91	
Note	

Tension clamp connection	
1.5 / 0.5 / 1.5	
64 / 6 / 91	
Note	

Ordering data

Type	Qty.	Order No.
MCZ 0 24VDC	10	8324610000

Type	Qty.	Order No.
MCZ 0 5VTTL	10	8398940000

Note

Accessories

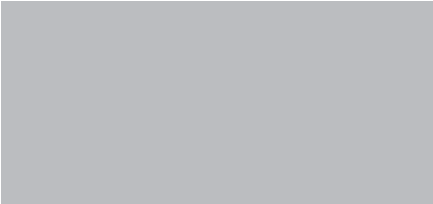
Note

End plate AP MCZ 1.5: 8389030000
Accessories and dimensional drawings: refer to the MCZ Accessories page

End plate AP MCZ 1.5: 8389030000
Accessories and dimensional drawings: refer to the MCZ Accessories page

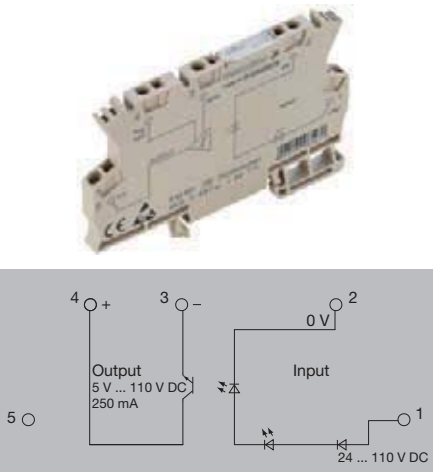
MCZ O TRAK

- Component for rail industry applications
- Fulfils requirements acc. to EN 50155
- Voltage fluctuations -30 % / +25 %
- Operating temperature -25...+70 °C (85 °C / 10 min.) acc. to EN 50155
- Condensation permissible



24 V DC TRAK

Connection system



Technical data

Control side	
Rated control voltage	24...110 V DC -30 / +25 %
Power rating	
Input frequency	max. 10 Hz
Rated auxiliary voltage	No
Status indicator	Green LED
Load side	
Rated switching voltage	5...137.5 V DC
Rated switching current	180 mA
Voltage drop at max. load	≤ 1.7 V
Switch-on delay	≤ 10 ms
Switch-off delay	50 ms
Short-circuit-proof / Protective circuit, load side	No / Varistor, integrated free-wheel diode
General data	
Ambient temperature (operational)	-25 °C...+70 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE, GOSTME25
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178, DIN EN 50155
Rated voltage	300 V
Rated impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Surge voltage category	III
Pollution severity	2

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Tension clamp connection	
1.5 / 0.5 / 1.5	
64 / 6 / 91	

Ordering data

Tension clamp connection

Note

Accessories

Note

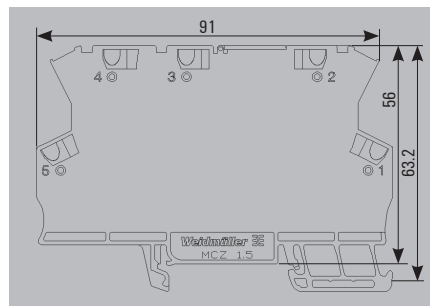
Type	Qty.	Order No.
MCZ O TRAK 24.110VDC	10	8820710000

Note

End plate AP MCZ 1.5: 8389030000 Accessories and dimensional drawings: refer to the MCZ Accessories page

MCZ-SERIES – Accessories

MCZ accessories



Ordering data

Type	Qty.	Order No.
End plate		

Type	Qty.	Order No.
AP MCZ 1.5	50	8389030000



Ordering data

	No. of poles
Plug-in cross-connection, yellow	2
Plug-in cross-connection, yellow	3
Plug-in cross-connection, yellow	4
Plug-in cross-connection, yellow	10
Plug-in cross-connection, yellow	20
Plug-in cross-connection, red	2
Plug-in cross-connection, red	3
Plug-in cross-connection, red	4
Plug-in cross-connection, red	10
Plug-in cross-connection, red	20
Plug-in cross-connection, blue	2
Plug-in cross-connection, blue	3
Plug-in cross-connection, blue	4
Plug-in cross-connection, blue	10
Plug-in cross-connection, blue	20
Plug-in cross-connection, black	2
Plug-in cross-connection, black	3
Plug-in cross-connection, black	4
Plug-in cross-connection, black	10
Plug-in cross-connection, black	20

Type	Qty.	Order No.
ZQV 4N / 2 GE	60	1758250000
ZQV 4N / 3 GE	60	1762630000
ZQV 4N / 4 GE	60	1762620000
ZQV 4N / 10 GE	20	1758260000
ZQV 4N / 20 GE	20	1909020000
red		
ZQV 4N / 2 RT	60	1793950000
ZQV 4N / 3 RT	60	1793980000
ZQV 4N / 4 RT	60	1794010000
ZQV 4N / 10 RT	20	1794040000
ZQV 4N / 20 RT	20	1909150000
blue		
ZQV 4N / 2 BL	60	1793960000
ZQV 4N / 3 BL	60	1793990000
ZQV 4N / 4 BL	60	1794020000
ZQV 4N / 10 BL	20	1794050000
ZQV 4N / 20 BL	20	1909100000
black		
ZQV 4N / 2 SW	60	1793970000
ZQV 4N / 3 SW	60	1794000000
ZQV 4N / 4 SW	60	1794030000
ZQV 4N / 10 SW	20	1794060000
ZQV 4N / 20 SW	20	1909120000



Ordering data

Type	Qty.	Order No.
Terminal markers		
Screwdriver		
End bracket		

Type	Qty.	Order No.
WS 10/6 MC NEUTRAL	600	1828450000
SD 0.6x3.5x100	1	9008330000
WEW 35/2	100	1061200000

Industrial relay modules and solid-state relays

Industrial relay modules and solid-state relays	Industrial relay modules and solid-state relays – Overview	B.2
	RIDERSERIES – Overview	B.4
	RIDERSERIES – Relay modules	B.6
	RIDERSERIES FG – Overview	B.44
	RIDERSERIES FG – Relay modules	B.46
	RS-SERIES – Relay modules	B.48
	RSO-SERIES – Solid-state relays	B.58

Industrial relay module and solid-state relay with the proven connection technology

Easy handling and safe connections

Weidmüller's relay bases are remarkable for their secure connection systems and their ease of use during wiring and installation. Pluggable cross-connection and the extra-quick PUSH IN connection help you to further reduce wiring times. In combination with the established relay technology, Weidmüller's industrial relays and solid state relays provide users with excellent reliability and service convenience. Whether electro-mechanical or electronic, our extensive choice of relay modules and solid-state relays provides the proper solution for all of your industrial application needs.





Coupling modules - the industrial standard



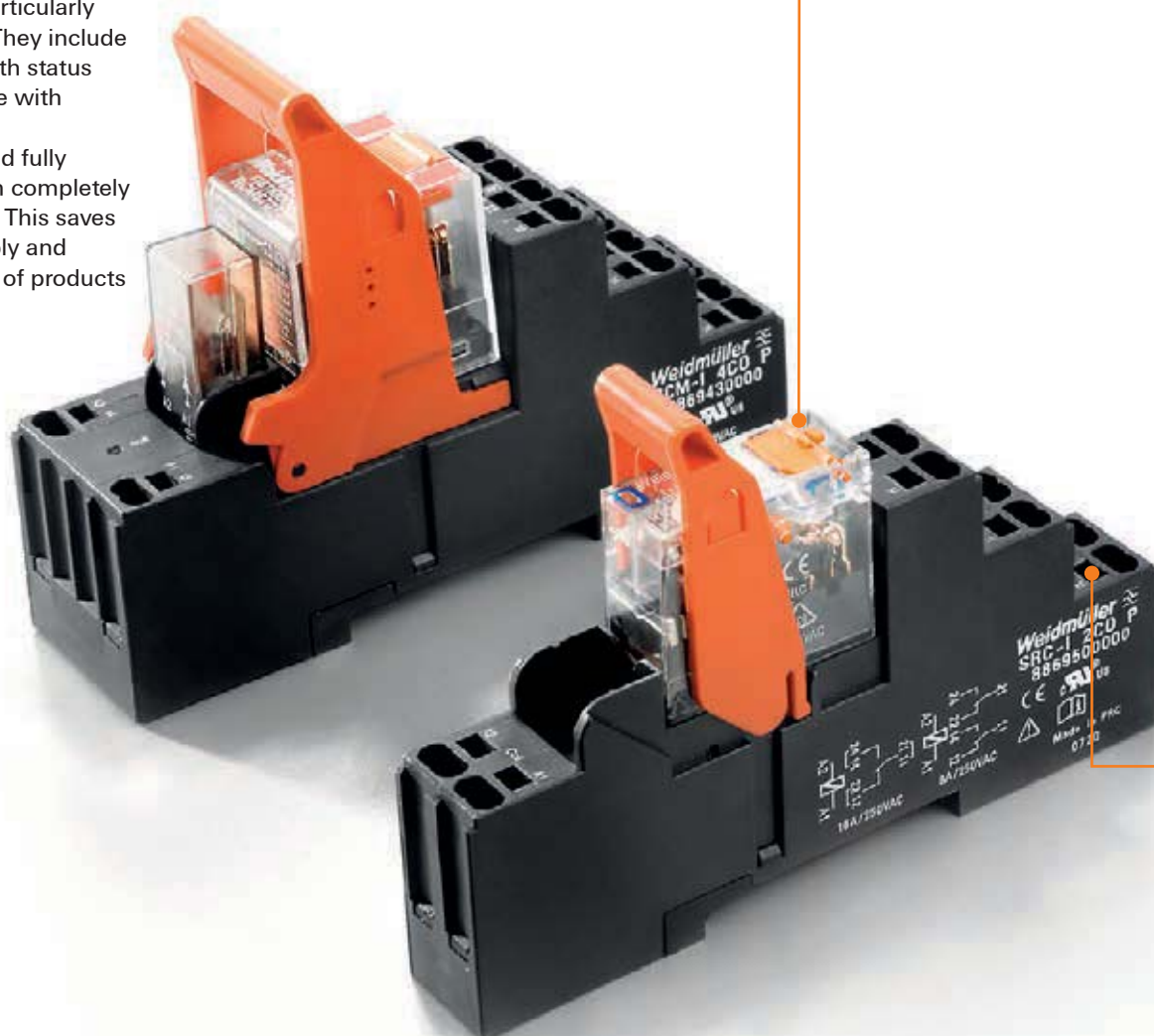
Relay module with 1 to 4 CO contacts

The RIDER SERIES and its RCI, RCM, RRD and RPW product lines have been successfully integrated into the entire Weidmüller line of relay products. This modular-designed product series formally complies with international standards. A variety of pluggable versions are available with from one to four CO contacts and your choice of connection method.

Our innovative relay bases with PUSH IN connection systems are available for both the RCI/RCL and RCM product lines. PUSH IN technology is safe and easy to use and it allows you to reduce costs with less wiring time. The relay modules are designed for industrial applications and feature sturdy relay pins and industrial-standard pinning. A mechanically operated, stay-down test button is integrated into the design. It enables switching statuses to be simulated during initial commissioning. Additional product features include LED status indicators and free-wheel diodes (DC).

Our relay kits are particularly convenient to use. They include the relay module with status display and the base with ejection lever.

The kits are delivered fully assembled and with completely tested functionality. This saves time during assembly and reduces the number of products required.



Simple

The stay-down test button simplifies commissioning and service work

**Customised**

Suppressor circuitry and LED can be integrated into a relay module or as a pluggable module at the base

**Safe**

The heavy-duty industrial pins ensure a reliable connection

Saves time

No-screw PUSH IN connections and cross-connections can reduce wiring time by more than 50 %

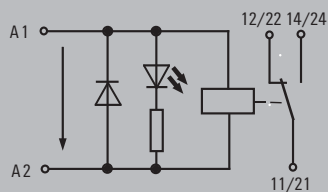


1 CO

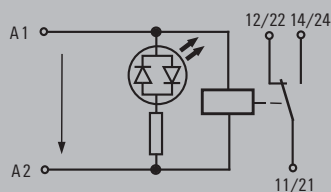
- 4000 VA switching capacity
- Stable plug-in connections
- LED (AC red / DC green) integrated in relay
- Protective suppressor circuit for DC coil
- Optional test button with latching function and inspection window
- Identification of coils (AC red / DC blue)



DC-Version



AC-Version



Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	16 A ¹⁾
Contact material	AgNi 90/10
Mechanical service life	AC coil 5 x 10 ⁶ switch. ops, DC coil 10 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	8 ms / 6 ms
Rated data	
Status indicator [print] / Free-wheel diode	Green LED = DC coil; red LED = AC coil / Yes
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; GL
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	> 8 mm
Surge voltage category	III
Pollution severity	3

Dimensions	Screw connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 2.5
Length x width x height	mm 70 / 15.5 / 77
Note	1) The relay connections 11 - 21, 12 - 22 and 14 - 24 must be bridged when using the full continuous current (16 A).

Input
Rated control voltage
Rated current AC
Rated current DC
Power rating
AC Response/dropout Volt
DC Response/dropout Volt
Coil resistance

24 V DC 1C0	24 V AC 1C0	115 V AC 1C0	230 V AC 1C0
24 V DC	24 V AC	115 V AC	230 V AC
16.7 mA	31.6 mA	7 mA	3.5 mA
420 mW	0.75 VA	0.8 VA	0.8 VA
16.8 V / 2.4 V	18 V / 3.6 V	86.3 V / 17.3 V	172.5 V / 34.5 V
1440 Ω ±10 %	350 Ω ±10 %	8100 Ω ±15 %	32500 Ω ±15 %

Ordering data					
Relay with socket					
w. test button	Type	RCIKIT 24VDC 1CO LD/PB	RCIKIT 24VAC 1CO LD/PB	RCIKIT 115VAC 1CO LD/PB	RCIKIT 230VAC 1CO LD/PB
	Order No.	8881580000	8881590000	8897060000	8881600000
w.o. test button	Type	RCIKIT 24VDC 1CO LED	RCIKIT 24VAC 1CO LED	RCIKIT 115VAC 1CO LD	RCIKIT 230VAC 1CO LED
	Order No.	8871000000	8871010000	8897090000	8871020000

Ordering data		w. test button		w.o. test button		w. test button		w.o. test button	
Spare relay									
Type		RCI374AC4	RCI314AC4	RCI374R24	RCI314R24	RCI374S15	RCI314S15	RCI374T30	RCI314T30
Order No.		8870250000	8870100000	8870280000	8870130000	8870290000	8870140000	8870300000	8870150000

Note					

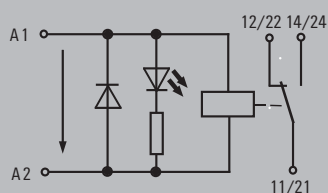
RCI-KITP with PUSH IN connection

1 CO

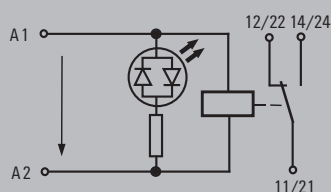
- 4000 VA switching capacity
- Stable plug-in connections
- LED (AC red / DC green) integrated in relay
- Protective suppressor circuit for DC coil
- Optional test button with latching function and inspection window
- Identification of coils (AC red / DC blue)



DC-Version



AC-Version



Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	16 A ¹⁾
Contact material	AgNi 90/10
Mechanical service life	AC coil 5 x 10 ⁶ switch. ops, DC coil 10 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	8 ms / 6 ms
Rated data	
Status indicator [print] / Free-wheel diode	Green LED = DC coil; red LED = AC coil / Yes
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; GL
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	> 8 mm
Surge voltage category	III
Pollution severity	3

Dimensions	PUSH IN spring connection	
Clamping range (nominal / min. / max.)	mm ²	1.5 / 0.5 / 1.5
Length x width x height	mm	70 / 15.5 / 98
Note 1) The relay connections 11 - 21, 12 - 22 and 14 - 24 must be bridged when using the full continuous current (16 A).		

Ordering data

Input	24 V DC 1CO	24 V AC 1CO	115 V AC 1CO	230 V AC 1CO
Rated control voltage	24 V DC	24 V AC	115 V AC	230 V AC
Rated current AC		31.6 mA	7 mA	3.5 mA
Rated current DC	16.7 mA			
Power rating	420 mW	0.75 VA	0.8 VA	0.8 VA
AC Response/dropout Volt		18 V / 3.6 V	86.3 V / 17.3 V	172.5 V / 34.5 V
DC Response/dropout Volt	16.8 V / 2.4 V			
Coil resistance	1440 Ω ±10 %	350 Ω ±10 %	8100 Ω ±15 %	32500 Ω ±15 %

Ordering data
Relay with socket

w. test button	Type	RCIKITP 24VDC 1CO LD/PB	RCIKITP 24VAC 1CO LD/PB	RCIKITP115VAC 1CO LD/PB	RCIKITP230VAC 1CO LD/PB
	Order No.	8897190000	8897200000	8897210000	8897220000
w.o. test button	Type	RCIKITP 24VDC 1CO LD	RCIKITP 24VAC 1CO LD	RCIKITP 115VAC 1CO LD	RCIKITP 230VAC 1CO LD
	Order No.	8897110000	8897120000	8897130000	8897140000

Ordering data
Spare relay

w. test button	w.o. test button	w. test button	w.o. test button	w. test button	w.o. test button	w. test button	w.o. test button
RCI374AC4	RCI314AC4	RCI374R24	RCI314R24	RCI374S15	RCI314S15	RCI374T30	RCI314T30
8870250000	8870100000	8870280000	8870130000	8870290000	8870140000	8870300000	8870150000

Note				

Accessories for RCI KIT relay modules, 1 CO

Plug-in module with PUSH IN connection

Plug-in module with screw connection



Technical data

Rated current
Rated voltage
Dielectric strength of coil contacts
Ambient temperature (operational)
Protection class (IEC 61810)
Approvals
Connection cross-section
- Solid-core wire
- Stranded wire
- with ferrule
Rated torque acc. to IEC 61984 for screw connection

2 x 12 A*)
240 V AC
4000 V _{eff}
-25 °C...+85 °C
IP20
VDE, cURus, CSA
2 x 1.5 mm ²
2 x 1.5 mm ²
2 x 1.0 mm ²

2 x 12 A*)
240 V AC
> 3000 V _{eff}
-25 °C...+85 °C
IP20
VDE, cURus, CSA
2 x 2.5 mm ²
2 x 2.5 mm ²
2 x 1.5 mm ²
0.5 Nm / max. 0.7 Nm

*) For 1-pole relay modules (16 A), the following terminals must be connected: 11 with 21, 12 with 22, and 14 with 24.

Ordering data

Description
Plug-in module, snaps onto TS35 DIN mounting rail, 2-pole

Type	Qty.	Order No.
SRC-I 2CO P	10	8869500000

Type	Qty.	Order No.
SRC-I 2CO	10	8869490000

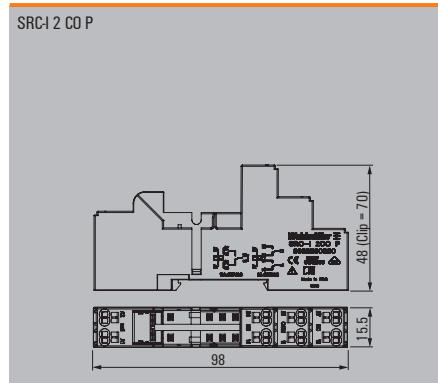
Accessories

Description
Plastic retaining clip
Metal retaining clip
Label
MultiCard 6x15 mm
 Cross-connector for PUSH IN base, 2-pole, 12 A
 Cross-connector for screw base, 8-pole

Type	Qty.	Order No.
SRC-I CLIP HP	10	8869510000
SRC-I CLIP HM RCI	20	1132090000
SRC-I MARK	10	8869530000
ESG 6/15 K MC NEUTR. WS	200	1880100000
SRC-I QV	10	8870840000

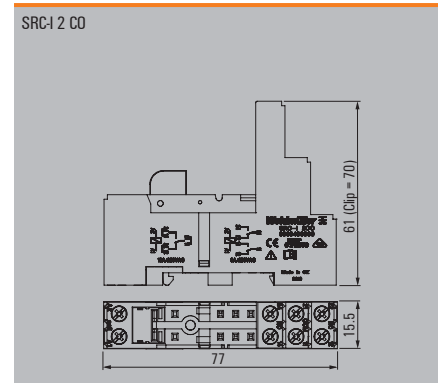
Type	Qty.	Order No.
SRC-I CLIP HP	10	8869510000
SRC-I CLIP HM RCI	20	1132090000
SRC-I MARK	10	8869530000
ESG 6/15 K MC NEUTR. WS	200	1880100000
SRC-I QV S		1132070000

Dimensions



Dimensions in mm

Dimensions



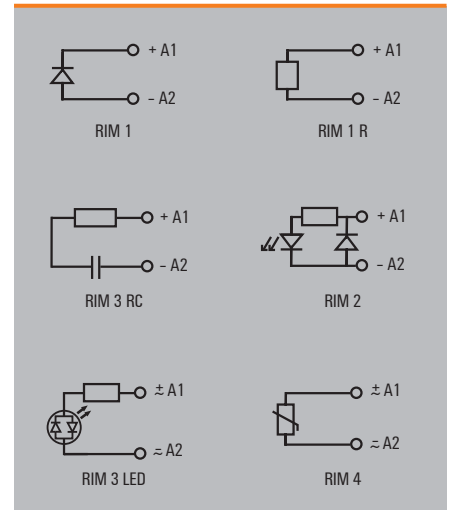
LED and protective modules for the SRC-I plug-in frame

Simply plug into the base module; reverse-connect protection. Connect parallel to coil.

Ordering data

Description
Free Wheel diode 1N4007
Resistor 100 k Ω 1 Watt
RC-element 6 ... 60 V AC; 470 Ω / 220 nF
RC-element 110 ... 230 V AC; 4.7 Ω / 10 nF
Varistor protection 24 V; S07K30
Varistor protection 110 V; S07K130
Varistor protection 230 V; S07K275
LED
LED 6 ... 24 V DC with free wheel diode
LED 24 ... 60 V DC with free wheel diode
LED 110 ... 230 V DC with free wheel diode
LED 6 ... 24 V DC / V AC
LED 24 ... 60 V DC / V AC
LED 110 ... 230 V DC / V AC

Type	Qty.	Order No.	Order No.
RIM-I 1 6/230V	10	8869580000	
RIM-I 1 R 110/230V	10	8870830000	
RIM-I 3 6/60VAC	10	8869770000	
RIM-I 3 110/230VAC	10	8869790000	
RIM-I 4 24VUC	10	8869710000	
RIM-I 4 110VUC	10	8869730000	
RIM-I 4 230VUC	10	8869750000	
		red	green
RIM-I 2 6/24VDC	10	8869590000	8869600000
RIM-I 2 24/60VDC	10	8869670000	8869680000
RIM-I 2 110/230VDC	10	8869690000	8869700000
RIM-I 3 6/24VUC	10	8869630000	8869640000
RIM-I 3 24/60VUC	10	8869610000	8869620000
RIM-I 3 110/230VUC	10	8869650000	8869660000

**Warnings and notes on usage**

Handling the PUSH IN connection

Cross-connector mounting for PUSH IN base

Cross-connector mounting for screw base

Release openings
Wire-connection opening

Screwdriver
SD 0.6 x 3.5 x 100
9008330000

$\varnothing 3.5$

If more than two poles need to be connected with stacked cross-connector ridges, then the lower ridge must be stripped and shortened to the proper length so it will fit.

RCI KIT with screw connection

2 CO

- 2000 VA switching capacity
- Stable plug-in connections
- LED (AC red / DC green) integrated in relay
- Protective suppressor circuit for DC coil
- Optional test button with latching function and inspection window
- Identification of coils (AC red / DC blue)



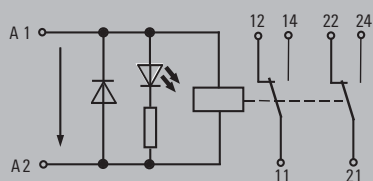
Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	8 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 5 x 10 ⁶ switch. ops, DC coil 10 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	10 ms / 4 ms
Rated data	
Status indicator [print] / Free-wheel diode	Green LED = DC coil; red LED = AC coil / Yes
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; GL
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	> 8 mm
Surge voltage category	III
Pollution severity	2

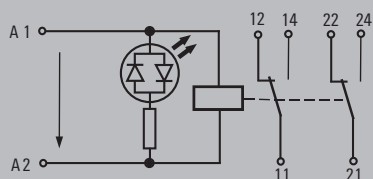
Dimensions	Screw connection	
Clamping range (nominal / min. / max.)	mm ²	2.5 / 0.5 / 2.5
Length x width x height	mm	70 / 15.5 / 77

Note

DC-Version



AC-Version



Ordering data

Input	24 V DC 2CO	24 V AC 2CO	115 V AC 2CO	230 V AC 2CO
Rated control voltage	24 V DC	24 V AC	115 V AC	230 V AC
Rated current AC		31.6 mA	7 mA	3.5 mA
Rated current DC	16.7 mA			
Power rating	420 mW	0.75 VA	0.8 VA	0.8 VA
AC Response/dropout Volt		18 V / 3.6 V	86.3 V / 17.3 V	172.5 V / 34.5 V
DC Response/dropout Volt	16.8 V / 2.4 V			
Coil resistance	1440 Ω ±10 %	350 Ω ±10 %	8100 Ω ±15 %	32500 Ω ±15 %

Ordering data
Relay with socket

w. test button	Type	RCIKIT 24VDC 2CO LD/PB	RCIKIT 24VAC 2CO LD/PB	RCIKIT 115VAC 2CO LD/PB	RCIKIT 230VAC 2CO LD/PB
	Order No.	8881610000	8881620000	8897080000	8881630000
w.o. test button	Type	RCIKIT 24VDC 2CO LED	RCIKIT 24VAC 2CO LED	RCIKIT 115VAC 2CO LD	RCIKIT 230VAC 2CO LED
	Order No.	8871030000	8871040000	8897100000	8871050000

Ordering data
Spare relay

w. test button	w.o. test button	w. test button	w.o. test button	w. test button	w.o. test button	w. test button	w.o. test button
RCI484AC4	RCI424AC4	RCI484R24	RCI424R24	RCI484S15	RCI424S15	RCI484T30	RCI424T30
8870320000	8870180000	8870350000	8870210000	8870360000	8870220000	8870370000	8870230000

Note

RCI-KITP with PUSH IN connection

2 CO

- 2000 VA switching capacity
- Stable plug-in connections
- LED (AC red / DC green) integrated in relay
- Protective suppressor circuit for DC coil
- Optional test button with latching function and inspection window
- Identification of coils (AC red / DC blue)



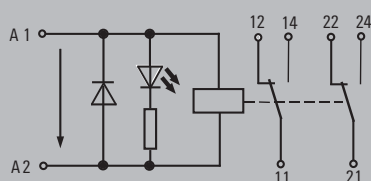
Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	8 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 5 x 10 ⁶ switch. ops, DC coil 10 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	10 ms / 4 ms
Rated data	
Status indicator [print] / Free-wheel diode	Green LED = DC coil; red LED = AC coil / Yes
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; GL
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	> 8 mm
Surge voltage category	III
Pollution severity	2

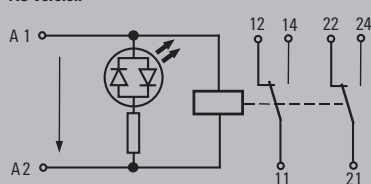
Dimensions	PUSH IN spring connection	
Clamping range (nominal / min. / max.)	mm ²	1.5 / 0.5 / 1.5
Length x width x height	mm	70 / 15.5 / 98

Note

DC-Version



AC-Version



Ordering data

Input	24 V DC 2CO	24 V AC 2CO	115 V AC 2CO	230 V AC 2CO
Rated control voltage	24 V DC	24 V AC	115 V AC	230 V AC
Rated current AC		31.6 mA	7 mA	3.5 mA
Rated current DC	16.7 mA			
Power rating	420 mW	0.75 VA	0.8 VA	0.8 VA
AC Response/dropout Volt		18 V / 3.6 V	86.3 V / 17.3 V	172.5 V / 34.5 V
DC Response/dropout Volt	16.8 V / 2.4 V			
Coil resistance	1440 Ω ±10 %	350 Ω ±10 %	8100 Ω ±15 %	32500 Ω ±15 %

Ordering data
Relay with socket

w. test button	Type	RCIKITP 24VDC 2CO LD/PB	RCIKITP 24VAC 2CO LD/PB	RCIKITP115VAC 2CO LD/PB	RCIKITP230VAC 2CO LD/PB
	Order No.	8897230000	8897240000	8897250000	8897260000
w.o. test button	Type	RCIKITP 24VDC 2CO LD	RCIKITP 24VAC 2CO LD	RCIKITP 115VAC 2CO LD	RCIKITP 230VAC 2CO LD
	Order No.	8897150000	8897160000	8897170000	8897180000

Ordering data
Spare relay

w. test button	w.o. test button	w. test button	w.o. test button	w. test button	w.o. test button	w. test button	w.o. test button
RCI484AC4	RCI424AC4	RCI484R24	RCI424R24	RCI484S15	RCI424S15	RCI484T30	RCI424T30
8870320000	8870180000	8870350000	8870210000	8870360000	8870220000	8870370000	8870230000

Note

Accessories for RCI KIT relay modules, 2 CO

Plug-in module with
PUSH IN connectionPlug-in module with
screw connectionPlug-in module with
screw connection

Standard height

Low height



Technical data

Rated current	2 x 12 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	4000 V _{eff}
Ambient temperature (operational)	-25 °C...+85 °C
Protection class (IEC 61810)	IP20
Stripping length	12 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	1 x 1.5 mm ² / 2 x 1.0 mm ²
- Stranded wire	1 x 1.5 mm ² / 2 x 1.0 mm ²
- with ferrule	1 x 1.0 mm ² / 2 x 0.75 mm ²
Rated torque acc. to IEC 61984 for screw connection	

Rated current	2 x 12 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	4000 V _{eff}
Ambient temperature (operational)	-25 °C...+85 °C
Protection class (IEC 61810)	IP20
Stripping length	12 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	1 x 1.5 mm ² / 2 x 1.0 mm ²
- Stranded wire	1 x 1.5 mm ² / 2 x 1.0 mm ²
- with ferrule	1 x 1.0 mm ² / 2 x 0.75 mm ²

Rated current	2 x 12 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 3000 V _{eff}
Ambient temperature (operational)	-25 °C...+85 °C
Protection class (IEC 61810)	IP20
Stripping length	8 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	2 x 2.5 mm ²
- Stranded wire	2 x 2.5 mm ²
- with ferrule	2 x 1.5 mm ²
Rated torque acc. to IEC 61984 for screw connection	0.5 Nm / max. 0.7 Nm

Rated current	2 x 12 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 3000 V _{eff}
Ambient temperature (operational)	-25 °C...+85 °C
Protection class (IEC 61810)	IP20
Stripping length	8 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	2 x 2.5 mm ²
- Stranded wire	2 x 2.5 mm ²
- with ferrule	2 x 1.5 mm ²
Rated torque acc. to IEC 61984 for screw connection	0.5 Nm / max. 0.7 Nm

Ordering data

Description
Plug-in module, snaps onto TS35 DIN mounting rail, 2-pole

Type	Qty.	Order No.
SRC-I 2CO P		8869500000

Type	Qty.	Order No.
SRC-I 2CO		8869490000

Type	Qty.	Order No.
SRC-I 2CO N		8869480000

Accessories

Description
Plastic retaining clip
Metal retaining clip
Label
MultiCard 6x15 mm

Type	Qty.	Order No.
SRC-I CLIP HP	10	8869510000
SRC-I CLIP HM RCI	20	1132090000
SRC-I MARK	10	8869530000
ESG 6/15 K MC	200	1880100000
NEUTR. WS		
SRC-I QV P		8870840000

Type	Qty.	Order No.
SRC-I CLIP HP	10	8869510000
SRC-I CLIP HM RCI	20	1132090000
SRC-I MARK	10	8869530000
ESG 6/15 K MC	200	1880100000
NEUTR. WS		

Type	Qty.	Order No.
SRC-I CLIP HP	10	8869510000
SRC-I CLIP HM RCI	20	1132090000
SRC-I MARK	10	8869530000
ESG 6/15 K MC	200	1880100000
NEUTR. WS		

Cross-connector for
PUSH IN base, 2-pole, 12 ACross-connector for
screw base, 8-pole

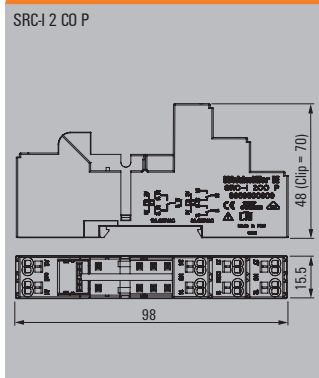
SRC-I QV S

1132070000

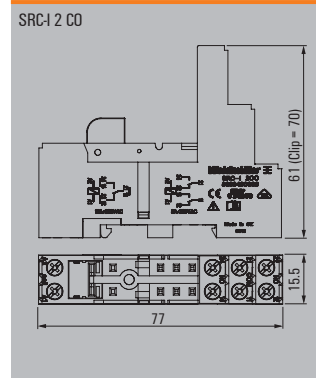
SRC-I QV S

1132070000

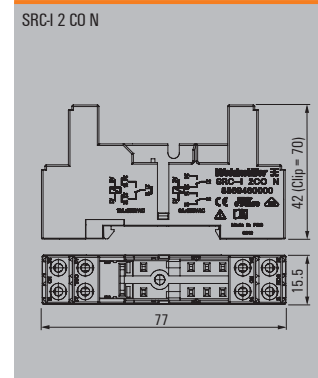
Dimensions



Dimensions



Dimensions



Dimensions in mm

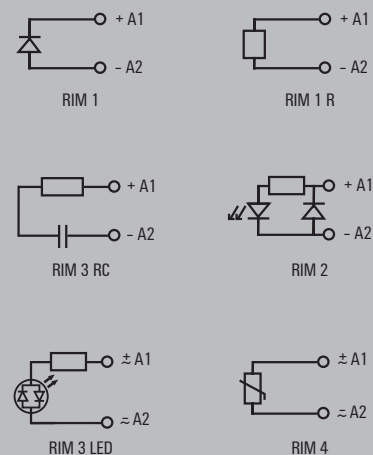
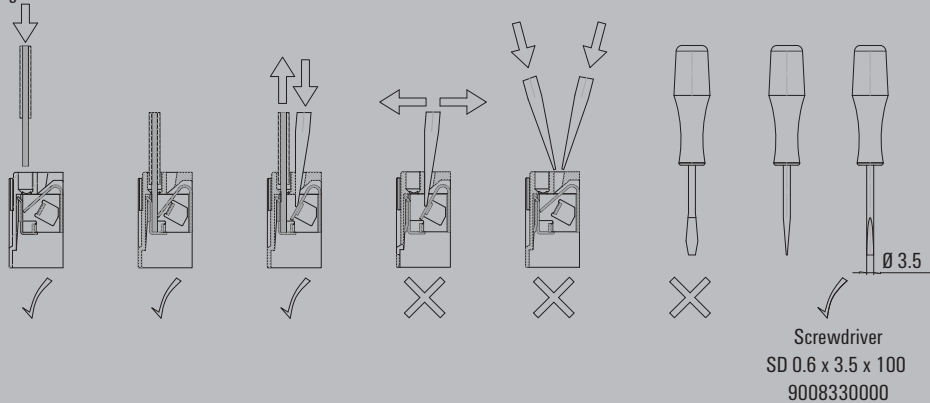
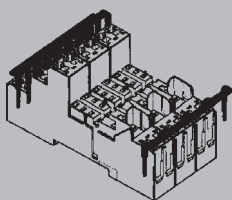
LED and protective modules for the SRC-I plug-in frame

Simply plug into the base module; reverse-connect protection. Connect parallel to coil.

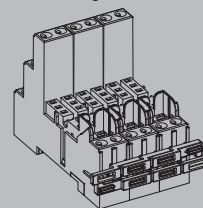
Ordering data

Description
Free Wheel diode 1N4007
Resistor 100 k Ω 1 Watt
RC-element 6 ... 60 V AC; 470 Ω / 220 nF
RC-element 110 ... 230 V AC; 4.7 Ω / 10 nF
Varistor protection 24 V; S07K30
Varistor protection 110 V; S07K130
Varistor protection 230 V; S07K275
LED
LED 6 ... 24 V DC with free wheel diode
LED 24 ... 60 V DC with free wheel diode
LED 110 ... 230 V DC with free wheel diode
LED 6 ... 24 V DC / V AC
LED 24 ... 60 V DC / V AC
LED 110 ... 230 V DC / V AC

Type	Qty.	Order No.	Order No.
RIM-I 1 6/230V	10	8869580000	
RIM-I 1 R 110/230V	10	8870830000	
RIM-I 3 6/60VAC	10	8869770000	
RIM-I 3 110/230VAC	10	8869790000	
RIM-I 4 24VUC	10	8869710000	
RIM-I 4 110VUC	10	8869730000	
RIM-I 4 230VUC	10	8869750000	
		red	green
RIM-I 2 6/24VDC	10	8869590000	8869600000
RIM-I 2 24/60VDC	10	8869670000	8869680000
RIM-I 2 110/230VDC	10	8869690000	8869700000
RIM-I 3 6/24VUC	10	8869630000	8869640000
RIM-I 3 24/60VUC	10	8869610000	8869620000
RIM-I 3 110/230VUC	10	8869650000	8869660000

**Warnings and notes on usage****Handling the PUSH IN connection****Cross-connector mounting for PUSH IN base**

If more than two poles need to be connected with stacked cross-connector ridges, then the lower ridge must be stripped and shortened to the proper length so it will fit.

Cross-connector mounting for screw base

RCI relay

1 CO AC/DC coil

- 4000 VA switching capacity
- Stable plug-in connections
- Optional test button with latching function and inspection window
- Optional status indicator (AC red/ DC green)
- Optional protective suppressor circuit
- Identification of coils (AC red / DC blue)



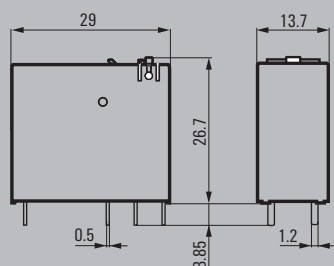
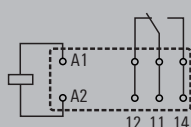
Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	16 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 5 x 10 ⁶ switch. ops, DC coil 10 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	8 ms / 6 ms
Rated data	
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CSA; cURus; VDE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	> 8 mm
Surge voltage category	III
Pollution severity	3

Circuit diagram

View on solder pins
dimensions in mm

1 C/O changeover contacts



Dimensions

Plug-in connection

Length x width x height

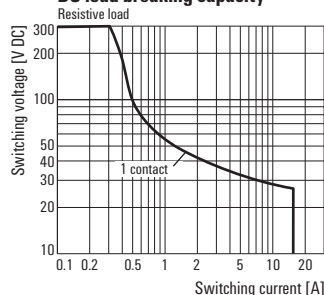
mm 29 / 13.7 / x

Note

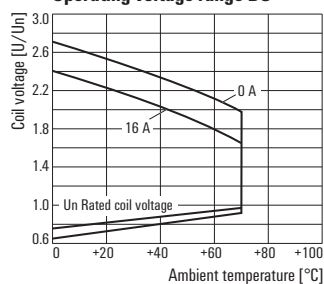
x = 25.5 without test button / 26.7 with test button

Applications

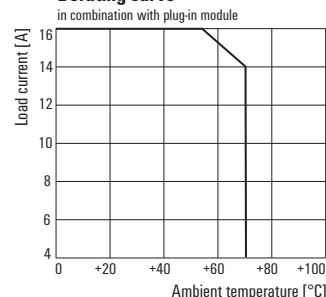
DC load breaking capacity



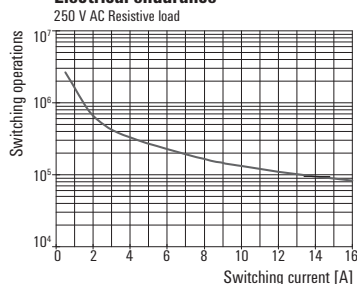
Operating voltage range DC



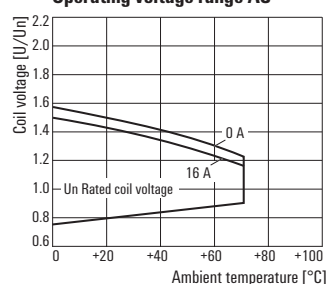
Derating curve



Electrical endurance



Operating voltage range AC



RCI relay

1 CO AC/DC coil

Type code		RCI				
Type	RIDER Control Industrial					Coil
Type of construction						012 12 V DC
3 1-pole, 16 A						024 24 V DC
4 2-pole, 8 A						048 48 V DC
Type of contact						110 110 V DC
1 1 CO contact without test button						524 24 V AC
2 2 CO contacts without test button						615 115 V AC
7 1 CO contact with test button						730 230 V AC
8 2 CO contacts with test button						AB2 12 V DC+LED+diode
Contact material						AC4 24 V DC+LED+diode
4 AgNi 90/10						AE8 48 V DC+LED+diode
						BB0 110 V DC+LED+diode
						R24 24 V AC+LED
						S15 115 V AC+LED
						T30 230 V AC+LED

Ordering data

Input	12 V DC 1CO	24 V DC 1CO	48 V DC 1CO	110 V DC 1CO
Rated control voltage	12 V DC	24 V DC	48 V DC	110 V DC
DC Response/dropout Volt	8.4 V / 1.2 V	16.8 V / 2.4 V	33.6 V / 4.8 V	77 V / 11 V
Power rating	400 mW	400 mW	400 mW	400 mW
Rated current DC	33.3 mA	16.7 mA	8.7 mA	4.1 mA
Coil resistance	360 Ω $\pm$ 10 %	1440 Ω $\pm$ 10 %	5520 Ω $\pm$ 10 %	28800 Ω $\pm$ 12 %

Ordering data				
Relay				
Standard	Type	RCI314012	RCI314024	RCI314048
	Order No.	8869800000	8869810000	8869820000
w. test button	Type	RCI374012	RCI374024	RCI374048
	Order No.	8869950000	8869960000	8869970000
With LED + freewheel diode	Type	RCI314AB2	RCI314AC4	RCI314AE8
	Order No.	8870090000	8870100000	8870110000
With test button + LED	Type	RCI374AB2	RCI374AC4	RCI374AE8
+ Free-wheel diode	Order No.	8870240000	8870250000	8870260000

Note				

Ordering data

Input	24 V AC 1CO	115 V AC 1CO	230 V AC 1CO
Rated control voltage	24 V AC	115 V AC	230 V AC
AC Response/dropout Volt	18 V / 3.6 V	86.3 V / 17.3 V	172.5 V / 34.5 V
Power rating	0.75 VA	0.75 VA	0.75 VA
Rated current AC	31.6 mA	6.6 mA	3.2 mA
Coil resistance	350 Ω $\pm$ 10 %	8100 Ω $\pm$ 15 %	32500 Ω $\pm$ 15 %

Ordering data			
Relay			
Standard	Type	RCI314524	RCI314615
	Order No.	8869840000	8869850000
w. test button	Type	RCI374524	RCI374615
	Order No.	8869990000	8870000000
with LED	Type	RCI314R24	RCI314S15
	Order No.	8870130000	8870140000
With test button + LED	Type	RCI374R24	RCI374S15
	Order No.	8870280000	8870290000

Note			

RCI relay

2 CO AC/DC coil

- 2000 VA switching capacity
- Stable plug-in connections
- Optional test button with latching function and inspection window
- Optional status indicator (AC red / DC green)
- Optional protective suppressor circuit
- Identification of coils (AC red / DC blue)



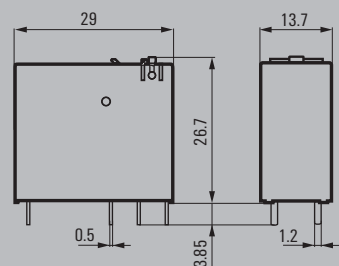
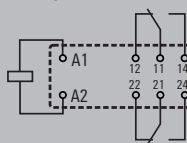
Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	8 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 5 x 10 ⁶ switch. ops, DC coil 10 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	10 ms / 4 ms
Rated data	
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CSA; cURus; VDE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	> 8 mm
Surge voltage category	III
Pollution severity	3

Circuit diagram

View on solder pins
dimensions in mm

2 C/O changeover contacts



Dimensions

Plug-in connection

Length x width x height

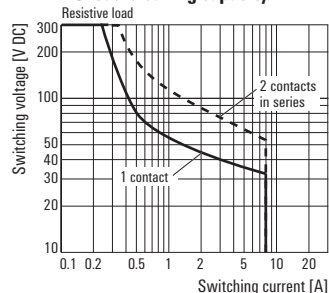
mm 29 / 13.7 / x

Note

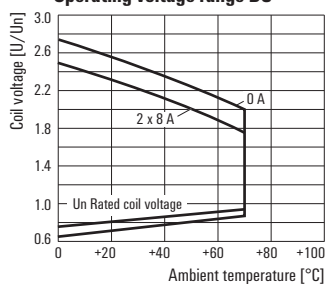
x = 25.5 without test button / 26.7 with test button

Applications

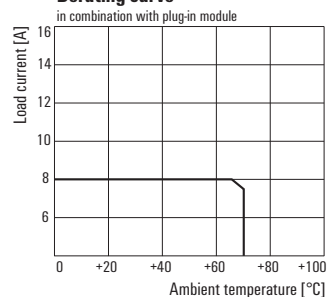
DC load breaking capacity



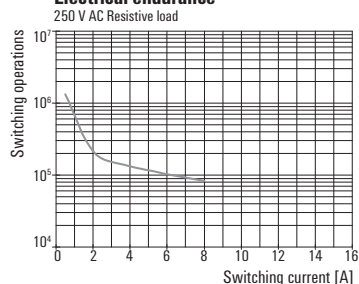
Operating voltage range DC



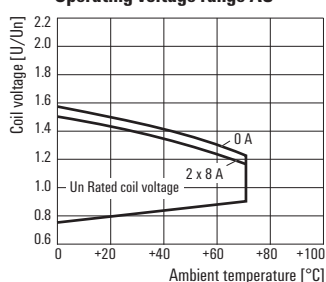
Derating curve



Electrical endurance



Operating voltage range AC



RCI relay 2 CO AC/DC coil

Type code	RCI				
Type	RIDER Control Industrial				
Type of construction	3 1-pole, 16 A 4 2-pole, 8 A				
Type of contact	1 1 CO contact without test button 2 2 CO contacts without test button 7 1 CO contact with test button 8 2 CO contacts with test button				
Contact material	4 AgNi 90/10				
Coil	012 12 V DC 024 24 V DC 048 48 V DC 110 110 V DC 524 24 V AC 615 115 V AC 730 230 V AC AB2 12 V DC+LED+diode AC4 24 V DC+LED+diode AE8 48 V DC+LED+diode BB0 110 V DC+LED+diode R24 24 V AC+LED S15 115 V AC+LED T30 230 V AC+LED				

Ordering data

Input	12 V DC 2CO	24 V DC 2CO	48 V DC 2CO	110 V DC 2CO
Rated control voltage	12 V DC	24 V DC	48 V DC	110 V DC
DC Response/dropout Volt	8.4 V / 1.2 V	16.8 V / 2.4 V	33.6 V / 4.8 V	77 V / 11 V
Power rating	400 mW	400 mW	400 mW	400 mW
Rated current DC	33.3 mA	16.7 mA	8.7 mA	4.1 mA
Coil resistance	360 Ω $\pm$ 10 %	1440 Ω $\pm$ 10 %	5520 Ω $\pm$ 10 %	28800 Ω $\pm$ 12 %

Ordering data					
Relay					
Standard	Type	RCI424012	RCI424024	RCI424048	RCI424110
	Order No.	8869870000	8869890000	8869900000	8869910000
w. test button	Type	RCI484012	RCI484024	RCI484048	RCI484110
	Order No.	8870020000	8870030000	8870040000	8870050000
With LED + freewheel diode	Type	RCI424AB2	RCI424AC4	RCI424AE8	RCI424BB0
	Order No.	8870170000	8870180000	8870190000	8870200000
With test button + LED	Type	RCI484AB2	RCI484AC4	RCI484AE8	RCI484BB0
+ Free-wheel diode	Order No.	8870310000	8870320000	8870330000	8870340000

Note				

Ordering data

Input	24 V AC 2CO	115 V AC 2CO	230 V AC 2CO
Rated control voltage	24 V AC	115 V AC	230 V AC
AC Response/dropout Volt	18 V / 3.6 V	86.3 V / 17.3 V	172.5 V / 34.5 V
Power rating	0.75 VA	0.75 VA	0.75 VA
Rated current AC	31.6 mA	6.6 mA	3.2 mA
Coil resistance	350 Ω $\pm$ 10 %	8100 Ω $\pm$ 15 %	32500 Ω $\pm$ 15 %

Ordering data				
Relay				
Standard	Type	RCI424524	RCI424615	RCI424730
	Order No.	8869920000	8869930000	8869940000
w. test button	Type	RCI484524	RCI484615	RCI484730
	Order No.	8870060000	8870070000	8870080000
with LED	Type	RCI424R24	RCI424S15	RCI424T30
	Order No.	8870210000	8870220000	8870230000
With test button + LED	Type	RCI484R24	RCI484S15	RCI484T30
	Order No.	8870350000	8870360000	8870370000

Note			

RCM KIT

2 CO AC/DC coil

Modular system comprising:

- Relay socket for rail mounting
- LED display unit (AC red / DC green)
- Retaining clip
- Pluggable relays with coil identification (AC red / DC blue)
- Markers

Independent of connection system:

- Screw or PUSH IN connection system



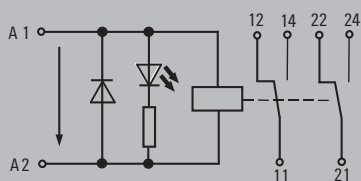
Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	12 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 20 x 10 ⁶ switch. ops, DC coil 30 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	15 ms / 10 ms
Rated data	
Status indicator / Free-wheel diode	Green LED = DC coil; red LED = AC coil / Yes
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; GL
Insulation coordination (EN 50 178)	
Rated voltage	240 V
Clearance and creepage distances for control side - load side	≥ 4 mm
Surge voltage category	III
Pollution severity	2

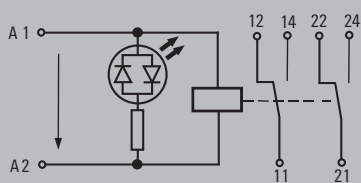
Dimensions	Screw connection	PUSH IN spring connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 2.5	1.5 / 0.5 / 1.5
Length x width x height	mm 75 / 28 / 82	96 / 28 / 98

Note

DC-Version



AC-Version



Ordering data

Input	24 V DC 2CO LED	24 V AC 2CO LED	115 V AC 2CO LED	230 V AC 2CO LED
Rated control voltage	24 V DC	24 V AC	115 V AC	230 V AC
Rated current AC		41.6 mA	8.8 mA	4.3 mA
Rated current DC	31.3 mA			
Power rating	740 mW	1.0 VA	1.0 VA	1.0 VA
AC Response/dropout Volt		19.2 V / 7.2 V	92 V / 34.5 V	184.0 V / 69.0 V
DC Response/dropout Volt	18.0 V / 2.4 V			

Ordering data
Relay with socket

Screw connection	Type	RCMKIT-I 24VDC 2CO LD	RCMKIT-I 24VAC 2CO LD	RCMKIT-I 115VAC 2CO LD	RCMKIT-I 230VAC 2CO LD
	Order No.	8920940000	8920950000	8920960000	8920970000
PUSH IN connection	Type	RCMKITP-I 24VDC 2CO LD	RCMKITP-I 24VAC 2CO LD	RCMKITP-I 115VAC 2CO LD	RCMKITP-I 230VAC 2CO LD
	Order No.	8921080000	8921090000	8921100000	8921110000

Ordering data
Spare relay (pluggable)

Type	RCM270024	RCM270524	RCM270615	RCM270730
Order No.	8689860000	8689760000	8689800000	8689820000

Note				
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Accessories for RCM KIT relay modules, 2 CO

Plug-in module with PUSH IN connection



Plug-in module with screw connection



Technical data

Rated current	12 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 2500 V _{eff}
Ambient temperature (operational)	-45...+70 °C
Insulation group (VDE 0110b)	C / 250 V AC
Protection class (IEC 61810)	IP20
Stripping length	12 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	1 x 0.75/1/1.5 mm ² / 2 x 0.75/1 mm ²
- Stranded wire	1 x 0.75/1/1.5 mm ² / 2 x 0.75/1 mm ²
- with ferrule	1 x 0.75/1 mm ² / 2 x 0.75 mm ²
Rated torque acc. to IEC 61984 for screw connection	
Plug-in cycles	A (10)

Rated current	12 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 2500 V _{eff}
Ambient temperature (operational)	-45...+70 °C
Insulation group (VDE 0110b)	C / 250 V AC
Protection class (IEC 61810)	IP20
Stripping length	8 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	2 x 2.5 mm ²
- Stranded wire	2 x 2.5 mm ²
- with ferrule	2 x 1.5 mm ²
Rated torque acc. to IEC 61984 for screw connection	0.5 Nm / max. 0.7 Nm
Plug-in cycles	A (10)

Rated current	12 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 2500 V _{eff}
Ambient temperature (operational)	-45...+70 °C
Insulation group (VDE 0110b)	C / 250 V AC
Protection class (IEC 61810)	IP20
Stripping length	8 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	2 x 2.5 mm ²
- Stranded wire	2 x 2.5 mm ²
- with ferrule	2 x 1.5 mm ²
Rated torque acc. to IEC 61984 for screw connection	0.5 Nm / max. 0.7 Nm
Plug-in cycles	A (10)

Ordering data

Description	Type	Qty.	Order No.
Plug-in module, snaps onto TS35 DIN mounting rail, 2-pole	SCM-H 2CO P		8876220000

Type	Qty.	Order No.
SCM-H 2CO P		8876220000

Type	Qty.	Order No.
SCM-H 2CO		8869400000

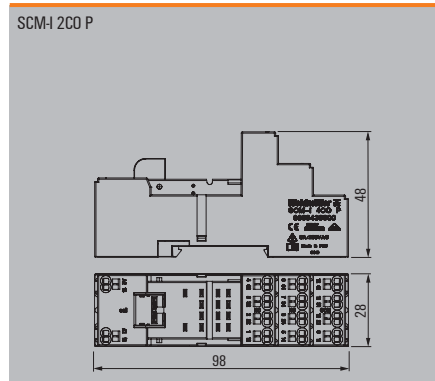
Accessories

Description	Type	Qty.	Order No.
Plastic retaining clip	SCM-H CLIP P	10	8869440000
Metal retaining clip	SCM-H CLIP M	10	8869450000
Marker	SCM-H MARK	10	8869460000
Marker, Multicard	ESG 9/11 K MC neutral	200	1857440000
	Cross-connector for PUSH IN base, 2-pole, 12 A	10	8870850000
	Cross-connector for screw base, 6-pole		

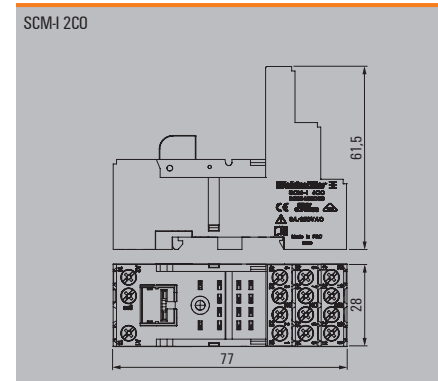
Type	Qty.	Order No.
SCM-H CLIP P	10	8869440000
SCM-H CLIP M	10	8869450000
SCM-H MARK	10	8869460000
ESG 9/11 K MC neutral	200	1857440000
SCM-H QV P	10	8870850000

Type	Qty.	Order No.
SCM-H CLIP P	10	8869440000
SCM-H CLIP M	10	8869450000
SCM-H MARK	10	8869460000
ESG 9/11 K MC neutral	200	1857440000
SCM-H QV S	10	1132080000

Dimensions



Dimensions



Dimensions in mm

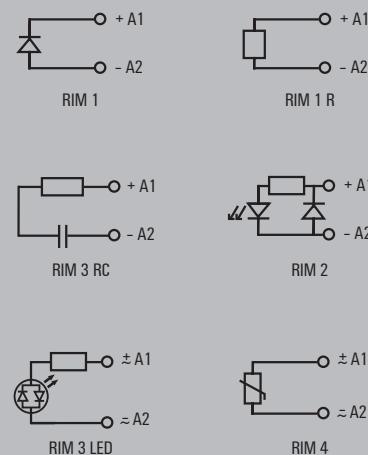
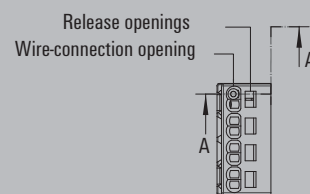
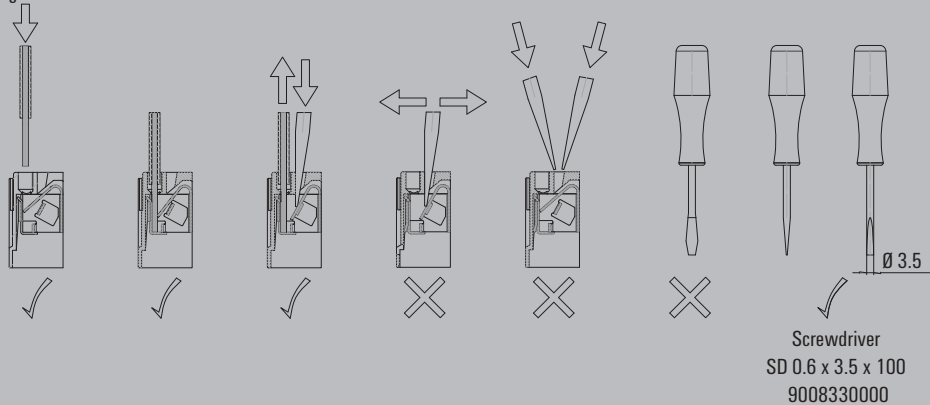
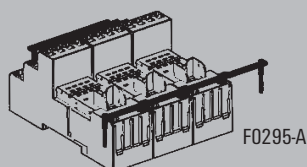
LED and protective modules for the SCM-I plug-in frame

Plug simply into the base module; reverse-connect protection. Connect parallel to coil.

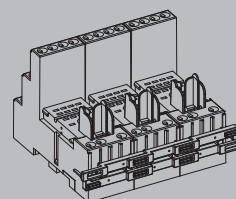
Ordering data

Description
Free Wheel diode 1N4007
Resistor 100 kΩ 1 Watt
RC element 6 ... 60 V AC; 470 Ω / 220 nF
RC element 110 ... 230 V AC; 4.7 Ω / 10 nF
Varistor protection 24 V; S07K30
Varistor protection 110 V; S07K130
Varistor protection 230 V; S07K275
LED
LED 6 ... 24 V DC with free wheel diode
LED 24 ... 60 V DC with free wheel diode
LED 110 ... 230 V DC with free wheel diode
LED 6 ... 24 V DC / V AC
LED 24 ... 60 V DC / V AC
LED 110 ... 230 V DC / V AC

Type	Qty.	Order No.	Order No.
RIM-I 1 6/230V	10	8869580000	
RIM-I 1 R 110/230V	10	8870830000	
RIM-I 3 6/60VAC	10	8869770000	
RIM-I 3 110/230VAC	10	8869790000	
RIM-I 4 24VUC	10	8869710000	
RIM-I 4 110VUC	10	8869730000	
RIM-I 4 230VUC	10	8869750000	
		red	green
RIM-I 2 6/24VDC	10	8869590000	8869600000
RIM-I 2 24/60VDC	10	8869670000	8869680000
RIM-I 2 110/230VDC	10	8869690000	8869700000
RIM-I 3 6/24VUC	10	8869630000	8869640000
RIM-I 3 24/60VUC	10	8869610000	8869620000
RIM-I 3 110/230VUC	10	8869650000	8869660000

**Warnings and notes on usage****Handling the PUSH IN connection****Cross-connector mounting for PUSH IN base**

If more than two poles need to be connected with stacked cross-connector ridges, then the lower ridge must be stripped and shortened to the proper length so it will fit.

Cross-connector mounting for screw base

RCM KIT

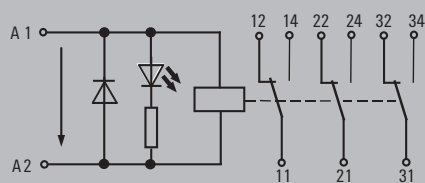
3 CO AC/DC coil

Modular system comprising:

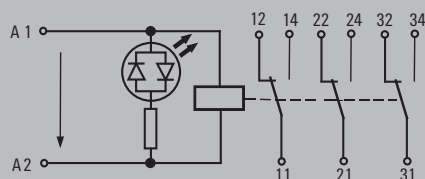
- Relay socket for rail mounting
- LED display unit (AC red / DC green)
- Retaining clip
- Pluggable relay modules
- Identification of coils (AC red / DC blue)
- Markers



DC-Version



AC-Version



Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	10 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 20 x 10 ⁶ switch. ops, DC coil 30 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	15 ms / 10 ms
Rated data	
Status indicator / Free-wheel diode	Green LED = DC coil; red LED = AC coil / Yes
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; GL
Insulation coordination (EN 50 178)	
Rated voltage	240 V
Clearance and creepage distances for control side - load side	≥ 4 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	
Clamping range (nominal / min. / max.)	mm ²	2.5 / 0.5 / 2.5
Length x width x height	mm	75 / 28 / 82
Note		

Ordering data

Input

Rated control voltage
Rated current AC
Rated current DC
Power rating
AC Response/dropout Volt
DC Response/dropout Volt

24 V DC 3CO LED

24 V DC
31.3 mA
740 mW
18.0 V / 2.4 V

24 V AC 3CO LED

24 V AC
41.6 mA
1.0 VA
19.2 V / 7.2 V

115 V AC 3CO LED

115 V AC
8.8 mA
1.0 VA
92 V / 34.5 V

230 V AC 3CO LED

230 V AC
4.3 mA
1.0 VA
184.0 V / 69.0 V

Ordering data
Relay with socket

Screw connection

Type
Order No.
Type
Order No.

RCMKIT-I 24VDC 3CO LD
8920980000

RCMKIT-I 24VAC 3CO LD
8920990000

RCMKIT-I 115VAC 3CO LD
8921010000

RCMKIT-I 230VAC 3CO LD
8921020000

Ordering data
Spare relay (pluggable)

Type
Order No.

RCM370024
8690040000

RCM370524
8690030000

RCM370615
8689980000

RCM370730
8690000000

Note

RIDERSERIES – RCM KIT 3 CO accessories

Accessories for
RCM KIT relay modules, 3 CO

Plug-in module with screw connection



Technical data

Rated current	10 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 2500 V _{eff}
Ambient temperature (operational)	-45...+70 °C
Insulation group (VDE 0110b)	C / 250 V AC
Protection class (IEC 61810)	IP20
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	2 x 2.5 mm ²
- Stranded wire	2 x 2.5 mm ²
- with ferrule	2 x 1.5 mm ²
Rated torque acc. to IEC 61984 for screw connection	0.5 Nm / max. 0.7 Nm
Plug-in cycles	A (10)

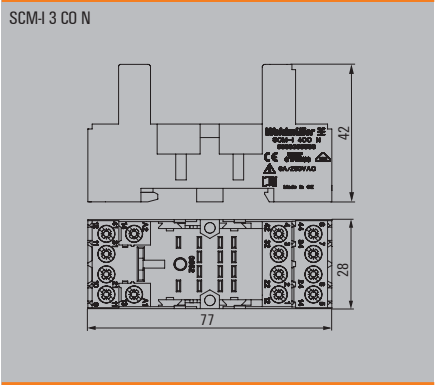
Ordering data

Description	Type	Qty.	Order No.
Plug-in module, snaps onto TS35 DIN mounting rail, 3-pole	SCM-H 3CO N		8869410000

Accessories

Description	Type	Qty.	Order No.
Plastic retaining clip	SCM-H CLIP N	10	8875620000
Metal retaining clip	SCM-H CLIP M	10	8869450000
Marker	SCM-H MARK	10	8869460000
Marker, Multicard	ESG 9/11 K MC neutral	200	1857440000
 Cross-connector for screw base, 6-pole	SCM-H QV S	10	1132080000

Dimensions



Dimensions in mm

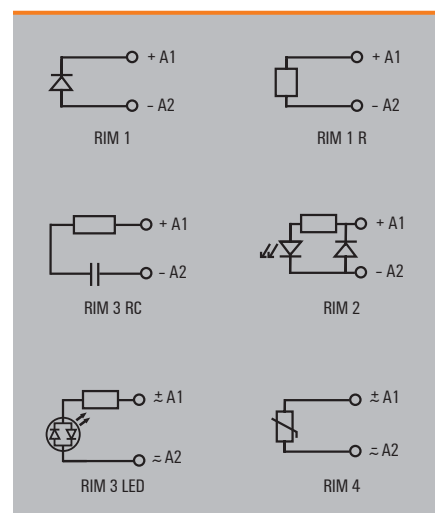
LED and protective modules for the SCM-I plug-in frame

Simply plug into the base module; reverse-connect protection. Connect parallel to coil.

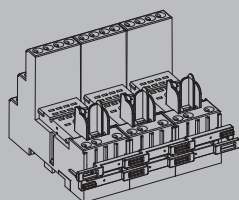
Ordering data

Description
Free Wheel diode 1N4007
Resistor 100 kΩ 1 Watt
RC element 6 ... 60 V AC; 470 Ω / 220 nF
RC element 110 ... 230 V AC; 4.7 Ω / 10 nF
Varistor protection 24 V; S07K30
Varistor protection 110 V; S07K130
Varistor protection 230 V; S07K275
LED
LED 6 ... 24 V DC with free wheel diode
LED 24 ... 60 V DC with free wheel diode
LED 110 ... 230 V DC with free wheel diode
LED 6 ... 24 V DC / V AC
LED 24 ... 60 V DC / V AC
LED 110 ... 230 V DC / V AC

Type	Qty.	Order No.	Order No.
RIM-I 1 6/230V	10	8869580000	
RIM-I 1 R 110/230V	10	8870830000	
RIM-I 3 6/60VAC	10	8869770000	
RIM-I 3 110/230VAC	10	8869790000	
RIM-I 4 24VUC	10	8869710000	
RIM-I 4 110VUC	10	8869730000	
RIM-I 4 230VUC	10	8869750000	
		red	green
RIM-I 2 6/24VDC	10	8869590000	8869600000
RIM-I 2 24/60VDC	10	8869670000	8869680000
RIM-I 2 110/230VDC	10	8869690000	8869700000
RIM-I 3 6/24VUC	10	8869630000	8869640000
RIM-I 3 24/60VUC	10	8869610000	8869620000
RIM-I 3 110/230VUC	10	8869650000	8869660000

**Warnings and notes on usage**

Cross-connector mounting for screw base



RCM KIT

4 CO AC/DC coil

Modular system comprising:

- Relay socket for rail mounting
- LED display unit (AC red / DC green)
- Retaining clip
- Pluggable relay modules
- Identification of coils (AC red / DC blue)
- Markers

Choice of connection system:

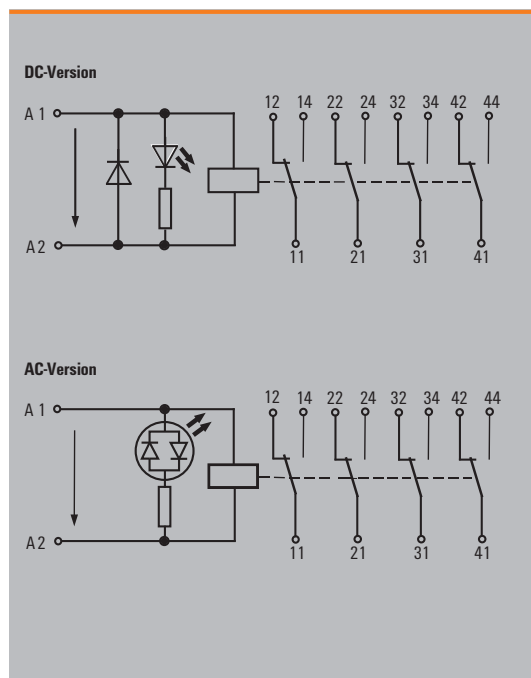
- Screw or PUSH IN connection system



Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	240 V
Continuous current	6 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 20 x 10 ⁶ switch. ops, DC coil 30 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	15 ms / 10 ms
Rated data	
Status indicator / Free-wheel diode	Green LED = DC coil; red LED = AC coil / Yes
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; GL
Insulation coordination (EN 50 178)	
Rated voltage	240 V
Clearance and creepage distances for control side - load side	≥ 4 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	PUSH IN spring connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 2.5	1.5 / 0.5 / 1.5
Length x width x height	mm 75 / 28 / 82	96 / 28 / 98
Note		



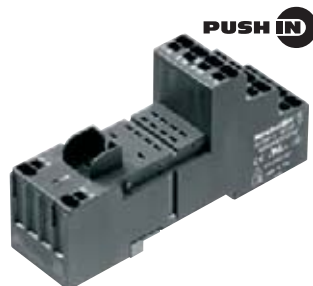
Ordering data

Input	24 V DC 4CO LED	24 V AC 4CO LED	115 V AC 4CO LED	230 V AC 4CO LED
Rated control voltage	24 V DC	24 V AC	115 V AC	230 V AC
Rated current AC		41.6 mA	8.8 mA	4.3 mA
Rated current DC	31.3 mA			
Power rating	740 mW	1.0 VA	1.0 VA	1.0 VA
AC Response/dropout Volt		19.2 V / 7.2 V	92 V / 34.5 V	184.0 V / 69.0 V
DC Response/dropout Volt	18.0 V / 2.4 V			

Ordering data		24 V DC 4CO LED	24 V AC 4CO LED	115 V AC 4CO LED	230 V AC 4CO LED
Relay with socket					
Screw connection	Type	RCMKIT-I 24VDC 4CO LD	RCMKIT-I 24VAC 4CO LD	RCMKIT-I 115VAC 4CO LD	RCMKIT-I 230VAC 4CO LD
	Order No.	8921030000	8921040000	8921050000	8921060000
PUSH IN connection	Type	RCMKITP-I 24VDC 4CO LD	RCMKITP-I 24VAC 4CO LD	RCMKITP-I 115VAC 4CO LD	RCMKITP-I 230VAC 4CO LD
	Order No.	8921120000	8921130000	8921140000	8921150000
Ordering data					
Spare relay (pluggable)					
	Type	RCM570024	RCM570524	RCM570615	RCM570730
	Order No.	8690200000	8690110000	1180800000	1181100000
Note					

Accessories for RCM KIT relay modules, 4 CO

Plug-in module with PUSH IN connection



Plug-in module with screw connection

Standard height



Plug-in module with screw connection

Low height



Technical data

Rated current	6 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 2500 V _{eff}
Ambient temperature (operational)	-45...+70 °C
Insulation group (VDE 0110b)	C / 250 V AC
Protection class (IEC 61810)	IP20
Stripping length	12 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	1 x 0.75/1/1.5 mm ² / 2 x 0.75/1 mm ²
- Stranded wire	1 x 0.75/1/1.5 mm ² / 2 x 0.75/1 mm ²
- with ferrule	1 x 0.75/1 mm ² / 2 x 0.75 mm ²
Rated torque acc. to IEC 61984 for screw connection	
Plug-in cycles	A (10)

Rated current	6 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 2500 V _{eff}
Ambient temperature (operational)	-45...+70 °C
Insulation group (VDE 0110b)	C / 250 V AC
Protection class (IEC 61810)	IP20
Stripping length	12 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	1 x 0.75/1/1.5 mm ² / 2 x 0.75/1 mm ²
- Stranded wire	1 x 0.75/1/1.5 mm ² / 2 x 0.75/1 mm ²
- with ferrule	1 x 0.75/1 mm ² / 2 x 0.75 mm ²
Rated torque acc. to IEC 61984 for screw connection	
Plug-in cycles	A (10)

Rated current	6 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 2500 V _{eff}
Ambient temperature (operational)	-45...+70 °C
Insulation group (VDE 0110b)	C / 250 V AC
Protection class (IEC 61810)	IP20
Stripping length	8 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	2 x 2.5 mm ²
- Stranded wire	2 x 2.5 mm ²
- with ferrule	2 x 1.5 mm ²
Rated torque acc. to IEC 61984 for screw connection	0.5 Nm / max. 0.7 Nm
Plug-in cycles	A (10)

Rated current	6 A
Rated voltage	240 V AC
Dielectric strength of coil contacts	> 2500 V _{eff}
Ambient temperature (operational)	-45...+70 °C
Insulation group (VDE 0110b)	C / 250 V AC
Protection class (IEC 61810)	IP20
Stripping length	8 mm
Approvals	VDE, cURus, CSA
Connection cross-section	
- Solid-core wire	2 x 2.5 mm ²
- Stranded wire	2 x 2.5 mm ²
- with ferrule	2 x 1.5 mm ²
Rated torque acc. to IEC 61984 for screw connection	0.5 Nm / max. 0.7 Nm
Plug-in cycles	A (10)

Ordering data

Description	Type	Qty.	Order No.
Plug-in module, snaps onto TS35 DIN mounting rail, 4-pole	SCM-I 4CO P		8869430000

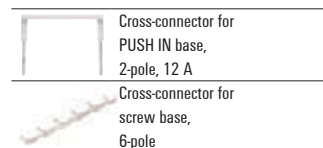
Type	Qty.	Order No.
SCM-I 4CO P		8869430000

Type	Qty.	Order No.
SCM-I 4CO		8869420000

Type	Qty.	Order No.
SCM-I 4CO N		8869390000

Accessories

Description	Type	Qty.	Order No.
Plastic retaining clip	SCM-I CLIP P	10	8869440000
Plastic retaining clip	SCM-I CLIP M	10	8869450000
Metal retaining clip	SCM-I MARK	10	8869460000
Marker	ESG 9/11 K MC neutral	200	1857440000
Marker, Multicard	SCM-I QV P		8870850000

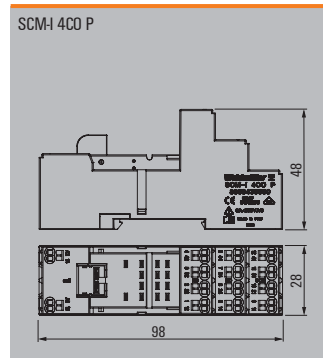


Type	Qty.	Order No.
SCM-I CLIP P	10	8869440000
SCM-I CLIP M	10	8869450000
SCM-I MARK	10	8869460000
ESG 9/11 K MC neutral	200	1857440000
SCM-I QV P		8870850000

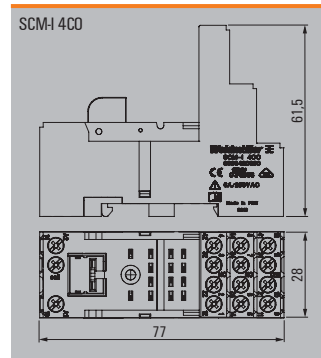
Type	Qty.	Order No.
SCM-I CLIP P	10	8869440000
SCM-I CLIP M	10	8869450000
SCM-I MARK	10	8869460000
ESG 9/11 K MC neutral	200	1857440000
SCM-I QV S		1132080000

Type	Qty.	Order No.
SCM-I CLIP N	10	8875620000
SCM-I CLIP M	10	8869450000
SCM-I MARK	10	8869460000
ESG 9/11 K MC neutral	200	1857440000
SCM-I QV S		1132080000

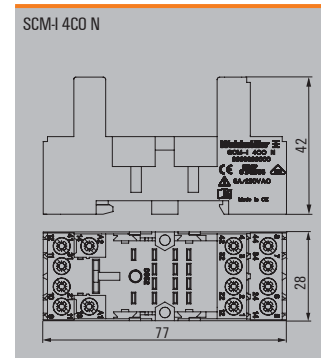
Dimensions



Dimensions



Dimensions



Dimensions in mm

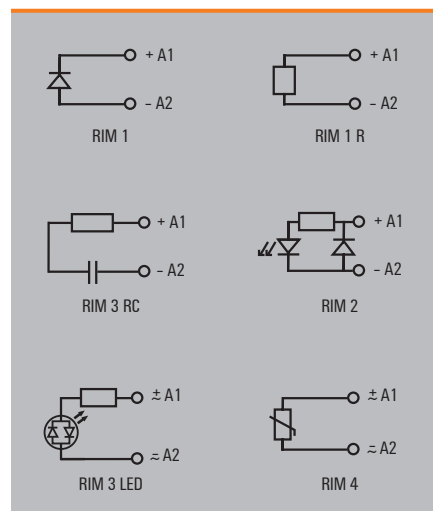
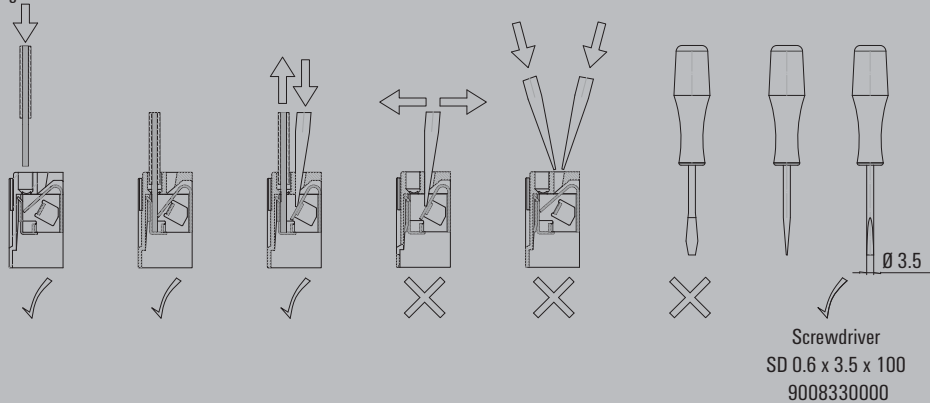
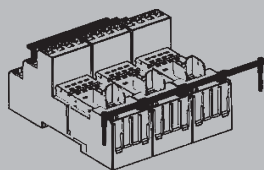
LED and protective modules for the SCM-I plug-in frame

Simply plug into the base module; reverse-connect protection. Connect parallel to coil.

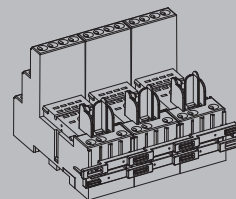
Ordering data

Description
Free Wheel diode 1N4007
Resistor 100 kΩ 1 Watt
RC element 6 ... 60 V AC; 470 Ω / 220 nF
RC element 110 ... 230 V AC; 4.7 Ω / 10 nF
Varistor protection 24 V; S07K30
Varistor protection 110 V; S07K130
Varistor protection 230 V; S07K275
LED
LED 6 ... 24 V DC with free wheel diode
LED 24 ... 60 V DC with free wheel diode
LED 110 ... 230 V DC with free wheel diode
LED 6 ... 24 V DC / V AC
LED 24 ... 60 V DC / V AC
LED 110 ... 230 V DC / V AC

Type	Qty.	Order No.	Order No.
RIM-I 1 6/230V	10	8869580000	
RIM-I 1 R 110/230V	10	8870830000	
RIM-I 3 6/60VAC	10	8869770000	
RIM-I 3 110/230VAC	10	8869790000	
RIM-I 4 24VUC	10	8869710000	
RIM-I 4 110VUC	10	8869730000	
RIM-I 4 230VUC	10	8869750000	
		red	green
RIM-I 2 6/24VDC	10	8869590000	8869600000
RIM-I 2 24/60VDC	10	8869670000	8869680000
RIM-I 2 110/230VDC	10	8869690000	8869700000
RIM-I 3 6/24VUC	10	8869630000	8869640000
RIM-I 3 24/60VUC	10	8869610000	8869620000
RIM-I 3 110/230VUC	10	8869650000	8869660000

**Warnings and notes on usage****Handling the PUSH IN connection****Cross-connector mounting for PUSH IN base**

If more than two poles need to be connected with stacked cross-connector ridges, then the lower ridge must be stripped and shortened to the proper length so it will fit.

Cross-connector mounting for screw base

RCM relay

2 CO

AC/DC coil

- 3000 VA switching capacity
- Solder and plug connection
- Safe-to-touch test button, selectable locking
- White labelling panel
- Identification of coils (AC red / DC blue)

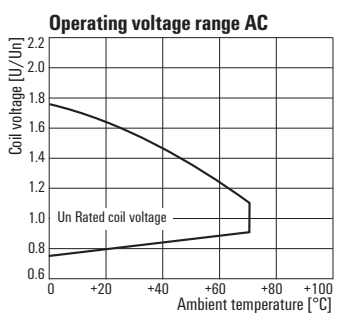
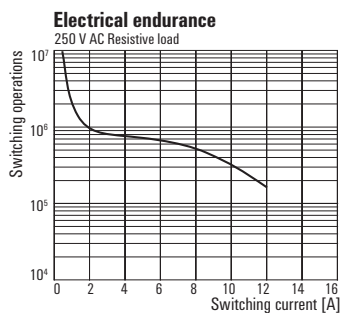
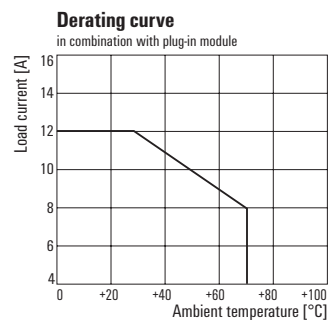
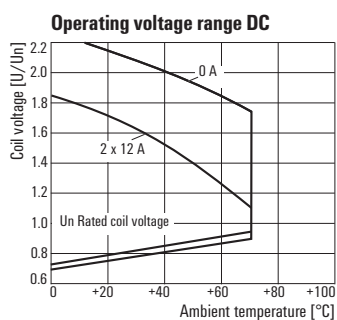
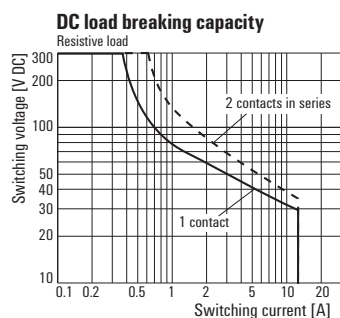


Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	12 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 20 x 10 ⁶ switch. ops, DC coil 30 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	15 ms / 10 ms
Rated data	
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CSA; cURus; VDE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	≥ 4 mm
Surge voltage category	
Pollution severity	

Dimensions	Plug-in connection
Length x width x height	mm 28 / 22.5 / 29
Note	

Applications



RCM relay
2 CO
AC/DC coil

[illegible]

Ordering data

Input				
Rated control voltage	12 V DC	24 V DC	48 V DC	110 V DC
DC Response/dropout Volt	9.0 V / 1.2 V	18.0 V / 2.4 V	36.0 V / 4.8 V	82.5 V / 11.0 V
Power rating	750 mW	750 mW	750 mW	750 mW
Rated current DC	62.5 mA	31.3 mA	15.6 mA	6.8 mA
Coil resistance	192 Ω ±10 %	777 Ω ±10 %	3072 Ω ±10 %	16133 Ω ±15 %

Ordering data

Relay					
Without LED	Type	RCM270012	RCM270024	RCM270048	RCM270110
AgNi 90/10	Order No.	8689840000	8689860000	8689880000	8689900000
with LED	Type	RCM270L12	RCM270L24	RCM270L48	
AgNi 90/10	Order No.	8689850000	8689870000	8689890000	
With LED + freewheel diode	Type	RCM270AB2	RCM270AC4	RCM270AE8	RCM270BB0
AgNi 90/10	Order No.	8957020000	8957030000	8957040000	8957050000
	Type				
	Order No.				

Note

Ordering data

Input				
Rated control voltage	24 V AC	48 V AC	115 V AC	230 V AC
AC Response/dropout Volt	38.4 V / 14.4 V	48.0 V / 18.0 V	92.0 V / 34.5 V	184.0 V / 69.0 V
Power rating	1.0 VA	1.0 VA	1.0 VA	1.0 VA
Rated current AC	41.6 mA	21.3 mA	8.8 mA	4.3 mA
Coil resistance	192 Ω ±10 %	777 Ω ±10 %	4845 Ω ±12 %	19465 Ω ±15 %

Ordering data

Relay					
Without LED	Type	RCM270524	RCM270548	RCM270615	RCM270730
AgNi 90/10	Order No.	8689760000	8689780000	8689800000	8689820000
with LED	Type	RCM270R24	RCM270R48	RCM270S15	RCM270T30
AgNi 90/10	Order No.	8689770000	8689790000	8689810000	8689830000
	Type				
	Order No.				
	Type				
	Order No.				

Note

RCM relay

3 CO

AC/DC coil

- 2500 VA switching capacity
- Solder and plug connection
- Safe-to-touch test button, selectable locking
- White labelling panel
- Identification of coils (AC red / DC blue)

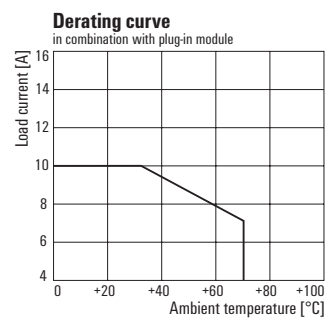
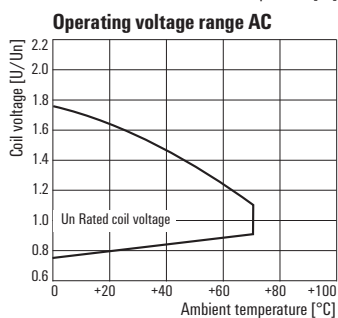
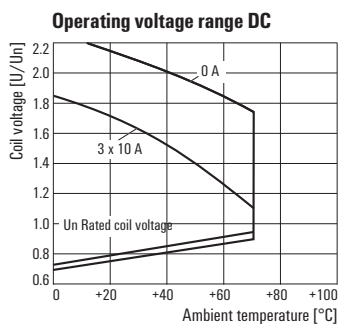
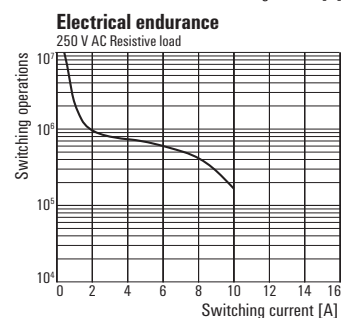
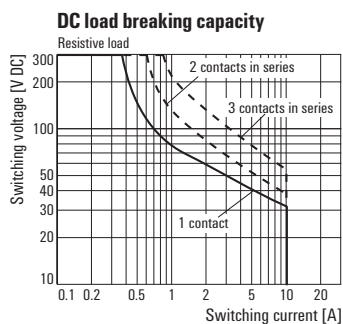


Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	400 V
Continuous current	10 A
Contact material	AgNi 90/10
Mechanical service life	AC coil 20 x 10 ⁶ switch. ops, DC coil 30 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	15 ms / 10 ms
Rated data	
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CSA; cURus; VDE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	≥ 4 mm
Surge voltage category	
Pollution severity	

Dimensions	Plug-in connection
Length x width x height	mm 28 / 22.5 / 29
Note	

Applications



RCM relay
3 CO
AC/DC coil

[illegible]

Ordering data

Input				
Rated control voltage	12 V DC	24 V DC	48 V DC	110 V DC
DC Response/dropout Volt	9.0 V / 1.2 V	18.0 V / 2.4 V	36.0 V / 4.8 V	82.5 V / 11.0 V
Power rating	750 mW	750 mW	750 mW	750 mW
Rated current DC	62.5 mA	31.3 mA	15.6 mA	6.8 mA
Coil resistance	192 Ω ±10 %	777 Ω ±10 %	3072 Ω ±10 %	16133 Ω ±15 %

Ordering data Relay

Without LED	Type	RCM370012	RCM370024	RCM370048	RCM370110
Ag/Ni 90/10	Order No.	8690020000	8690040000	8690060000	8690080000
With LED + freewheel diode	Type	RCM370AB2	RCM370AC4	RCM370AE8	RCM370BB0
Ag/Ni 90/10	Order No.	8957090000	8957100000	8957110000	8957120000
	Type				
	Order No.				
	Type				
	Order No.				

Note

Ordering data

Input				
Rated control voltage	24 V AC	48 V AC	115 V AC	230 V AC
AC Response/dropout Volt	19.2 V / 7.2 V	38.4 V / 14.4 V	92.0 V / 34.5 V	184.0 V / 69.0 V
Power rating	1.0 VA	1.0 VA	1.0 VA	1.0 VA
Rated current AC	41.6 mA	21.3 mA	8.8 mA	4.3 mA
Coil resistance	192 Ω ±10 %	777 Ω ±10 %	4845 Ω ±12 %	19465 Ω ±15 %

Ordering data Relay

Without LED	Type	RCM370524		RCM370615	RCM370730
AgNi 90/10	Order No.	8690030000		8689980000	8690000000
with LED	Type	RCM370R24	RCM370R48	RCM370S15	RCM370T30
AgNi 90/10	Order No.	8689950000	8689970000	8689990000	8690010000
	Type				
	Order No.				
	Type				
	Order No.				

Note

RIDERSERIES - Relay modules

RCM relay

4 CO

AC/DC coil

- 1500 VA switching capacity
- Solder and plug connection
- AC/DC versions also with gold-plated contacts
- Safe-to-touch test button, selectable locking
- White labelling panel
- Identification of coils (AC red / DC blue)

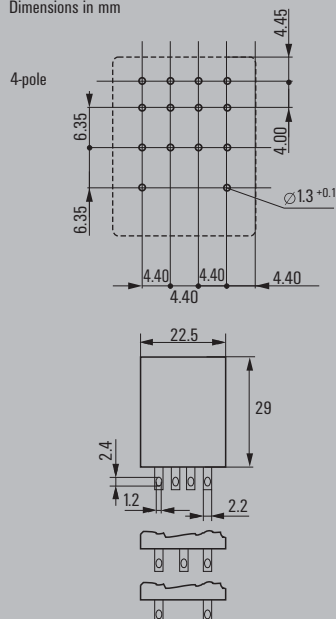


Technical data

Output	
Rated switching voltage	240 V AC
Max. switching voltage, AC	240 V
Continuous current	6 A
Contact material [print]	AgNi 90/10 or AgNi 5µm Au
Mechanical service life	AC coil 20 x 10 ⁶ switch. ops, DC coil 30 x 10 ⁶ switch. cycles
Sparkover time / Drop-out time	15 ms / 10 ms
Rated data	
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-0
Approvals	CSA; cURus; VDE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	≥ 4 mm
Surge voltage category	
Pollution severity	

Circuit diagram

Dimensions in mm



Dimensions

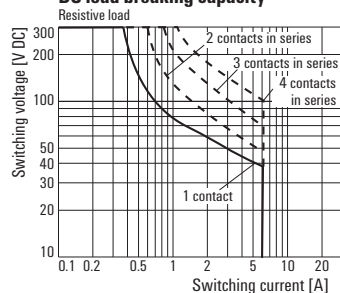
Plug-in connection

Length x width x height mm 28 / 22.5 / 29

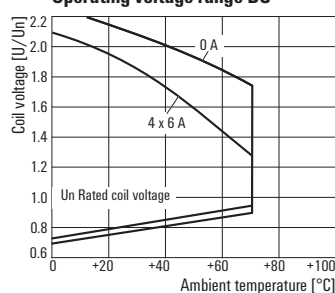
Note

Applications

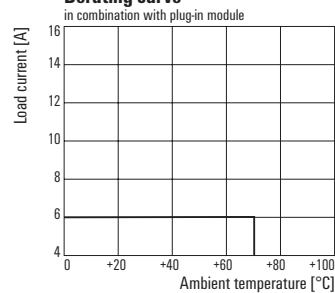
DC load breaking capacity



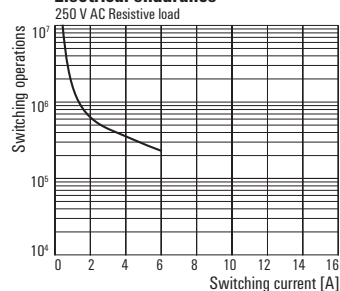
Operating voltage range DC



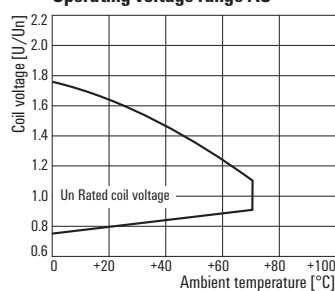
Derating curve



Electrical endurance



Operating voltage range AC



RRD relay

2 CO

AC/DC coil

- 2 CO contacts
- 2500 VA switching capacity
- Mechanical operating display
- Safe-to-touch test button, selectable locking

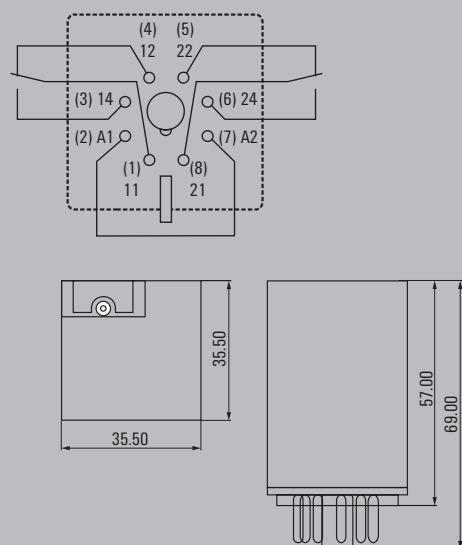


Technical data

Output	
Max. switching voltage, AC	400 V
Continuous current	10 A
Contact material	AgNi 90/10
Mechanical service life	20 x 10 ⁶ switching cycles
Sparkover time / Drop-out time	15 ms / 10 ms
Rated data	
Status indicator / Free-wheel diode	Mechanical / No
Ambient temperature (operational)	-40 °C...+60 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CSA; cURus; VDE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	≤ 3 mm
Surge voltage category	
Pollution severity	

Circuit diagram

View of connections



Dimensions

Plug-in connection

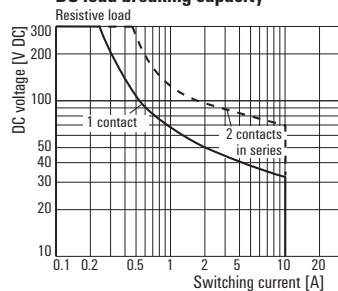
Length x width x height

mm 35.5 / 35.5 / 57

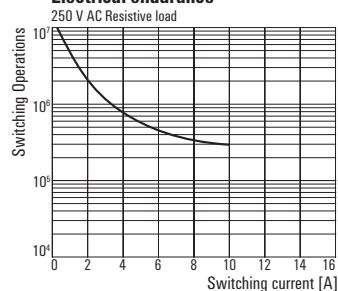
Note

Applications

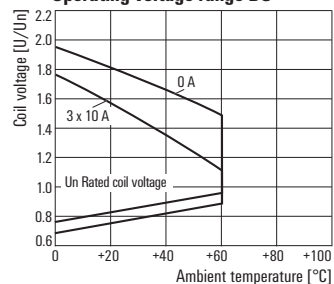
DC load breaking capacity



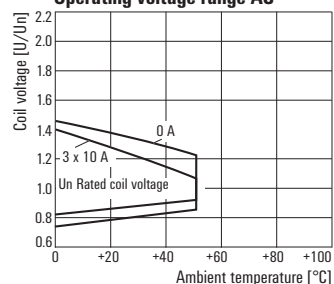
Electrical endurance



Operating voltage range DC



Operating voltage range AC



RRD relay 2 CO AC/DC coil

Type code	RRD				
Type	RIDER Round				
Contacts	2 2 change-over contacts, 8-pole 3 3 change-over contacts, 11-pole				
Contact material	2 AgNi 90/10				
Type of construction	1 DC coil with test button 3 DC coil with test button and bi-polar LED 6 AC coil with test button 8 AC coil with test button and bi-polar LED				
DC coil	006 6 V DC 012 12 V DC 024 24 V DC 048 48 V DC 060 60 V DC 110 110 V DC 220 220 V DC				Free wheel diode
AC coil	006 6 V AC 012 12 V AC 024 24 V AC 048 48 V AC 115 115 V AC 230 230 V AC				OC4 OE8 OG0 1B0 2C0

Ordering data

Input	24 V DC 2C0	48 V DC 2C0	24 V AC 2C0	48 V AC 2C0
Rated control voltage	24 V DC	48 V DC	24 V AC	48 V AC
DC Response/dropout Volt	18.0 V / 2.4 V	36.0 V / 4.8 V	19.2 V / 9.6 V	38.4 V / 19.2 V
Power rating	1.2 W	1.2 W	2.3 VA	2.3 VA
Rated current DC	50.5 mA	24.0 mA	94.2 mA	47.5 mA
Coil resistance	475 $\Omega \pm 10 \%$	2000 $\Omega \pm 10 \%$	86 $\Omega \pm 10 \%$	345 $\Omega \pm 10 \%$

Ordering data Relay				
w. test button Type	RRD221024		RRD226024	
AgNi 90/10 Order No.	8690370000		8690270000	
With test button + LED Type	RRD223024	RRD223048	RRD228024	RRD228048
AgNi 90/10 Order No.	8690380000	8690400000	8690280000	8690300000
Type Order No.				
Type Order No.				

Note				

Ordering data

Input	115 V AC 2C0	230 V AC 2C0
Rated control voltage	115 V AC	230 V AC
AC Response/dropout Volt	92.0 V / 34.5 V	184.0 V / 92.0 V
Power rating	2.3 VA	2.3 VA
Rated current AC	20.6 mA	10.1 mA
Coil resistance	2000 $\Omega \pm 10 \%$	8300 $\Omega \pm 12 \%$

Ordering data Relay		
w. test button Type	RRD226115	RRD226230
AgNi 90/10 Order No.	8690310000	8690330000
With test button + LED Type	RRD228115	RRD228230
AgNi 90/10 Order No.	8690320000	8690340000
Type Order No.		
Type Order No.		

Note		

RRD relay

3 CO

AC/DC coil

- 3 CO contacts
- 500 VA switching capacity
- Mechanical operating display
- Safe-to-touch test button, selectable locking

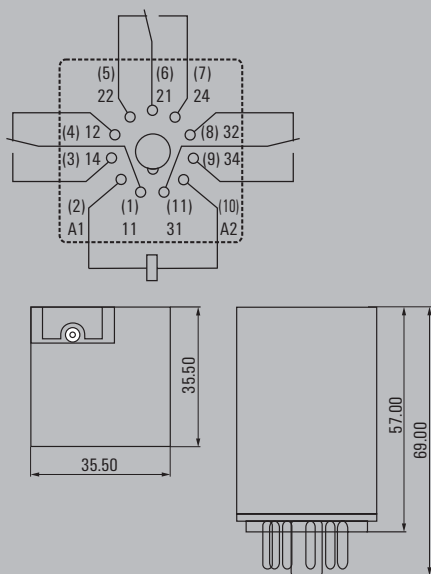


Technical data

Output	
Max. switching voltage, AC	400 V
Continuous current	10 A
Contact material	AgNi 90/10
Mechanical service life	20 x 10 ⁶ switching cycles
Sparkover time / Drop-out time	12 ms / 5 ms
Rated data	
Status indicator / Free-wheel diode	Mechanical / No
Ambient temperature (operational)	DC coil: -45 °C...+60 °C / AC coil: -45 °C...+50 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CSA; cURus; VDE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	3 mm
Surge voltage category	
Pollution severity	

Circuit diagram

View of connections



Dimensions

Plug-in connection

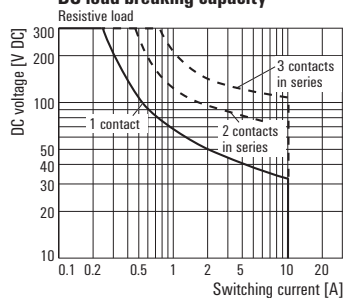
Length x width x height

35.5 / 35.5 / 57

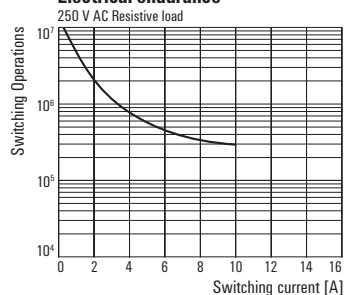
Note

Applications

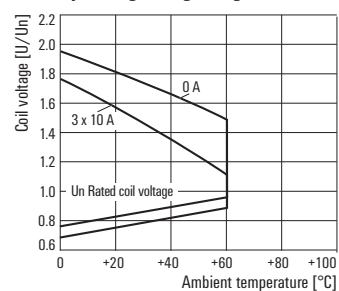
DC load breaking capacity



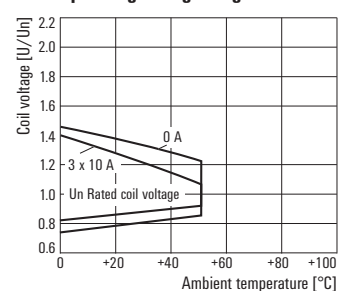
Electrical endurance



Operating voltage range DC



Operating voltage range AC



RRD relay

3 CO

AC/DC coil

Type code	RRD				
Type	RIDER Round				
Contacts	2 2 change-over contacts, 8-pole 3 3 change-over contacts, 11-pole				
Contact material	2 AgNi 90/10				
Type of construction	1 DC coil with test button 3 DC coil with test button and bi-polar LED 6 AC coil with test button 8 AC coil with test button and bi-polar LED				
DC coil	006 6 V DC 012 12 V DC 024 24 V DC 048 48 V DC 060 60 V DC 110 110 V DC 220 220 V DC				Free wheel diode OC4 OE8 OG0 1B0 2C0
AC coil	006 6 V AC 012 12 V AC 024 24 V AC 048 48 V AC 115 115 V AC 230 230 V AC				

Ordering data

Input	12 V DC 3CO	24 V DC 3CO	110 V DC 3CO	220 V DC 3CO
Rated control voltage	12 V DC	24 V DC	110 V DC	220 V DC
DC Response/dropout Volt	9 V / 1.2 V	18 V / 2.4 V	82.5 V / 11.5 V	165 V / 22 V
Power rating	1.2 W	1.2 W	1.2 W	1.2 W
Rated current DC	109.1 mA	50.5 mA	11 mA	5.5 mA
Coil resistance	110 Ω ±10 %	475 Ω ±10 %	10000 Ω ±12 %	40000 Ω ±15 %

Ordering data Relay				
w. test button Type	RRD321012	RRD321024	RRD321110	RRD321220
Order No.	8799030000	8690610000	8690650000	7940007742
With test button + LED Type		RRD323024	RRD323110	RRD323220
Order No.		8690620000	8690660000	8798610000
w. test button Type		RRD3210C4	RRD3211B0	RRD3212C0
+ Free-wheel diode Order No.		8797650000	8797640000	8797610000
With test button + LED Type		RRD3230C4		RRD3232C0
+ Free-wheel diode Order No.		7940007732		8829400000

Note				

Ordering data

Input	24 V AC 3CO	48 V AC 3CO	115 V AC 3CO	230 V AC 3CO
Rated control voltage	24 V AC	48 V AC	115 V AC	230 V AC
AC Response/dropout Volt	19.2 V / 7.2 V	38.4 V / 14.4 V	92 V / 34.5 V	184 V / 92 V
Power rating	2.3 VA	2.3 VA	2.3 VA	2.3 VA
Rated current AC	94.2 mA	47.5 mA	20.6 mA	10.1 mA
Coil resistance	86 Ω ±10 %	345 Ω ±10 %	2000 Ω ±10 %	8300 Ω ±12 %

Ordering data Relay				
w. test button Type	RRD326024	RRD326048	RRD326115	RRD326230
Order No.	8690450000	8690470000	8690550000	8690570000
With test button + LED Type	RRD328024	RRD328048	RRD328115	RRD328230
Order No.	8690460000	8690480000	8690560000	8690580000
Type				
Order No.				
Type				
Order No.				

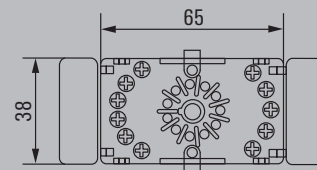
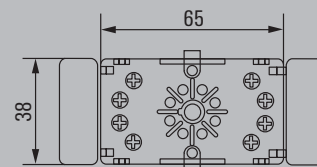
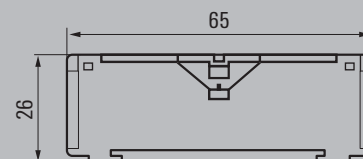
Note				

Accessories for RRD relay modules

Plug-in module with screw connection



Dimensions in mm



Technical data

Contact data	
Nominal current	10 A
Nominal voltage	400 V AC
Dielectric strength, coil/contacts	>2500 V _{eff}
Ambient temperature	-20 °C ... + 80 °C
Ingress protection class (IEC 61810)	IP 20
Approvals	cURus
Connection cross-section / with ferrule	2 x 2.5 mm ² / 2 x 1.5 mm ²
Terminal torque	0.5 / 0.7 Nm
Humidity	40 °C/93 rel. humidity, no condensation

Ordering data

Description	Type	Qty.	Order No.
Plug-in module with screw connections, 8-pole	SRD-I 2CO	10	8869360000
Plug-in module with screw connections, 11-pole	SRD-I 3CO	10	8869350000

Accessories

Description	Type	Order No.
End bracket	WEW 35/2	1061200000
Screwdriver	SD 0.6/3.5/100	9008330000
Metal retaining clip, RRD	SRD-I CLIP M	8869370000

RPW relay

2 CO AC/DC coil

3 CO AC/DC coil

- 6000 VA switching capacity
- Mechanical operating display
- With and without test button



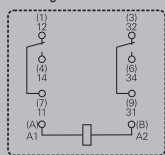
Technical data

Output	
Max. switching voltage, AC	440 V
Continuous current	16 A
Contact material	AgCdO
Mechanical service life	20 x 10 ⁶ switching cycles
Sparkover time / Drop-out time	15 ms / 10 ms
Rated data	
Status indicator / Free-wheel diode	Mechanical / No
Ambient temperature (operational)	-45 °C...+70 °C
Flammability class UL94	V-0
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CSA; cURus; VDE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	≥ 4 mm
Surge voltage category	
Pollution severity	

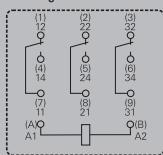
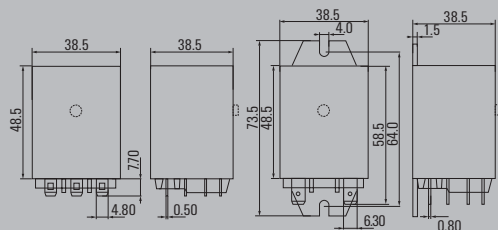
Circuit diagram

View of connections

2 changeover contacts



3 changeover contacts

Cap without lug,
plug-in connectionsCap with fixing lug, 6.3 mm
Faston (4.8 mm possible)

Dimensions

Plug-in connection

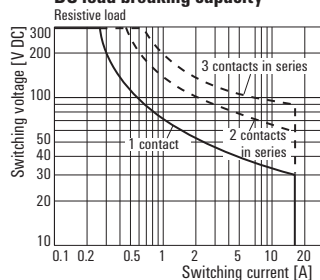
Length x width x height

mm 38.5 / 38.5 / 48.5

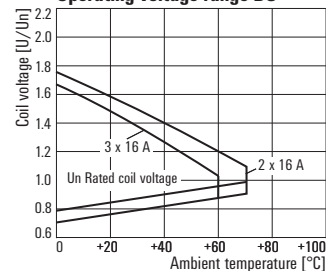
Note

Applications

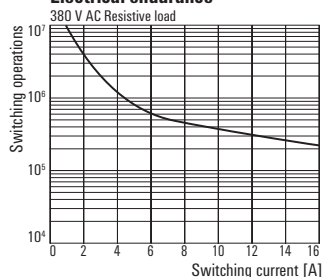
DC load breaking capacity



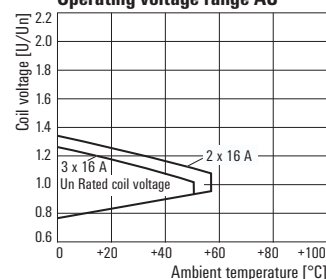
Operating voltage range DC



Electrical endurance



Operating voltage range AC



Type code		RPW					
Type	RIDER PoWer						DC coil
Contacts							006 6 V DC
2	2 change-over contacts						012 12 V DC
7	3 change-over contacts						024 24 V DC
							048 48 V DC
							060 60 V DC
							110 110 V DC
Type of construction							AC coil
0	Without test button						506 6 V AC
3	With test button						512 12 V AC
Housing							524 24 V AC
2	Cap without lug, 4.8 mm Faston						548 48 V AC
5	Cap with lug, 6.3 mm Faston						615 115 V AC
							730 230 V AC

Input			
Rated control voltage	24 V DC	24 V AC	230 V AC
DC Response/dropout Volt	18 V / 2.4 V		
AC Response/dropout Volt		19.2 V / 9.6 V	184 V / 69 V
Power rating	1.2 W	2.3 VA	2.3 VA
Rated current DC	50.5 mA		
Rated current AC		94.2 mA	10.1 mA
Coil resistance	475 Ω ±10 %	86 Ω ±10 %	8300 Ω ±12 %

w.o. test button	Type	RPW202024	RPW202524	RPW202730
AgCdO	Order No.	8690730000	on request	8690720000
	Type			
	Order No.			
	Type			
	Order No.			
	Type			
	Order No.			

Note				

Input			
Rated control voltage	24 V DC	24 V AC	230 V AC
DC Response/dropout Volt	18 V / 2.4 V		
AC Response/dropout Volt		19.2 V / 7.2 V	184 V / 69 V
Power rating	1.6 W	2.8 VA	2.8 VA
Rated current DC	69.6 mA		
Rated current AC		109.2 mA	11.7 mA
Coil resistance	345 Ω ±10 %	80 Ω ±10 %	7500 Ω ±10 %

w.o. test button	Type	RPW702024	RPW702524	RPW702730
AgCdO	Order No.	8690760000	8690740000	8690750000
	Type			
	Order No.			
	Type			
	Order No.			
	Type			
	Order No.			

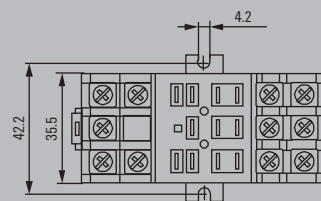
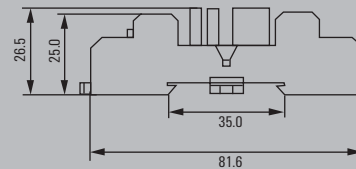
Note				
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Accessories for RPW

Plug-in module with screw connection



Dimensions in mm



Technical data

Contact data	
Nominal current	16 A
Nominal voltage	250 V AC
Dielectric strength, coil/contacts	>2500 Vms
Ambient temperature (operational)	-40 °C ... +40 °C
Terminal torque	0.8 Nm
max.	1.2 Nm
Humidity	40 °C/93 rel. humidity, no condensation

Ordering data

Description	Type	Qty.	Order No.
Plug-in module with screw connections	SPW 3CD	25	8697680000

Accessories

Description	Type	Order No.
End bracket	WEW 35/2	1061200000
Screwdriver	SD 0,6/3,5/100	9008330000

Signal monitoring in safety-critical circuits

Coupling relays with positively driven contacts

Weidmüller has expanded the RIDERSERIES to include a relay variant with force-guided contacts. Relays with force-guided contacts have a 99 % diagnostics coverage and an excellent reputation for use in safety systems. The contacts interlock mechanically with each other in order to ensure a synchronous switching status of both contacts. This guarantees that the alert contact will maintain the same switching status in the event of an error (for example, if the working contact melts from an overload). The controller (or safety controller) detects the alert contact and then compares the set point and actual values. If a difference occurs, measures can then be taken to protect equipment and human life.

Resistant to vibration

A metal clip ensures that the relay module remains secure even under vibration / mechanical shock conditions.



A variety of connection options

The base is available either with the proven screw clamp connection or the time saving tension clamp connection.



Convenient

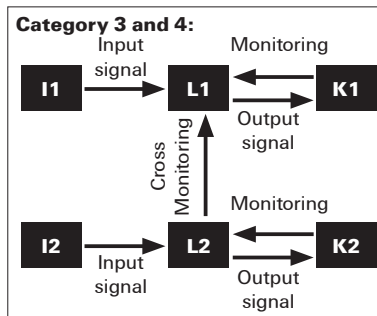
Relay modules can be replaced quickly in the event of a fault without removing the connecting cable.

**On site diagnostics**

An easy to view LED display module with an integrated free wheeling diode is used to protect the series connected electronics.

**Safety-based output relay controls**

By connecting two coupling relays together with a safety based controller or safety switching devices, it is possible to set up a safe and efficient control mechanism that complies with the structure specified in EN ISO 13849-1 (Category 3 and 4).



RIDERSERIES FG - Relay modules

RCI KIT with forcibly guided contacts

2 CO

DC coil

Modular system comprising:

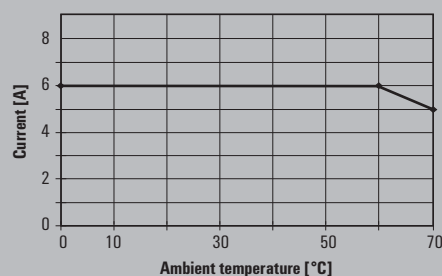
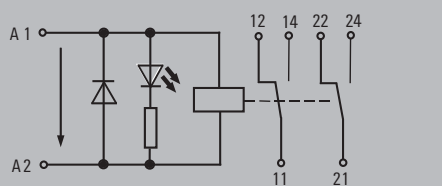
- Relay socket for rail mounting
- LED indicator unit
- Retaining clip
- Pluggable relay modules
- Markers



Technical data

Output	
Max. switching voltage, AC	250 V
Continuous current	6 A
Contact material	AgCuNi
Mechanical service life	> 50 x 10 ⁶ switching cycles
Sparkover time / Drop-out time	12 ms / 5 ms
Rated data	
Status indicator / Free-wheel diode	Green LED / Yes
Ambient temperature (operational)	-40 °C...+70 °C
Flammability class UL94	V-1
Humidity	40 °C / 95 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Rated voltage	250 V
Clearance and creepage distances for control side - load side	≥ 10 mm
Surge voltage category	III
Pollution severity	3
Standards	DIN EN 50205

DC-Version



Ordering data

Input	
Rated control voltage	24 V DC
Rated current DC	40 mA
Power rating	0.82 W
DC Response/dropout Volt	16.8 V / 2.4 V

24 V DC 2CO LED

Ordering data

Screw connection	Type	RCIKIT 24VDC 2CO LD/FG
	Order No.	1218410000
Tension clamp connection	Type	RCIKITZ 24VDC 2CO LD/FG
	Order No.	1218390000

Ordering data

Spare relay		
Type		RCI42424FG
Order No.		1218380000

Note

1 NCC, 1 NOC

or 1 change-over contact

RS 30

Screw connection

1 NOC
1 NCC1 change-over
contact

RS 30

Isolating plug with screw connection

1 NOC
1 NCC1 change-over
contact

Technical data

Input voltage

5...60 V ± 10 %; 115 V/230 V + 5 % – 15 %

Nominal consumption - (W)

Nominal consumption ~ (VA)

Drop-out current of relay module (at 20 °C)

Drop-out current of relay module (at 20 °C)

Pick-up current

Output voltage max.

Continuous current

Derating curve

a = fitted on mounting rail in horizontal row without spacing

b = fitted on mounting rail in horizontal row with 20 mm spacing



Making current

Making power under ohmic load

Min. switching power/switching current

Duration of bounce

Typical switching times

– Pick-up delay

– Drop-out delay

Max. switching frequency

Contact material

Service life, mechanical

– 24 V~, 1 A, ohmic load

– 230 V~, 3 A, ohmic load

Storage temperature

Ambient temperature, fitted on mounting rail

– in horizontal row without spacing

– in horizontal row without spacing ≥ 20 mm spacing

Humidity

Insulation coordination to EN 50178

Surge category

Pollution severity

Dimensions

Mounting width

Length (at 90° to mounting rail)

Height (with TS 32 / TS 35 x 7.5)

5 VTTL

0.45 W¹⁾

–

–

–

–

250 V

5 A

24 V–

0.45 W

–

3 mA

–

12 mA

250 V

6 A

24 V~

0.45 W

0.7 VA

2.5 mA~

3.5 mA~

–

250 V

6 A

115 V~

–

0.8 VA

–

1 mA~

6 mA

250 V

5 A

230 V~

–

0.8 VA

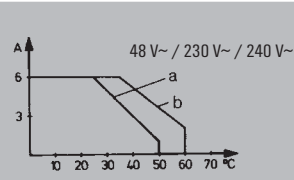
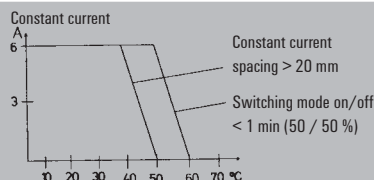
–

1 mA~

–

250 V

3 A



8 A

2000 VA / 100 W

250 mW / 10 mA

≤ 3 ms

≤ 8 ms

≤ 7 ms

70 Hz

AgNi, gold-flashed

>10⁷ switching cycles> 5 x 10⁵ switching cycles>7 x 10⁵ switching cycles

–40 °C...+60 °C

–25 °C...+40 °C

–25 °C...+50 °C

40 °C/93 rel. humidity, no condensation

III

2

11.2 mm NOC / NCC, 25 mm change-over contact

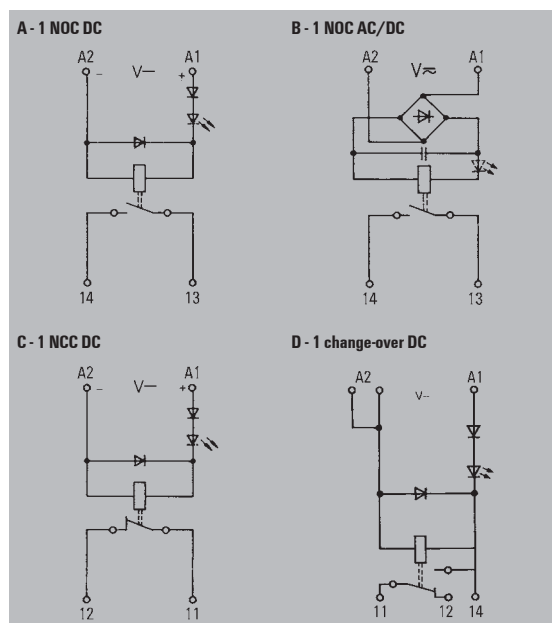
70 mm (74 mm BL/SL version)

56 mm / 51.5 mm

1) Rated consumption of auxiliary voltage 24 V~.

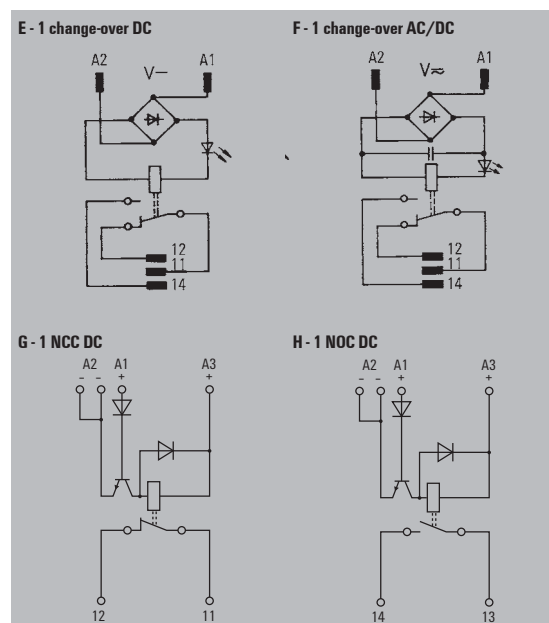
RS 30

Screw connection



RS 30

Isolating plug with screw connection



Ordering data

Wiring diagram	
Input voltage	Function indicator
5 V-, TTL	without
24 V-	without
	LED green
	LED red
24 V=	without
	LED green
	LED red
115 V~	without
	LED green
	LED red
230 V~	without
	LED green
	LED red

A	B	C	D
NOC	NOC	NCC	change-over
1101661001		1100961001	
1101611001		1100911001	1181511001
1101621001		1100921001	1181521001
	1101711001		
	1101721001		
	1102111001		
	1102121001		
	1102261001		
	1102211001		
	1102221001		

E	F	G	H
change-over	change-over	NCC	NOC
		1167660000	1167760000
1100260000			
1100210000			
1100220000			
	1100360000		
	1100760000		
	1100860000		

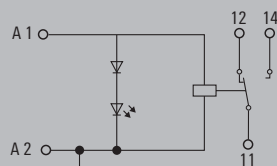
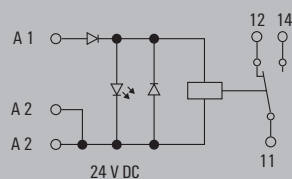
1 C0 contact**AC/DC coil**

- For high switching capacities
- Suitable for switching inductive loads

**Technical data**

Output	
Max. switching voltage, AC / Continuous current	250 V / 16 A
Min. switching power	1 W
Sparkover time / Drop-out time	
Contact material	AgCdO
Mechanical service life	3 x 10 ⁷ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	red LED / Yes
Reverse polarity protection	Available
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	250 V
Impulse withstand voltage	6 kV
Clearance and creepage distances for control side - load side	> 3 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	
Clamping range (nominal / min. / max.)	mm ²	2.5 / 0.5 / 4
Length x width x height	mm	53.5 / 25 / 70

Note

Residual voltages

Ordering data

Input	24 V DC 1C0	115 V AC 1C0	230 V AC 1C0
Rated control voltage	24 V DC ±10 %	115 V AC +5 % / -15 %	230 V AC +5 % / -15 %
Rated current AC		8 mA	4.5 mA
Rated current DC	40 mA		
Power rating	1 W	1 VA	1 VA
AC Response/dropout Volt		98 V	195 V
DC Response/dropout Volt	21.5 V		
AC pickup/dropout current		-/1.5 mA	-/2.2 mA
DC pickup/dropout current	-/11.5 mA		

Ordering data				
Screw connection	Type	RS 31 24VDC LD LP 1U	RS 31 115VAC LD LP 1U	RS 31 230VAC LD LP 1U
	Order No.	1128361001	1150461001	1128461001
	Type			
	Order No.			

Note

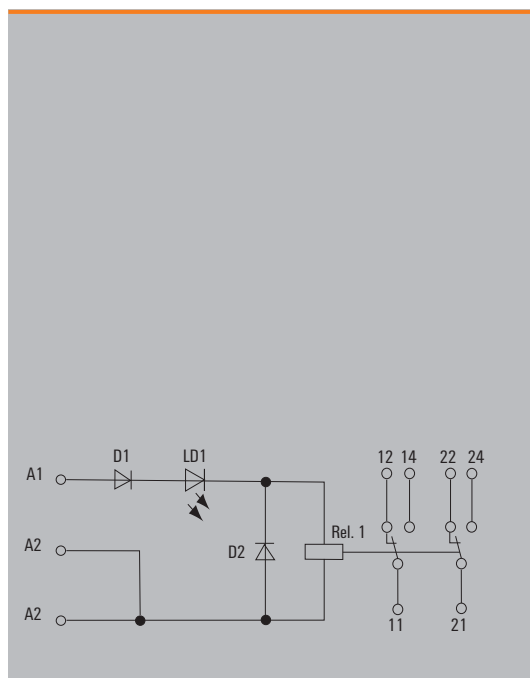
2 CO contacts**positively-driven contacts**

- DC coil
- Relay module with 2 positively-driven CO contacts, acc. to EN 50205
- 2-pole safety relays with 2 CO contacts*)
- For mounting on TS 32/35

**Technical data**

Output	
Max. switching voltage, AC / Continuous current	250 V / 4 A
Min. switching power	5 V / 10 mA
Sparkover time / Drop-out time	
Contact material	AgNi 90/10
Mechanical service life	20 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	red LED / No
Reverse polarity protection	Yes
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178, DIN EN 50205
Rated voltage	300 V
Impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	≥ 4 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	
Clamping range (nominal / min. / max.)	mm ²	2.5 / 0.5 / 4
Length x width x height	mm	63.5 / 25 / 70
Note		*) According to EN50205, only 1 NO / 1 NC is permitted for safety circuits

**Ordering data**

Input	24 V DC 2CO
Rated control voltage	24 V DC ±10 %
Rated current AC	
Rated current DC	21 mA
Power rating	0.5 W
AC Response/dropout Volt	
DC Response/dropout Volt	16 V / 10 V
AC pickup/dropout current	
DC pickup/dropout current	12.5 mA / 7 mA

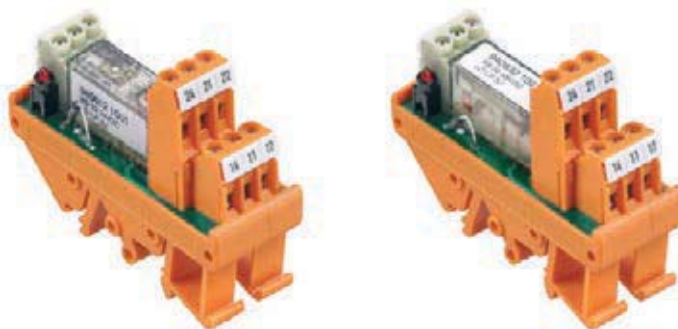
Ordering data

Type	RS32 24 VDC SAFETY
Order No.	8872160000
Type	
Order No.	

Note

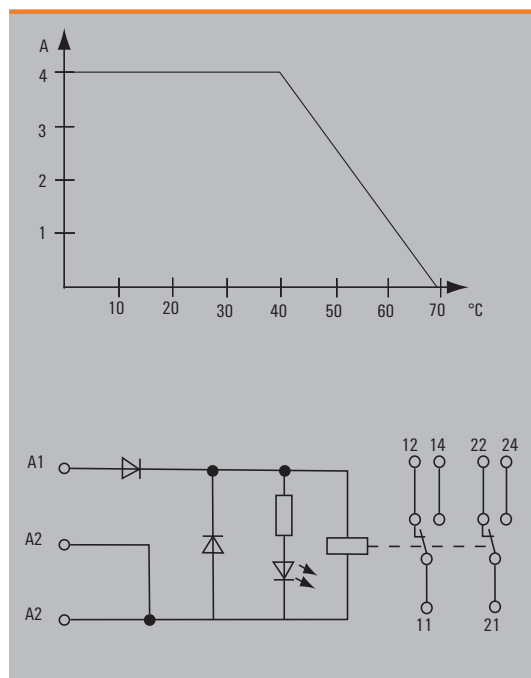
2 CO contacts**DC coil**

- Relay modules with two CO contacts
- Relay soldered
- Optional multi-voltage input
- For mounting on TS 32/35

**Technical data**

Output	
Max. switching voltage, AC / Continuous current	250 V / 4 A
Min. switching power	10 V / 10 mA
Sparkover time / Drop-out time	
Contact material	AgNi 90/10
Mechanical service life	3 x 10 ⁷ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	red LED / Yes
Reverse polarity protection	Available
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	250 V
Impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	> 3 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection	
Clamping range (nominal / min. / max.)	mm ²	2.5 / 0.5 / 4
Length x width x height	mm	63.5 / 25 / 70

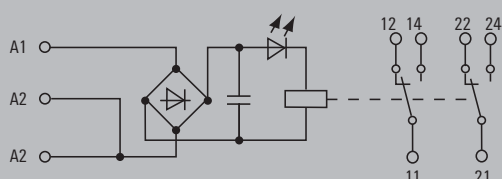
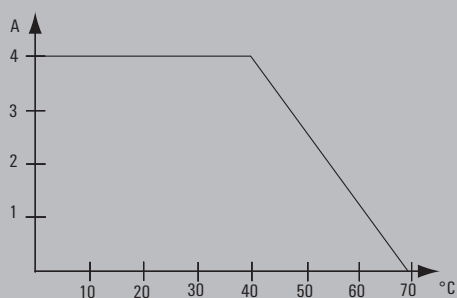
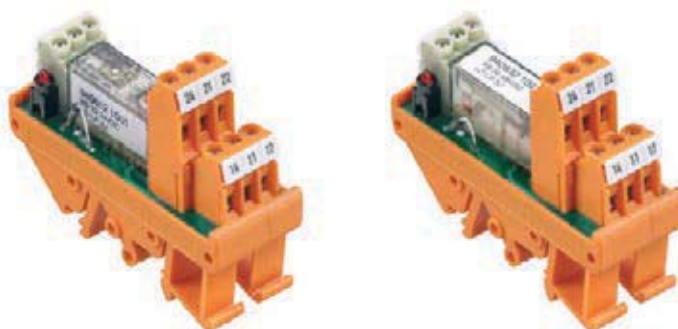
Note**Ordering data**

Input	24 V DC 2CO
Rated control voltage	24 V DC $\pm 10\%$
Rated current AC	
Rated current DC	25 mA
Power rating	0.6 W
AC Response/dropout Volt	
DC Response/dropout Volt	21.5 V
AC pickup/dropout current	
DC pickup/dropout current	-/5 mA

Ordering data		RS 32 24VDC LD LP 2U
Screw connection	Type	9406121001
	Order No.	
	Type	
	Order No.	

Note	

2 CO contacts UC coil



Technical data

Output	
Max. switching voltage, AC / Continuous current	250 V / 4 A
Min. switching power	12 V / 10 mA
Sparkover time / Drop-out time	
Contact material	AgNi 90/10
Mechanical service life	30 x 10 ⁷ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	red LED / No
Reverse polarity protection	Available
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; MARITREG; ROHS
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	250 V
Impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	> 3 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 4
Length x width x height	mm 63.5 / 25 / 70

Note

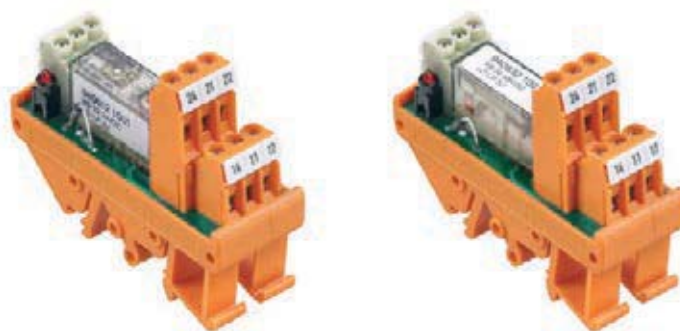
Ordering data

Input	24 V UC 2CO	115 V UC 2CO	230 V UC 2CO
Rated control voltage	24 V UC ±10 %	115 V UC +5 % / -15 %	230 V UC +5 % / -15 %
Rated current AC	28 mA	5 mA	4.3 mA
Rated current DC	18 mA	5 mA	4.3 mA
Power rating	0.6 W / 0.9 VA	0.5 W / 0.6 VA	1 W / 1 VA
AC Response/dropout Volt			
DC Response/dropout Volt	21.5 V	98 V	195 V
AC pickup/dropout current	-/2.5 mA	-/1.5 mA	-/2 mA
DC pickup/dropout current	-/4.5 mA	1 mA	-/1.2 mA

Ordering data			
Screw connection	Type	RS 32 24VUC LD LP 2U	RS 32 115VUC LD LP 2U
	Order No.	9406221001	9406621001
	Type		
	Order No.		

Note

2 CO contacts multiple voltage input

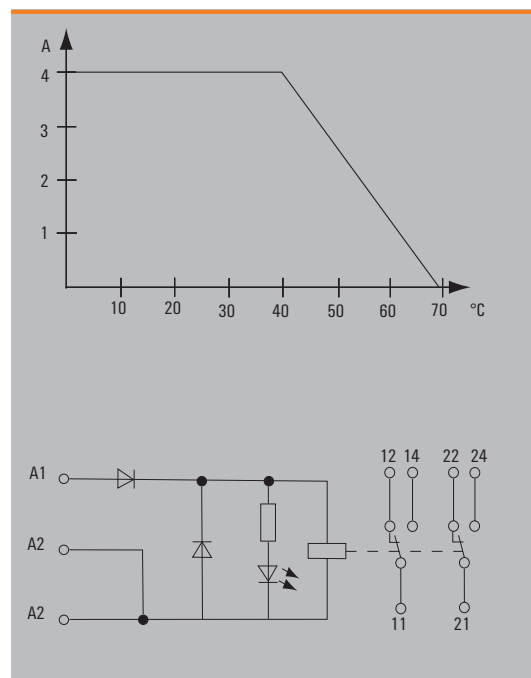


Technical data

Output	
Max. switching voltage, AC / Continuous current	250 V / 4 A
Min. switching power	10 V / 10 mA
Sparkover time / Drop-out time	13 ms / 10 ms
Contact material	AgNi 90/10
Mechanical service life	30 x 10 ⁷ switching cycles
Max. switching frequency at rated load	0.1 Hz
Rated data	
Status indicator / Free-wheel diode	red LED / No
Reverse polarity protection	Available
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+60 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	250 V
Impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	> 3 mm
Surge voltage category	III
Pollution severity	2

Dimensions	Screw connection
Clamping range (nominal / min. / max.)	mm ² 2.5 / 0.5 / 4
Length x width x height	mm 63.5 / 25 / 70

Note



Ordering data

Input	24-48 V UC 2CO	115-230 V UC 2CO
Rated control voltage	24 V UC ±10 %, 48 V UC ±10 %	115 V UC +5 % / -15 %, 230 V UC +5 % / -15 %
Rated current AC	28 mA / 22 mA	5.6 mA / 5.3 mA
Rated current DC	18 mA / 20 mA	5.4 mA / 5 mA
Power rating	0.6 W / 0.9 VA	1 W / 1 VA
AC Response/dropout Volt		
DC Response/dropout Volt	21.5 V / 43 V	98 V / 195 V
AC pickup/dropout current	3 mA / 4.5 mA	1.5 mA / 2 mA
DC pickup/dropout current	5 mA / 2 mA	1 mA / 1.2 mA

Ordering data		
Screw connection	Type	RS 32 24-48VUC LD LP 2U
	Order No.	1122661001
	Type	RS 32 115-230VUC LD 2U
	Order No.	1122761001

Note		

4-/8-/16-way, ea. with 1 COC

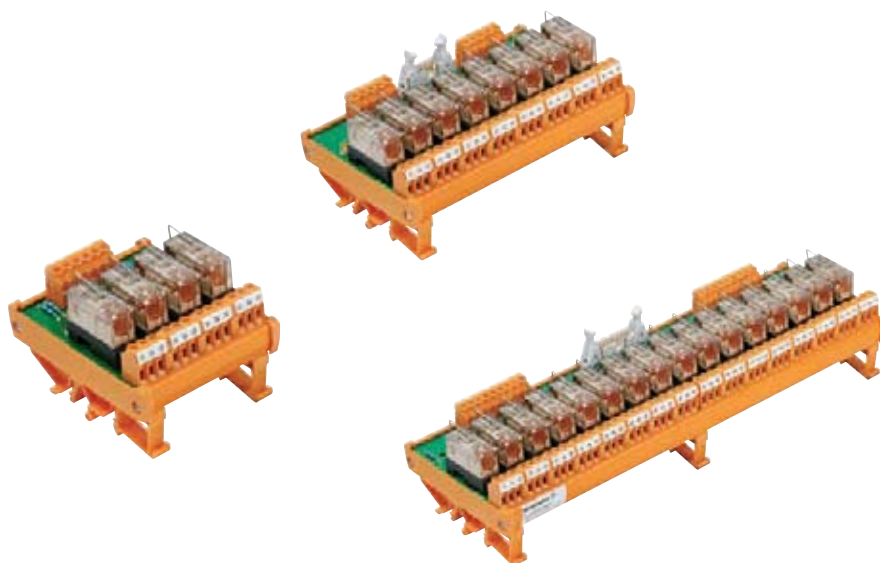
RSM 4 R / RSM 4 RS

4 relay modules
soldered or plug-in

RSM 8 R / RSM 8 RS

8 relay modules
soldered or plug-in

RSM 16 R / RSM 16 RS

16 relay modules
soldered or plug-in

Technical data

Rated data	
Input voltage	
Nominal consumption DC	soldered relay module
	plug-in relay module
Nominal consumption AC	soldered relay module
	plug-in relay module
Pick-up current DC	soldered relay module
	plug-in relay module
Pick-up current AC	soldered relay module
	plug-in relay module

Drop-out current of relay module (at 20 °C)

Output voltage max.

Continuous current

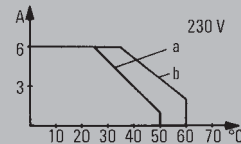
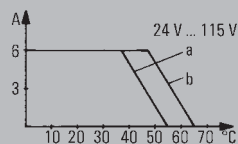
Derating curve

a = fitted on mounting rail in horizontal row without spacing

b = fitted on mounting rail in horizontal row with 20 mm spacing



24 V DC	24 V AC/DC	115 V AC/DC	230 V AC
0.45 W	-	-	-
0.75 W	0.45 W	-	-
-	-	-	-
-	0.7 VA	0.6 VA	1.2 VA
12 mA	-	-	-
23 mA	12 mA	5 mA	-
-	-	-	-
-	16.5 mA	6 mA	4 mA
2 mA	-	-	1 mA
250 V	250 V	250 V	250 V
6 A	6 A	6 A	3 A



Typical making times

Pick-up delay (AC/DC)

Drop-out delay (AC/DC)

Duration of bounce

Making current

Making power under ohmic load

Min. switching power / switching current

Contact material

Service life

24 V DC, 1 A, ohmic load

230 V AC, 3 A, ohmic load

Storage temperature

Ambient temperature

Humidity

Insulation coordination to EN 50178

Surge category

Pollution severity

Dimensions

Conductor cross-section (screw connection)

≤ 8 ms	≤ 10 ms / 10 ms	≤ 8 ms / 10 ms	≤ 10 ms
≤ 7 ms	≤ 15 ms / 20 ms	≤ 5 ms / 8 ms	≤ 10 ms

≤ 3 ms

8 A

2000 VA

250 mW/10 mA

AgNi 90/10, AgNiO, 15, gold-flashed

> 30 x 10⁵ switching cycles> 5 x 10⁵ switching cycles> 7 x 10⁵ switching cycles

-40 °C...+60 °C

-25 °C...+50 °C

40 °C/93 rel. humidity, no condensation

III

2

0.5...2.5 mm²

Output **Screw connection**

		4 relay modules	8 relay modules	16 relay modules
		RSM 4 R/RS	RSM 8 R/RS	RSM 16 R/RS
Input voltage		(B = 75 mm)	(B = 145 mm)	(B = 285 mm)
24 V DC, switching plus	Relay module pluggable	1113361001	1113561001	1113761001
	Relay module soldered	1112361001	1107761001	1107861001
24 V DC, switching minus	Relay module pluggable	1113461001	1113661001	1113861001
24 V AC/DC	Relay module pluggable	1173461001	1173561001	1173661001
115 V AC/DC	Relay module pluggable	1114561001	1114661001	1114761001
230 V AC	Relay module pluggable	1114861001	1114961001	1115061001

Input voltage	Contact material	Remarks	Order No.
24 V DC	AgNi 90/10	RT 314024 with clip	8630780000
	AgNi 90/10	RT 314024 without clip	4058480000
48 V DC	AgNi 90/10	RT 314048 without clip	4058740000
115 V DC	AgNi 90/10	RT 314110 with clip	8630770000
	AgNi 90/10	RT 314110 without clip	4058500000
Note: Can also be ordered with clamp for conversion to new RSM relay module.			

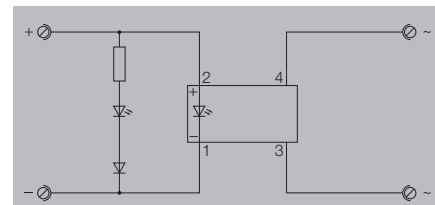
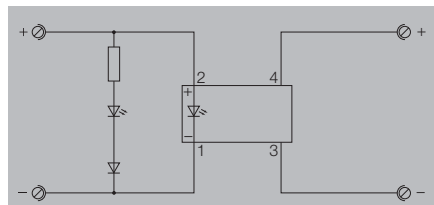
RSO 30

- Pluggable connections
- DC output up to 3 A @ 5 to 60 V DC
- AC output up to 3 A @ 24 to 240 V AC
- 11 mm modular width

RSO 30-DV/SC



RSO 30-DV/SA



Technical data

Control side	
Rated control voltage	5...24 V DC ±20 %
Power rating	No
Rated auxiliary voltage	Green LED
Status indicator	
Load side	
Rated switching voltage	2...60 V DC
Rated switching current	3 A
Voltage drop at max. load	0.1 ms / 0.75 ms
Switch-on delay / Switch-off delay	No /
Short-circuit-proof / Protective circuit, load side	
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	≥ 8 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	5...24 V DC ±20 %
Power rating	No
Rated auxiliary voltage	Green LED
Status indicator	
Load side	
Rated switching voltage	24...250 V AC
Rated switching current	3 A
Voltage drop at max. load	1.6 V
Switch-on delay / Switch-off delay	No-voltage switch /
Short-circuit-proof / Protective circuit, load side	No /
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	≥ 8 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	5...24 V DC ±20 %
Power rating	No
Rated auxiliary voltage	Green LED
Status indicator	
Load side	
Rated switching voltage	24...250 V AC
Rated switching current	3 A
Voltage drop at max. load	1.6 V
Switch-on delay / Switch-off delay	No-voltage switch /
Short-circuit-proof / Protective circuit, load side	No /
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	≥ 8 mm
Surge voltage category	III
Pollution severity	2

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Ordering data

Type	Qty.	Order No.
------	------	-----------

Type	Qty.	Order No.
RSO 30/DV 5-24V CC/SC	20	9443100000

Type	Qty.	Order No.
RSO 30/DV 5-24V CC/SA	20	9443110000

Note

Note

Note

Accessories

Note

Note

Note

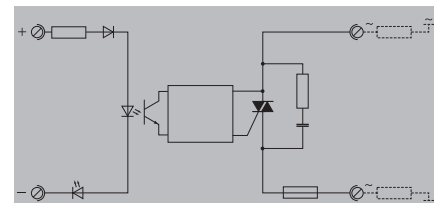
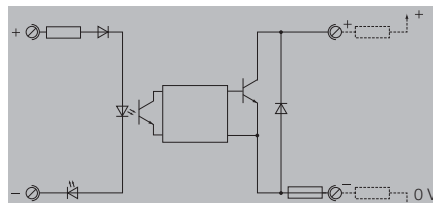
RSO 31

- Pluggable connections
- DC output up to 3 A @ 5 to 60 V DC
- AC output up to 3 A @ 24 to 240 V AC
- 12.5 mm width
- Pluggable fuse in output circuit

RSO 31 -ODC/F



RSO 31 -OAC/F



Technical data

Control side	
Rated control voltage	24 V DC $\pm 10\%$
Power rating	0.29 W
Rated auxiliary voltage	No
Status indicator	red LED
Load side	
Rated switching voltage	5...50 V DC
Rated switching current	3 A
Voltage drop at max. load	1.6 V
Switch-on delay / Switch-off delay	0.1 ms / 0.75 ms
Short-circuit-proof / Protective circuit, load side	No /
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	≥ 8 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	24 V DC $\pm 10\%$
Power rating	0.29 W
Rated auxiliary voltage	No
Status indicator	red LED
Load side	
Rated switching voltage	24...250 V AC
Rated switching current	3 A
Voltage drop at max. load	1.6 V
Switch-on delay / Switch-off delay	No-voltage switch /
Short-circuit-proof / Protective circuit, load side	No /
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	≥ 8 mm
Surge voltage category	III
Pollution severity	2

Control side	
Rated control voltage	24 V DC $\pm 10\%$
Power rating	0.29 W
Rated auxiliary voltage	No
Status indicator	red LED
Load side	
Rated switching voltage	24...250 V AC
Rated switching current	3 A
Voltage drop at max. load	1.6 V
Switch-on delay / Switch-off delay	No-voltage switch /
Short-circuit-proof / Protective circuit, load side	No /
General data	
Ambient temperature (operational)	-25 °C...+40 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50 178)	
Standards	DIN EN 50178
Rated voltage	300 V
Rated impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	≥ 8 mm
Surge voltage category	III
Pollution severity	2

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

2.5 / 0.5 / 2.5
65.5 / 12.5 / 80

2.5 / 0.5 / 2.5
65.5 / 12.5 / 80

Ordering data

Type	Qty.	Order No.
------	------	-----------

RS031-ODC24/F	20	9430820000
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Type	Qty.	Order No.
------	------	-----------

RS031-OAC24/F	20	9430320000
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Note

Note

Note

Accessories

Note

Note

Note

Power electronics

Power electronics	Power solid-state relays – Overview	C.2
	Power solid-state relays	C.4

Wear-free switching of AC loads up to 20 A

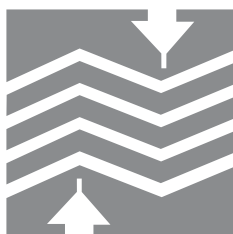
Single- and three-phase Power solid-state relays

The advantage over contactors and relays is that the Power solid-state relays (PSSRs) are able to switch noiselessly, with no wear on their parts. The modules have a high capacity for handling surge currents and thus have sufficient reserves for triggering fuses. They can also easily resist capacitive and inductive interference pulses.

Single-phase PSSRs, with their zero-voltage switch, are best suited for switching resistive loads up to 20 A at 55 °C. Three-phase PSSRs feature an integrated instantaneous switch. Both versions are ready to use; they are simply snapped onto a rail and connected.

Not sensitive

PSSR modules use semiconductor technology and are thus resistant to shock and vibrations.



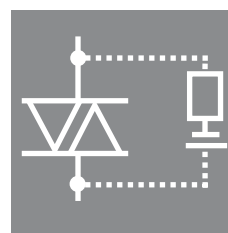
Safe

Semiconductor-based wear-free switching reduces your service costs.

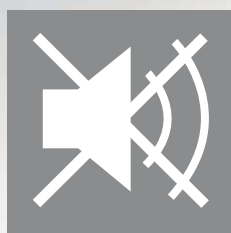


**Robust**

High-quality semiconductor switches and extensive protective circuitry allow safe use in an industrial environment.

**Quiet**

Silent switching is well suited for noise-sensitive environments such as air-conditioning and heating systems, or for processes with a high volume of switching cycles (for example, valve controllers).

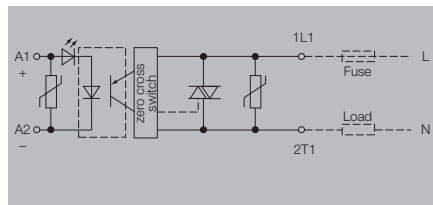
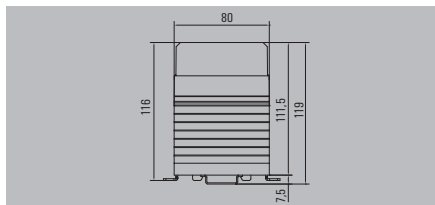


Power solid-state relays

PSSR

- Load circuit: single-phase 12 to 275 V AC / 20 A
- Ready-to-use: simply clip on and connect
- Silent, wear-free switching
- High capacity for handling surge currents
 $I^2t = 312 \text{ A}^2\text{s}$ (10 ms)

PSSR 24 V DC / 1 PH AC 20 A



Technical data

Control side	
Rated control voltage	3...32 V DC
Power rating	0.03...0.3 W
Cut-in (switch-on) voltage	3 V
Dropout voltage	1 V
Input frequency	max. 10 Hz
Status indicator	Green LED
Protective circuit	Varistor
Load side	
Solid-state type	Triac
Rated switching voltage	12...275 V AC
Rated switching current	20 A @ 55 °C
Voltage drop at max. load	0.85 V
Leakage current	< 1 mA
Short-circuit-proof / Protective circuit	No / Varistor
Switch-on delay / Switch-off delay	≤ 10 ms / ≤ 10 ms
Continuous current	20 A
Pulse load, max. current / Cartridge fuse	250 A (10 ms) / FERRAZ gRC 25 A 14x51 165 A²s
Load category	AC 53: 5 A
General data	
Ambient temperature (operational)	-30 °C...+80 °C
Storage temperature	-30 °C...+100 °C
Humidity	40...85 % (indoor) no condensation
Approvals	CE; cURus
Standards	DIN EN 60950, IEC 60947-4-3
Insulation coordination (EN 50 178)	
Rated voltage	300 V
Rated impulse withstand voltage	4 kV
Clearance and creepage distances for control side - load side	≥ 6.4 mm
Surge voltage category	III
Pollution severity	2

Dimensions	
Clamping range (nominal / min. / max.)	mm² 16 / 1.5 / 16
Length x width x height	mm 116.1 / 22.5 / 98
Note	

Ordering data

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Type	Qty.	Order No.
PSSR 24VDC/1PH AC 20A	1	8952110000

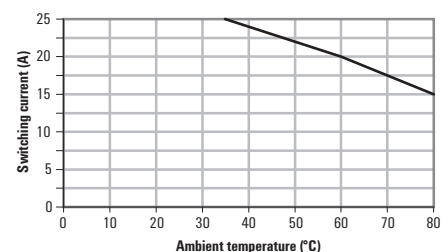
Note

Refer to the page on Power Solid-State Relay/Accessories for accessories and dimensioned drawings.

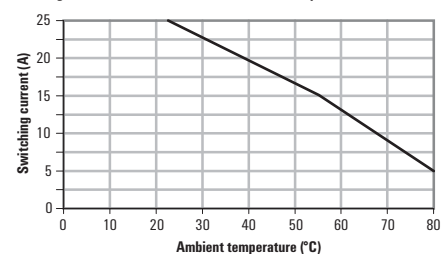
Accessories

Note

Derating curve with moderate ventilation and 50 % operational running time



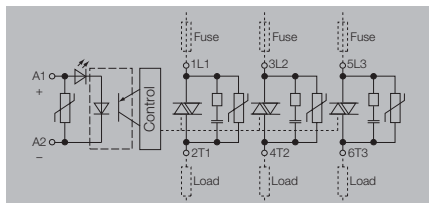
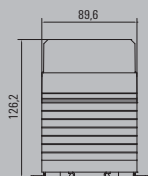
Derating curve without ventilation and in continual operation



PSSR

- Load circuit: three phase 12 ... 520 V AC / 20 A
- Ready-to-use: simply clip on and connect
- Silent, wear-free switching
- High capacity for handling surge currents
 $I^2t = 1500 \text{ A}^2\text{s}$ (10 ms)

PSSR 24 V DC / 3 PH AC 20 A



Technical data

Control side

Rated control voltage
 Power rating
 Cut-in (switch-on) voltage
 Dropout voltage
 Input frequency
 Status indicator
 Protective circuit

Load side

Solid-state type
 Rated switching voltage
 Rated switching current
 Voltage drop at max. load
 Leakage current
 Short-circuit-proof / Protective circuit
 Switch-on delay / Switch-off delay
 Continuous current
 Pulse load, max. current / Cartridge fuse
 Load category

General data

Ambient temperature (operational)
 Storage temperature
 Humidity
 Approvals
 Standards

Insulation coordination (EN 50 178)

Rated voltage
 Rated impulse withstand voltage
 Clearance and creepage distances for control side - load side
 Surge voltage category
 Pollution severity

8...30 V DC / 10...30 V AC

0.1...2 W

8 V DC / 10 V AC

4 V

max. 10 Hz

Green LED

RC element, Varistor

Thyristor

24...520 V AC

20 A @ 55 °C

1.4 V

< 1 mA

No / RC element, Varistor

30 ms / 30 ms

20 A

550 A (10 ms) / FERRAZ gRC 63 A 22x58 1353 A²s

AC 53: 3 x 12 A

-40 °C...+80 °C

-40 °C...+100 °C

40...85 % (indoor) no condensation

CE; cURus

DIN EN 60950, IEC 60947-4-3

300 V

4 kV

≥ 6.4 mm

III

2

Dimensions

Clamping range (nominal / min. / max.)

mm²

Length x width x height

mm

Note

Ordering data

Type	Qty.	Order No.
PSSR 24VDC/3PH AC 20A	1	8952130000

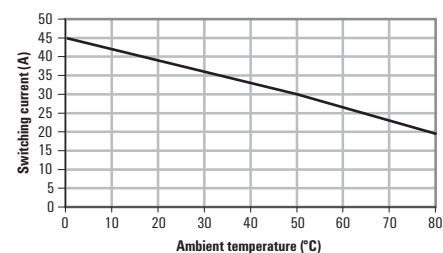
Note

Refer to the page on Power Solid-State Relay/Accessories for accessories and dimensioned drawings.

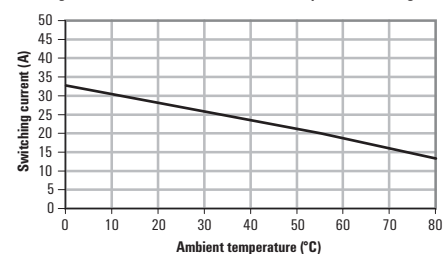
Accessories

Note

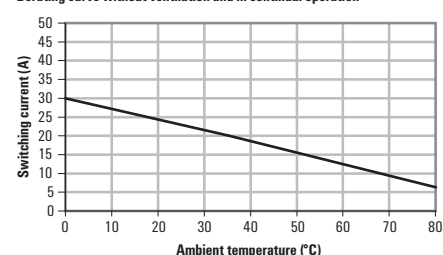
Derating curve with maximum ventilation



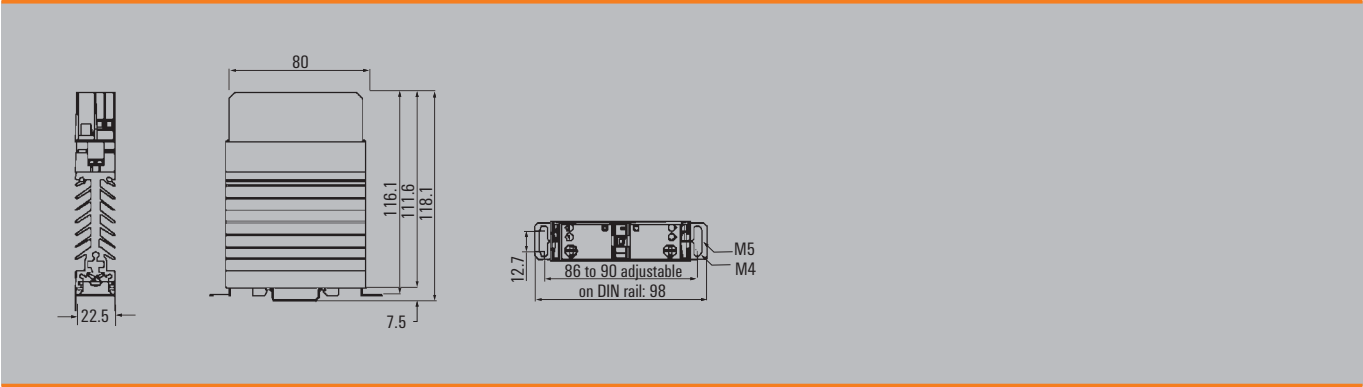
Derating curve with moderate ventilation and 50 % operational running time



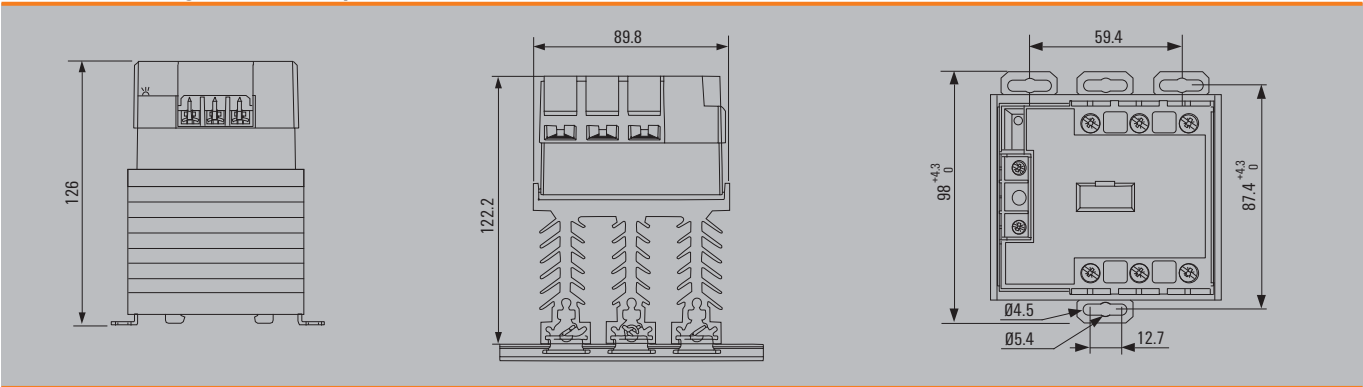
Derating curve without ventilation and in continual operation



Dimensioned drawing for PSSR, single-phase



Dimensioned drawing for PSSR, three-phase



Uninsulated screwdriver

Weidmüller SoftFinish screwdriver for general uses.
Blade made from fully hardened, high-alloy chromium-vanadium-molybdenum steel,
matt chrome finish.



SD S

Slotted screwdriver with rounded blade SD DIN 5265, ISO 2380/2,
output to DIN 5264, ISO 2380/1. ChromTop tip, SoftFinish grip

Type	Size / AF	A	B	C	Order No.
SD 0.5x3.0x80		0.5	3.0	80	9008320000



SDK PZ

Crosshead screwdriver, Pozidriv, SDK PZ DIN 5262, ISO 8764/2-PZ,
output to ISO 8764/1-PZ, ChromTop tip, SoftFinish grip

SDK PZ2	2			100	9008540000
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Timer

Timer	BT-SERIES – Overview	D.2
	BT-SERIES – Timer	D.4
	MCZ-SERIES – Timer	D.8
	DK-SERIES – Timer	D.9

Installation timer

The electronic timer from the BT product range offers ideal solutions for industrial applications.

The BT product range provides the following functions:

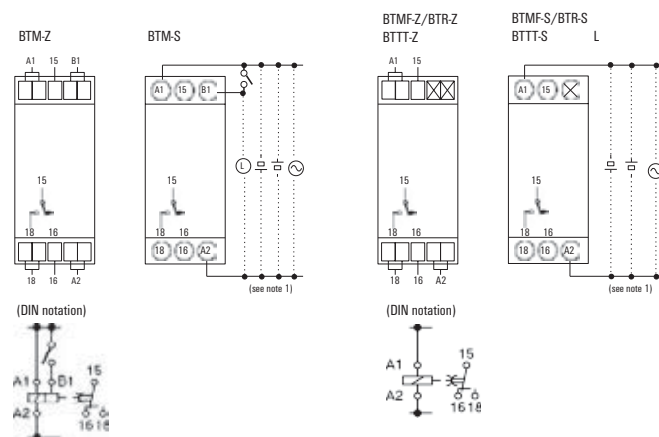
- Pick-up delay (BTR)
- Pulse emitter (BTTT)
- Multifunction with control input (BTM)
- Multifunction without control input (BTMF)
- Star-delta change-over

Time ranges and power supplies for timer

Using the central button, you can select the functions of the modules over either 4 or 8 time ranges.

The multi-voltage supply range offers a wide bandwidth for industrial use (see technical data).

Connection of the timer



Note: 1. Pole numbers are not necessary for DC voltage supply.

2. The contact symbol of BTM is marked with  as it provides several operating modes and differs from the delayed contacts of conventional timer.



Time ranges

Display of time scale	Time ranges
0.1 s	0.1 to 1.2 s
1 s	1 to 12 s
0.1 min	0.1 to 1.2 min
1 min	1 to 12 min
0.1 h	0.1 to 1.2 h
1 h	1 to 12 h
10 h	10 to 120 h

Note:

If the rotary button for time adjustment is set to "0", the output will be switched without delay.

Choosing the time range

The time range is chosen by turning the rotary switch for the ON-time scale and OFF-time scale. The time scales are visible in the display to the left of the rotary switch in the following order: 0.1 s, 1 s, 0.1 min, 1 min, 0.1 h, 1 h.

Note:

The time scales "1 s" and "0.1 h" are given twice. Both adjustments represent the same time scale.

Locking/unlocking of selectors and time setting dial

The rotary switches for the ON/OFF time adjustment and the option selector for the time scale can be locked with the locking key.

This pen-style special tool is available separately. To lock either rotary switches or the option selector, simply insert the locking key into the keyhole bottom right of the rotary switch/option selector and turn it clockwise until the button/switch is totally covered by the red cover. To unlock, simply turn the key in the opposite direction.

Connection system

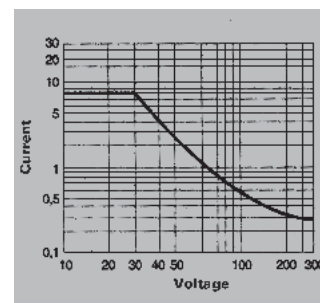
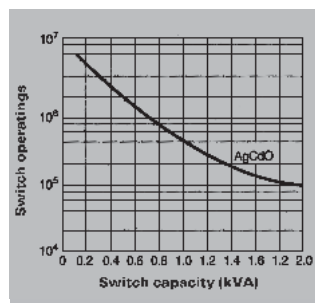
The units offers the following connection technologies:

Screw connection

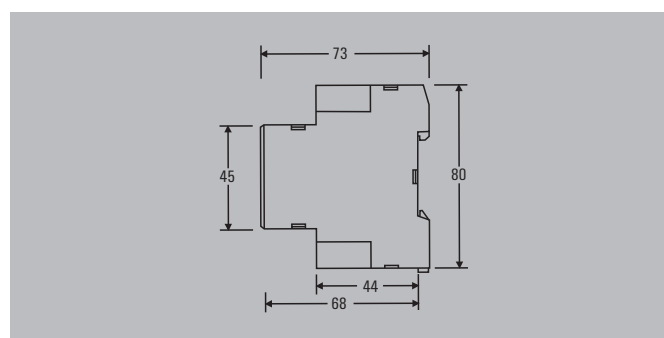
- 2 x 1.5 mm² with wire end ferrule,
- 2 x 2.5 mm² without wire end ferrule

Tension clamp connection

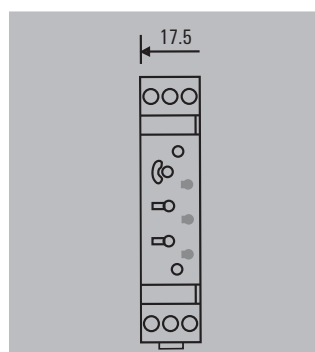
- 2 x 1.5 mm² with wire end ferrule,
- 2 x 1.5 mm² without wire end ferrule



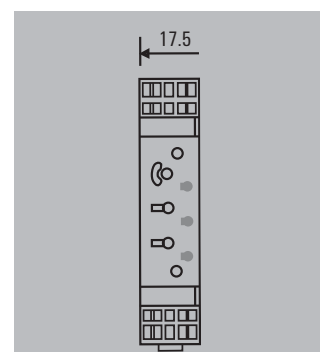
Dimensions



Screw connection



Tension clamp connection



BT-SERIES – Timer

Installation timer

- Screw or tension clamp connection
- LED status indicator

- Approvals

Input:
Output:

508
EN 61812-1
IEC 60947-5-1
IEC 60664-1
EN 55011

voltage present
output active
22.2 Nr. 14
IEC 60664-1
EN 61812-1
IEC 60947-5-1
EN 50082-2



Type designation:

B = Building
T = Timer
R = Response Delay
TT = Two Times
M = Multifunction, 8 ranges
MF = Multifunction, 4 ranges
DS = Delta, Star
S = Screw
Z = Tension

Input		Contacts hard gold plated	
Rated voltage		24 ... 230 V AC, 50/60 Hz, 24 ... 48 V DC	
Voltage tolerance		85 ... 110 % of rated voltage	
Breaking voltage		Max. 2.4 V AC/DC	
Power consumption per type		V AC	21...33 VA at 230 V
		V DC	0.6...1.3 W at 24 V
Reset time		Min. 0.1 s (BTDS: 0.5 s)	
Insulation			
Insulation resistance		100 MΩ min., at 500 V DC	
Insulation test voltage		between input and output, to enclosure	2000 V AC, 50/60 Hz, 1 min
		between non-adjacent contacts	1000 V AC, 50/60 Hz, 1 min
Ingress protection class		IP30, terminal block IP20	
Output			
Contact/contact material		1 change-over contact (BTDS 2 NOC) / AgNi 90/10	
Switch output		5 A at 250 V AC, resistive load (cos φ=1)	
Service life		mechanical min.	10 ⁷ switching cycles (no load, 1800/h)
		electrical min.	10 ⁶ switching cycles (5A at 250 V AC, resistive load at 1800/h)
Time range		0,10 s...120 h	
Repetition accuracy		± 1 %	
Other data			
Flammability class as per UL94		V-2	
Ambient temperature/storage temperature		-10...+55 °C / -25...+65 °C (without condensation)	
Humidity		35...85 % rel. humidity, no condensation	
Clamping range (nominal/min/max)		mm ²	
Length x Width x Height		mm	73.0 x 17.5 x 80.0

Accessories

Designation

Locking and adjusting key

Type	Qty.	Order No.
BT Lock Pen	1	8659840000

Multifunction relay with control input (BTM)



Ordering data

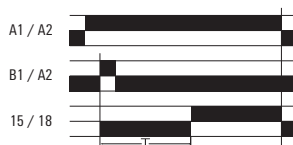
Connection system	Type	Qty.	Order No.
Screw connection	BTM-S	1	8647700000
Tension clamp	BTM-Z	1	8647710000

Functions

Function A – on-delay

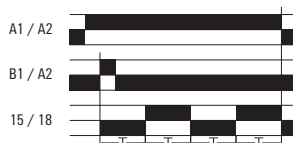
Connect power supply (A1/A2). When the input signal (B1/A2) is applied, the on-delay lasting for the set time T starts. The output R (15/18) connects the load at the end of the set time.

To reset, the power supply has to be switched off.



Function B – pulse emitter (starting at normal position)

Connect power supply (A1/A2). After applying the input signal (B1/A2), output R (15/18) switches the load synchronously and alternately between the normal and operated positions within the set time T. In this function, the cycle starts at the normal position.



Function B2 – pulse emitter (starting at operated position)

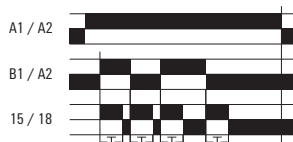
Connect power supply (A1/A2). After applying the input signal (B1/A2), output R (15/18) switches the load synchronously and alternately between the normal and operated positions within the set time T. In this function, the cycle starts at the operated position.



Function C – interval time-delay

Connect power supply (A1/A2). After applying the input signal (B1/A2), output R (15/18) connects the load for the set time T. Output R (15/18) switches the load off again at the end of time T.

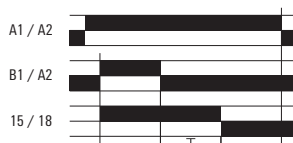
After switching off the input signal (B1/A2), output R (15/18) connects the load again for the set time T. Output R (15/18) switches the load off again at the end of time T.



Function D – off-delay function

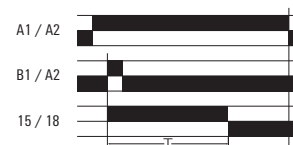
Connect power supply (A1/A2). After applying the input signal (B1/A2), output R (15/18) connects the load.

The time delay T begins after the input signal (B1/A2) has been switched off. At the end of time T, output R (15/18) switches the load off again.



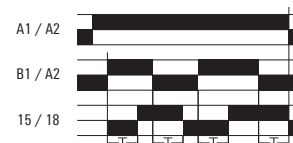
Function E – passing make function

Connect power supply (A1/A2). After applying the input signal (B1/A2), output R (15/18) connects the load immediately. At the end of the set delay time T, output R (15/18) switches the load off again.



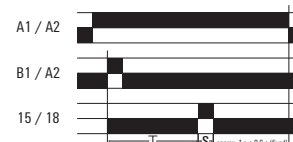
Function G – on and off-delay function

Connect power supply (A1/A2). Time delay T begins after applying the input signal (B1/A2). At the end of this time, output R (15/18) connects the load (on-delayed). After the input signal (B1/A2) has been switched off again, the output switches the load off again after the set time (off-delayed).



Function J – on-delay with pulse

Connect power supply (A1/A2). Time delay T begins after applying the input signal (B1/A2). At the end of this time, the output R (15/18) connects the load for 1 second.



Multi-function relay without control input (BTMF)



Ordering data

Connection system	Type	Qty.	Order No.
Screw connection	BTMF-S	1	8647680000
Tension clamp	BTMF-Z	1	8647690000

Functions

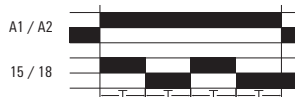
Function A – on-delay

When the input signal (A1/A2) is applied, the on-delay lasting for the set time T starts. The output R (15/18) connects the load at the end of the set time. To reset, the power supply has to be switched off.



Function B2 – pulse emitter (starting at operated condition)

After applying the input signal (A1/A2), output R (15/18) switches the load synchronously and alternately between the normal and operated positions within the set time T. In this function, the cycle starts at the operated position.



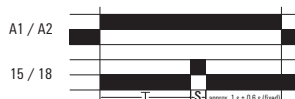
Function E – passing make function

After applying the input signal (A1/A2), output R (15/18) connects the load immediately. At the end of the set delay time T, output R (15/18) switches the load off again.



Function J – on-delay with pulse

Time delay T begins after applying the input signal (A1/A2). At the end of this time, the output R (15/18) connects the load for 1 second.



Timer (BTR)



Ordering data

Connection system	Type	Qty.	Order No.
Screw connection	BTR-S	1	8647720000
Tension clamp	BTR-Z	1	8647730000

Functions

Function A – on-delay

When the power supply is connected (A1/A2), the on-delay lasting for the set time T starts. The output R (15/18) connects the load at the end of the set time.



Timer (BTTT)



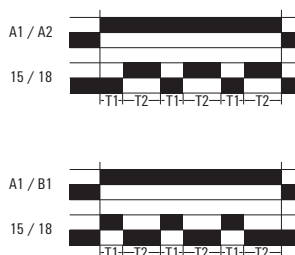
Ordering data

Connection system	Type	Qty.	Order No.
Screw connection	BTTT-S	1	8647740000

Functions

Function BTTT – pulse emitter

When the power supply is connected (A1/A2), the repeat cycle begins with two independently adjustable times. The standard setting is to start at the normal position. A bridge between connections A1 and A2 allows the module to start at the operated position.



Timer (BTDS)



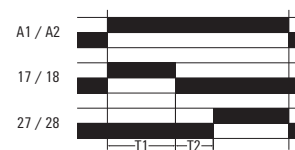
Ordering data

Connection system	Type	Qty.	Order No.
Screw connection	BTDS-S	1	8647660000
Tension clamp	BTDS-Z	1	8647670000

Functions

Star-delta changeover

After connecting the power supply, output R1 (17/18) connects immediately. At the end of time T1, output R1 (17/18) switches off and time T2 starts. At the end of time T2, output R2 (27/28) connects. After switching off the power supply, output R2 (27/28) switches off.

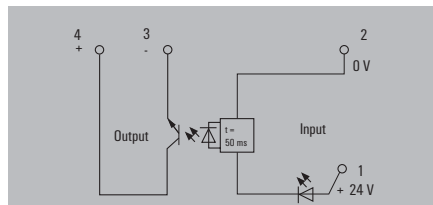


MCZ-SERIES – Timer

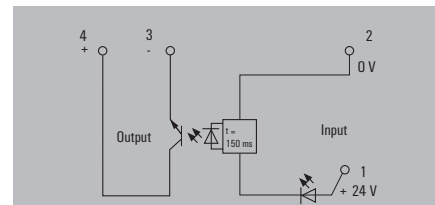
Miniconditioner MCZ TO

- Components for lengthening short pulses for the PLC
- Fixed switch-off delay
- Low input power
- Tension-clamp connection system
- Plug-in cross-connection
- 6 mm modular width
- For mounting on TS 35

24 V DC 50 ms



24 V DC 150 ms



Technical data

Input	
Rated control voltage	24 V DC $\pm 10\%$
Rated current DC	6.7 mA $\pm 10\%$
Power rating	160 mW
Switch-off delay	50 ms
Min. pulse duration	2 ms
Output	
Max. switching voltage, DC	48 V
Max. switching current	20 mA
Max. switching frequency at rated load	20 Hz
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV
Surge voltage category	III
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Dielectric strength for control side - load side	4 kV

Input	
Rated control voltage	24 V DC $\pm 10\%$
Rated current DC	6.7 mA $\pm 10\%$
Power rating	160 mW
Switch-off delay	150 ms
Min. pulse duration	2.5 ms
Output	
Max. switching voltage, DC	48 V
Max. switching current	20 mA
Max. switching frequency at rated load	5 Hz
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV
Surge voltage category	III
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Dielectric strength for control side - load side	4 kV

Input	
Rated control voltage	24 V DC $\pm 10\%$
Rated current DC	6.7 mA $\pm 10\%$
Power rating	160 mW
Switch-off delay	150 ms
Min. pulse duration	2.5 ms
Output	
Max. switching voltage, DC	48 V
Max. switching current	20 mA
Max. switching frequency at rated load	5 Hz
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE; CSA; cURus; GOSTME25
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV
Surge voltage category	III
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Dielectric strength for control side - load side	4 kV

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Ordering data

Tension clamp connection

Type	Qty.	Order No.
MCZ TO 24VDC/50MS	10	8324590000

Type	Qty.	Order No.
MCZ TO 24VDC/150MS	10	8286410000

Note

Note

Note

Accessories

Note

AP MCZ end plate 8389030000

AP MCZ end plate 8389030000

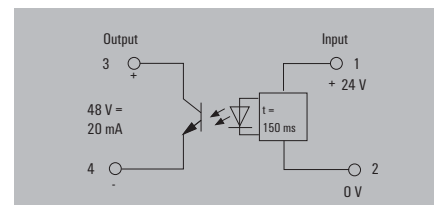
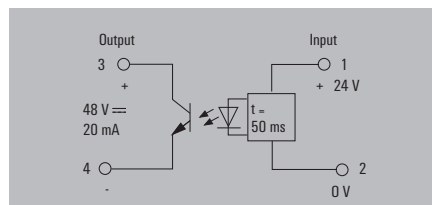
Mini-coupler DKZ

- Components for lengthening short pulses for the PLC
- Fixed switch-on/switch-off delay
- Low input power
- Screw connection system
- 6 mm modular width
- For mounting on TS 35

24 V DC 50 ms



24 V DC 150 ms



Technical data

Input	
Rated control voltage	24 V DC $\pm 18\%$
Rated current AC	6.7 mA
Rated current DC	160 mW
Power rating	50 ms
Switch-off delay	2 ms
Min. pulse duration	
Output	
Max. switching voltage, DC	48 V
Max. switching current	20 mA
Max. switching frequency at rated load	20 Hz
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	4 kV
Surge voltage category	III
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 4 mm
Dielectric strength for control side - load side	4 kV

Input	
Rated control voltage	24 V DC $\pm 18\%$
Rated current AC	6.7 mA
Rated current DC	160 mW
Power rating	50 ms
Switch-off delay	2 ms
Min. pulse duration	
Output	
Max. switching voltage, DC	48 V
Max. switching current	20 mA
Max. switching frequency at rated load	20 Hz
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	4 kV
Surge voltage category	III
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 4 mm
Dielectric strength for control side - load side	4 kV

Input	
Rated control voltage	24 V DC $\pm 18\%$
Rated current AC	6.7 mA
Rated current DC	160 mW
Power rating	150 ms
Switch-off delay	2.5 ms
Min. pulse duration	
Output	
Max. switching voltage, DC	48 V
Max. switching current	20 mA
Max. switching frequency at rated load	20 Hz
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	4 kV
Surge voltage category	III
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 4 mm
Dielectric strength for control side - load side	4 kV

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Screw connection	
4 / 0.5 / 4	
65 / 6 / 62	
Note	
For mounting on TS 35 rail	

Screw connection	
4 / 0.5 / 4	
65 / 6 / 62	
Note	
For mounting on TS 35 rail	

Ordering data

Type	Qty.	Order No.
DKZA 35 24VDC 50MS	10	8008180000

Type	Qty.	Order No.
DKZA 35 24VDC 150MS	10	8022110000

Type	Qty.	Order No.
DKZA 35 24VDC 150MS	10	8022110000

Note

Note

Note

Accessories

Note

Note

Note

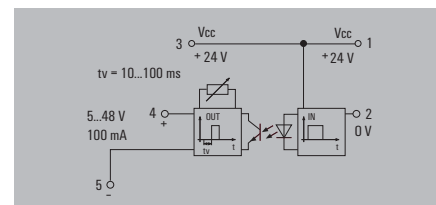
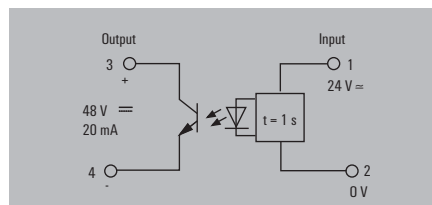
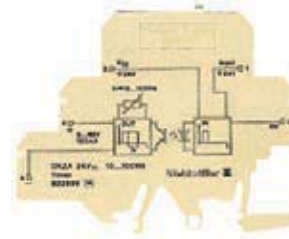
Mini-coupler DKZ

- Components for lengthening short pulses for the PLC
- Fixed switch-on/switch-off delay
- Low input power
- Screw connection system
- 6 mm modular width
- For mounting on TS 35

24 V UC 1 s



24 V DC 10-100 ms



Technical data

Input	
Rated control voltage	24 V UC ±10 %
Rated current AC	6.1 mA
Rated current DC	5.1 mA
Power rating	130 mW / 150 mVA
Switch-off delay	max. 0.7 ms
Min. pulse duration	
Output	
Max. switching voltage, DC	48 V
Max. switching current	20 mA
Max. switching frequency at rated load	0.9 Hz
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	4 kV
Surge voltage category	III
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 4 mm
Dielectric strength for control side - load side	4 kV

Input	
Rated control voltage	24 V UC ±10 %
Rated current AC	6.1 mA
Rated current DC	5.1 mA
Power rating	130 mW / 150 mVA
Switch-off delay	max. 0.7 ms
Min. pulse duration	
Output	
Max. switching voltage, DC	48 V
Max. switching current	20 mA
Max. switching frequency at rated load	0.9 Hz
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	4 kV
Surge voltage category	III
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 4 mm
Dielectric strength for control side - load side	4 kV

Input	
Rated control voltage	24 V DC ±20 %
Rated current AC	
Rated current DC	Approx. 12 mA
Power rating	290 mW
Switch-off delay	
Min. pulse duration	
Output	
Max. switching voltage, DC	48 V
Max. switching current	100 mA
Max. switching frequency at rated load	
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV
Surge voltage category	IV
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Dielectric strength for control side - load side	4 kV

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Screw connection	
4 / 0.5 / 4	
65 / 6 / 62	
Note	
For mounting on TS 35 rail	

Screw connection	
4 / 0.5 / 4	
77 / 6 / 62	
Note	
For mounting on TS 32/35 rails	

Ordering data

Type	Qty.	Order No.
DKZ 35 24VUC 1S	10	8008190000

Type	Qty.	Order No.
DKZ 35 24VUC 1S	10	8008190000

Type	Qty.	Order No.
DKZ DK5 24VDC 10-100MS	10	8228680000

Note

Note

Note

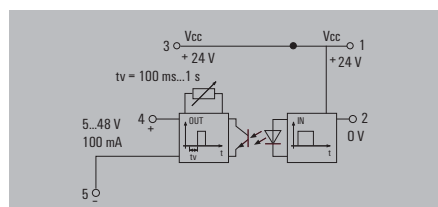
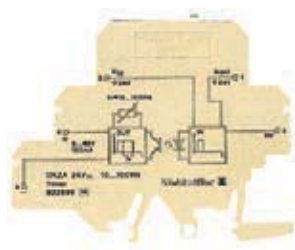
Accessories

Note

Note

Note

24 V DC 0.1-1 s

24 V DC $\pm 20\%$ Approx. 12 mA
290 mW48 V
100 mA-25 °C...+50 °C
-40 °C...+85 °C
40 °C / 93 % rel. humidity, no condensation
CE300 V
6 kV
IV
2
 ≥ 5.5 mm
4 kV

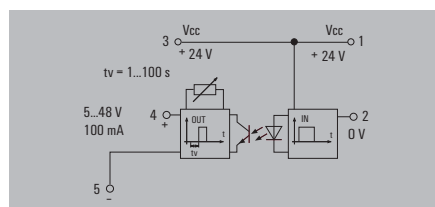
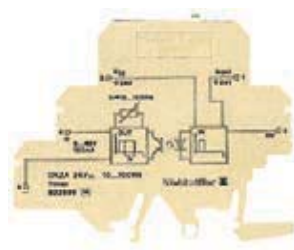
Screw connection

4 / 0.5 / 4
77 / 6 / 62For mounting on
TS 32/35 rails

Type	Qty.	Order No.
DKZ DK5 24VDC 0.1-1S	10	8243780000

End plate
AP DK5 8268870000

24 V DC 1-100 s

24 V DC $\pm 20\%$ Approx. 12 mA
290 mW48 V
100 mA-25 °C...+50 °C
-40 °C...+85 °C
40 °C / 93 % rel. humidity, no condensation
CE300 V
6 kV
IV
2
 ≥ 5.5 mm
4 kV

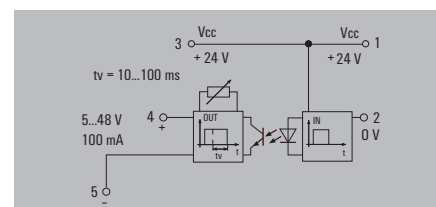
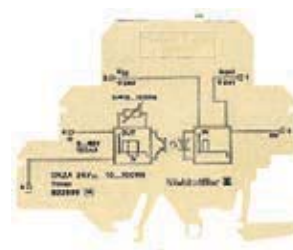
Screw connection

4 / 0.5 / 4
77 / 6 / 62For mounting on
TS 32/35 rails

Type	Qty.	Order No.
DKZ DK5 24VDC 1-100S	10	8019650000

End plate
AP DK5 8268870000

24 V DC 10-100 ms

24 V DC $\pm 20\%$

Approx. 11 mA

10 ... 100 ms (adjustable)
2 ms48 V
100 mA-25 °C...+50 °C
-40 °C...+85 °C
40 °C / 93 % rel. humidity, no condensation
CE300 V
6 kV
IV
2
 ≥ 5.5 mm
4 kV

Screw connection

4 / 0.5 / 4
77 / 6 / 62For mounting on
TS 32/35 rails

Type	Qty.	Order No.
DKZA DK5 24VDC 10-100MS	10	8228690000

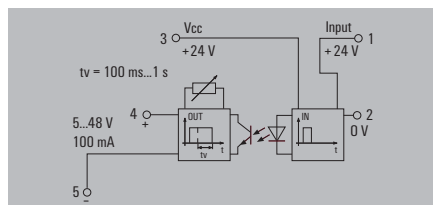
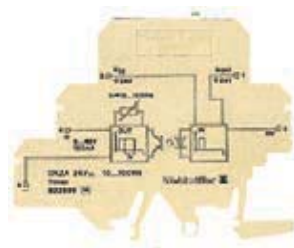
End plate
AP DK5 8268870000

DK-SERIES – Timer

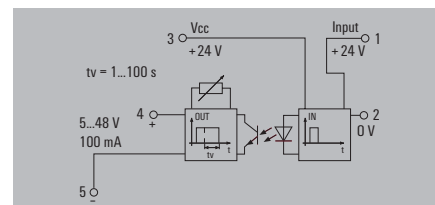
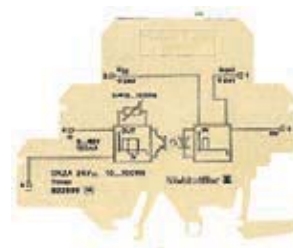
Mini-coupler DKZ

- Components for lengthening short pulses for the PLC
- Fixed switch-on/switch-off delay
- Low input power
- Screw connection system
- 6 mm modular width
- For mounting on TS 35

24 V DC 0.1-1 s



24 V DC 1-100 s



Technical data

Input	
Rated control voltage	24 V DC $\pm 20\%$
Rated current AC	Approx. 11 mA
Rated current DC	260 mW
Power rating	100 ms ... 1 s (adjustable)
Switch-off delay	2 ms
Min. pulse duration	
Output	
Max. switching voltage, DC	48 V
Max. switching current	100 mA
Max. switching frequency at rated load	
Rated data	
Ambient temperature (operational)	-25 °C...+50 °C
Storage temperature	-40 °C...+85 °C
Humidity	40 °C / 93 % rel. humidity, no condensation
Approvals	CE
Insulation coordination (EN 50178)	
Rated voltage	300 V
Impulse withstand voltage	6 kV
Surge voltage category	IV
Pollution severity	2
Clearance and creepage distances for control side - load side	≥ 5.5 mm
Dielectric strength for control side - load side	4 kV

Screw connection	
4 / 0.5 / 4	
77 / 6 / 62	
For mounting on TS 32/35 rails	

Screw connection	
4 / 0.5 / 4	
77 / 6 / 62	
For mounting on TS 32/35 rails	

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Screw connection	
4 / 0.5 / 4	
77 / 6 / 62	
For mounting on TS 32/35 rails	

Screw connection	
4 / 0.5 / 4	
77 / 6 / 62	
For mounting on TS 32/35 rails	

Ordering data

Screw connection

Type	Qty.	Order No.
DKZA DK5 24VDC 0,1-1S	10	8243770000

Type	Qty.	Order No.
DKZA DK5 24VDC 1-100S	10	8019630000

Note

Accessories

Note

End plate AP DK5 8268870000

End plate AP DK5 8268870000

JACKPAC® (IP67)/ Functional components

JACKPAC® (IP67) / Functional components	JACKPAC® - Overview	E.2
	JACKPAC® relay module	E.3
	JACKPAC® timer	E.4
	JACKPAC® signal inverter	E.5
	JACKPAC® test	E.6
	JACKPAC® - General Data and Accessories	E.7
	Functional components - Overview	E.8
	Functional components	E.9

The Concept

The IP20 Solution

Until now, all signal conditioning tasks were carried out by modules designed to IP20. For their own protection, these need to be installed in central switchgear cabinets. However, decentralised solutions that do not require large switchgear cabinets are increasingly being sought for use in modern-day industrial automation technology.

It is true that shielded signals can be fed to the machinery via powerful fieldbus systems; but in each case, however, there remains an interconnecting cable between the subdistribution boards and the sensors/actuators that is susceptible to interference from surrounding operations. As has always been the case, signals are still influenced by overvoltages and earth loops; interference pulses are superimposed on sensor signals and malfunctions can be initiated.

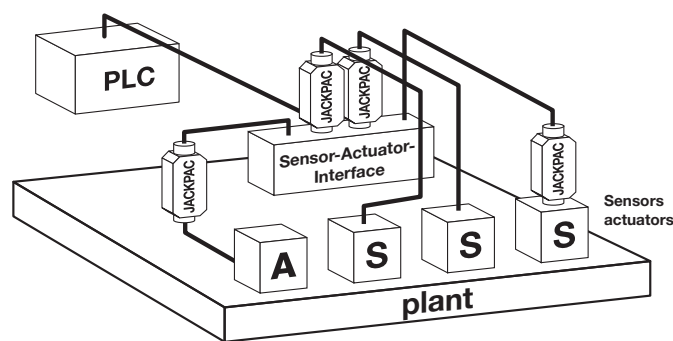
The result is that signal conditioning modules sealed to IP20 require terminal boxes, such as switchgear cabinets, or even cost-intensive special solutions (for example, sensor-actuator distributors with integrated signal-conditioning functions providing as many functionalities as possible, even when these are surplus to requirements).

The JACKPAC® Solution

By introducing **JACKPAC®**, the new M12 Signal Box with the high IP67 ingress protection, Weidmüller can now provide a modular and versatile concept that makes it possible to condition signals in an industrial environment. Requiring no additional enclosures, these modules can be installed directly on the machine, in the production plant, conveyor system or within a process.

The M12 connector, which is standardised all over the world, makes it possible to integrate the **JACKPAC®** at any point in the sensor-actuator cabling. The fixed pin assignment means it is easy to install and is protected against polarity reversal. This versatility really comes into its own when an installation needs to be altered or modernised, simply because no additional enclosures or cabling are required.

By providing this high degree of protection and versatility, **JACKPAC®** renders possible innovative automation concepts based on decentralised applications – without large control cabinets or small distribution boards – for consistent, transparent, efficient and cost-efficient installations.



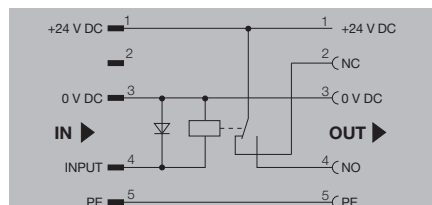
- Easy 'Plug and Play' installation
- Universal and versatile usage
- No additional enclosure required
- Saves time and costs
- Ideal for decentralised concepts and plant modernisation (retrofitting)

Switching amplifiers

- Switching amplifiers are simply built into the actuator system controls.
- Switching outputs can be amplified from 24 V DC / 0.5 A to 24 V DC / 2 A.
- Galvanic isolation is optional, for insulating between the input and output circuits, which prevents conducted interference on the switching output.
- Switched voltage feed at output via T-distributor

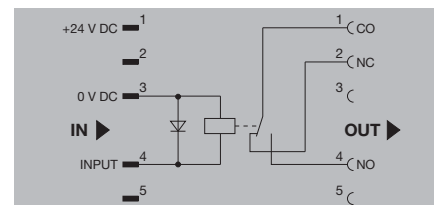
JPR 24 V DC 1C0 M12

without isolation



JPR 24 V DC ISO 1C0 M12

with electrical isolation



Technical data

Input	
Rated control voltage	24 V DC ±20 %
Rated current DC	8 mA
Power rating	200 mW
DC Response/dropout Volt	16.8 V / 1.2 V
DC pickup/dropout current	5 mA / 1 mA
Free-wheel diode	Yes
Output	
Max. switching power	24 V / 2 A
Min. switching power	12 V / 10 mA
Contact material	AgSnO
Mechanical service life	10 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Sparkover time / Drop-out time	ca. 5 ms
Insulation coordination (EN 50 178)	
Rated voltage	300
Surge voltage category	III
Pollution severity	2
General data	
Ambient temperature (operational)	-25 °C...+70 °C
Storage temperature	-25 °C...+70 °C
Conductor connection system	M12 plug / socket, A-coded
Approvals	cULus; GOSTME25

Rated control voltage	24 V DC ±20 %
Rated current DC	8 mA
Power rating	200 mW
DC Response/dropout Volt	16.8 V / 1.2 V
DC pickup/dropout current	5 mA / 1 mA
Free-wheel diode	Yes
Max. switching power	24 V / 2 A
Min. switching power	12 V / 10 mA
Contact material	AgSnO
Mechanical service life	10 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Sparkover time / Drop-out time	ca. 5 ms
Rated voltage	300
Surge voltage category	III
Pollution severity	2
Ambient temperature (operational)	-25 °C...+70 °C
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Approvals	cULus; GOSTME25

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Rated current DC	8 mA
Power rating	200 mW
DC Response/dropout Volt	16.8 V / 1.2 V
DC pickup/dropout current	5 mA / 1 mA
Free-wheel diode	Yes
Max. switching power	24 V / 2 A
Min. switching power	12 V / 10 mA
Contact material	AgSnO
Mechanical service life	10 x 10 ⁶ switching cycles
Max. switching frequency at rated load	0.1 Hz
Sparkover time / Drop-out time	ca. 5 ms
Rated voltage	300
Surge voltage category	III
Pollution severity	2
Ambient temperature (operational)	-25 °C...+70 °C
Storage temperature	-25 °C...+70 °C
Conductor connection system	M12 plug / socket, A-coded
Approvals	cULus; GOSTME25

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Details for TU = 20 °C	

Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Details for TU = 20 °C	

Ordering data

Type	Qty.	Order No.
------	------	-----------

Type	Qty.	Order No.
JPR 24VDC 1C0 M12	1	8771420000

Type	Qty.	Order No.
JPR 24VDC ISO 1C0 M12	1	8771430000

Note

Note

Note

Accessories

Note

Note

Note

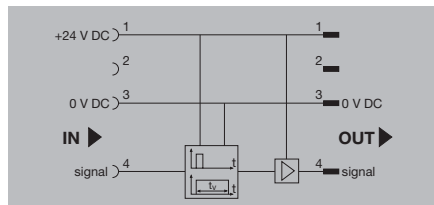
JACKPAC® timer

Timer relay

Signal extenders can be easily connected to the cable between the sensor and the input modules. They extend the pulse length from a minimum of 1 ms to 50 ms or 100 ms. This enables short sensor signals to also be reliably recognised and evaluated by the controller.

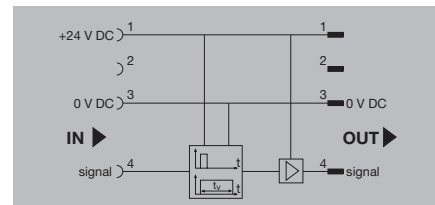
JPTA 50 MS 24VDC PNP M12

Pulse stretching, 50 ms



JPTA 100 MS 24VDC PNP M12

Pulse stretching, 100 ms



Technical data

Input	
Rated control voltage	18...24...30 V DC
Rated current DC	3,5...7,0...10,0 mA
Switch-off delay	50 ms
Output	
Max. switching voltage, DC	30 V
Max. switching current	400 mA
Insulation coordination (EN 50 178)	
Rated voltage	32 V
Impulse withstand voltage	330 V
Surge voltage category	I
Pollution severity	2
General data	
Ambient temperature (operational)	0 °C...+60 °C
Storage temperature	-20 °C...+85 °C
Conductor connection system	M12 plug / socket, A-coded
Approvals	CE; cULus; GOSTME25

Rated control voltage	18...24...30 V DC
Rated current DC	3,5...7,0...10,0 mA
Switch-off delay	50 ms
Max. switching voltage, DC	30 V
Max. switching current	400 mA
Rated voltage	32 V
Impulse withstand voltage	330 V
Surge voltage category	I
Pollution severity	2
Ambient temperature (operational)	0 °C...+60 °C
Storage temperature	-20 °C...+85 °C
Conductor connection system	M12 plug / socket, A-coded
Approvals	CE; cULus; GOSTME25

Rated control voltage	18...24...30 V DC
Rated current DC	3,5...7,0...10,0 mA
Switch-off delay	100 ms
Max. switching voltage, DC	30 V
Max. switching current	400 mA
Rated voltage	32 V
Impulse withstand voltage	330 V
Surge voltage category	I
Pollution severity	2
Ambient temperature (operational)	0 °C...+60 °C
Storage temperature	-20 °C...+85 °C
Conductor connection system	M12 plug / socket, A-coded
Approvals	CE; cULus; GOSTME25

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

Ordering data

Type	Qty.	Order No.
------	------	-----------

Type	Qty.	Order No.
JPTA 50MS 24VDC PNP M12	1	8771440000

Type	Qty.	Order No.
JPTA100MS 24VDC PNP M12	1	8836630000

Note

Note

Note

Accessories

Note

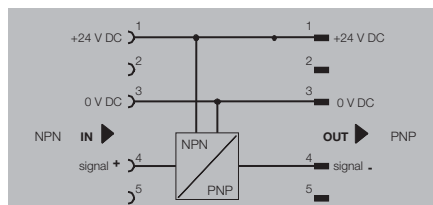
Note
Retaining clip JP CLIP M: 8778490000

Note
Retaining clip JP CLIP M: 8778490000

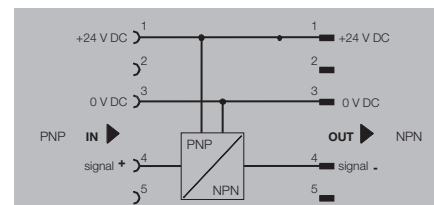
Signal inverter

Signal inverters convert PNP sensor signals to NPN signals and NPN signals back to PNP. This means that existing circuits do not require complex alteration and the existing inputs on the I/O cards can be put to best use. This is particularly well suited for the Asian and North American markets.

JPP NPN PNP 24 V DC



JPP PNP NPN 24 V DC



Technical data

Input	
Sensor	2-/ 3-Conductor Sensor NPN-type
Rated control voltage	18...24...30 V DC
Input current for sensor	< 200 mA
Type of contact	NO contact
Output	
Solid-state type	Solid state relay
Rated switching voltage	18...30 V DC
Rated switching current	400 mA
Voltage drop at max. load	≤ 1 V
Insulation coordination (EN 50 178)	
Rated voltage	32 V
Impulse withstand voltage	330 V
Surge voltage category	I
Pollution severity	2
General data	
Ambient temperature (operational)	0 °C...+60 °C
Storage temperature	-20 °C...+85 °C
Conductor connection system	M12 plug / socket, A-coded
Approvals	cULus; GOSTME25

Input	
Sensor	2-/ 3-Conductor Sensor PNP-Type
Rated control voltage	18...24...30 V DC
Input current for sensor	< 200 mA
Type of contact	NO contact
Output	
Solid-state type	Solid state relay
Rated switching voltage	18...30 V DC
Rated switching current	400 mA
Voltage drop at max. load	≤ 1 V
Insulation coordination (EN 50 178)	
Rated voltage	32 V
Impulse withstand voltage	330 V
Surge voltage category	I
Pollution severity	2
General data	
Ambient temperature (operational)	0 °C...+60 °C
Storage temperature	-20 °C...+85 °C
Conductor connection system	M12 plug / socket, A-coded
Approvals	CE; cULus; GOSTME25

Input	
Sensor	2-/ 3-Conductor Sensor PNP-Type
Rated control voltage	18...24...30 V DC
Input current for sensor	< 200 mA
Type of contact	NO contact
Output	
Solid-state type	Solid state relay
Rated switching voltage	18...30 V DC
Rated switching current	400 mA
Voltage drop at max. load	≤ 1 V
Insulation coordination (EN 50 178)	
Rated voltage	32 V
Impulse withstand voltage	330 V
Surge voltage category	I
Pollution severity	2
General data	
Ambient temperature (operational)	0 °C...+60 °C
Storage temperature	-20 °C...+85 °C
Conductor connection system	M12 plug / socket, A-coded
Approvals	CE; cULus; GOSTME25

Dimensions	
Clamping range (nominal / min. / max.)	mm ²
Length x width x height	mm
Note	

83 / 36 / 14.4	

83 / 36 / 14.4	

Ordering data

Type	Qty.	Order No.
------	------	-----------

Type	Qty.	Order No.
JPP NPN PNP 24VDC	1	8852350000

Type	Qty.	Order No.
JPP PNP NPN 24VDC	1	8857030000

Note

Note

Note

Accessories

Note

Retaining clip JP CLIP M: 8778490000

Retaining clip JP CLIP M: 8778490000

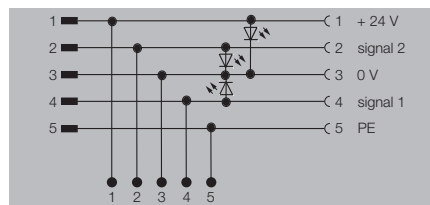
JACKPAC® test

Test adapter

The new JACKPAC® test adapter can be easily integrated at any point on an M12 network and enables quick and easy connection of a testing device via the 5 PUSH IN connections. Status indicators show the status of the 2 signal channels as well as the 24 V DC auxiliary voltage.

JP TEST

with status indication



Technical data

Input

Rated control voltage
Rated current DC
Status indicator

Output

Continuous current
Power

General data

Ambient temperature (operational)
Storage temperature
Conductor connection system
Approvals

18...24...30 V DC

2.2 mA (LED)

Green LED

2 A

2.2 mA at 24 V

0 °C...+55 °C

-25 °C...+70 °C

M12 plug / socket, A-coded

CE; GOSTME25

Dimensions

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

Note

83 / 36 / 14.4

Ordering data

Type	Qty.	Order No.
JP TEST	1	8794120000

Note

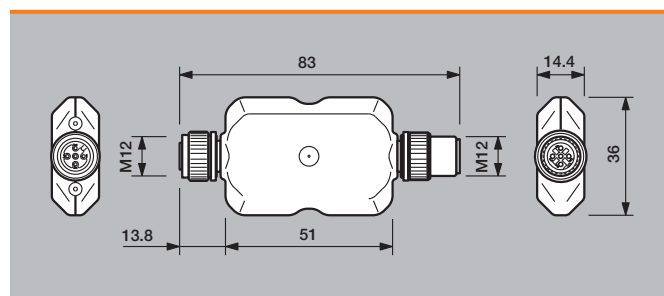
Accessories

Note

Retaining clip
JP CLIP M: 8778490000

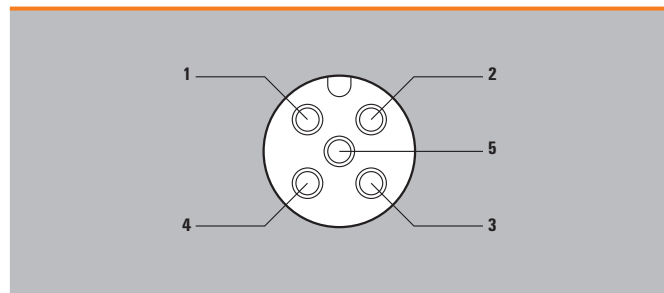
General data

Ingress protection class	IP67
Housing material	PBT, RAL 7032 (grey)
Flammability class	V0 to UL94
Screw socket	M12, CuZn, nickel plated, A-coded
Rated torque	0.8 ... 1 Nm



Contact assignment (socket)

Pole	Assignment
1	+24 V DC
2	Input / output 2
3	0 V DC
4	Input / output 1
5	PE / Earth



Accessories

Retaining clip



Type	Qty.	Order No.
------	------	-----------

Stainless steel	1	8778490000
-----------------	---	------------

Twin plug



Type	Qty.	Order No.
------	------	-----------

5-pole	1	1783430000
--------	---	------------

Screwty M12



Type	Qty.	Order No.
------	------	-----------

With torque	1	1900001000
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Sensor cables



Type	Qty.	Order No.
4-pole, length 0.3 m	1	9457150000
4-pole, length 0.6 m	1	9457160000
4-pole, length 1.5 m	1	9457190000
5-pole, length 0.3 m	1	9457340030
5-pole, length 0.6 m	1	9457340060
5-pole, length 1.5 m	1	9457340150

Additional accessories can be found in the Sensor Actuator Interface catalogue.

Overview of function components

Switch and button modules

The dimensions of the switch and button modules are adapted to suit the electronic components in the integral housing.

The housings are equipped with a universal DIN rail mounting foot for TS 32 and TS 35 terminal rails.

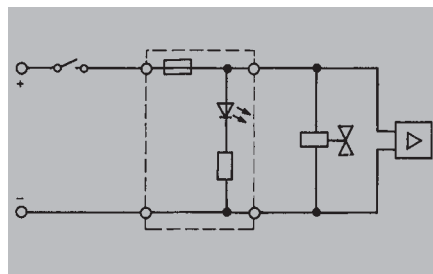
Buttons and switches simplify the commissioning, maintenance, monitoring and repair of systems. The contacts are rated for inductive or resistive loads.

When switching inductive loads, a contact protection circuit has to be provided, such as Weidmüller terminals with diodes or RC combination.

Fuse modules

Unlike fuse terminals with a failure indicator, here an LED indicates that the fuse is functional. The circuit carries no closed-circuit current when the fuse is defective.

Example of use:
Fuse for a solenoid valve



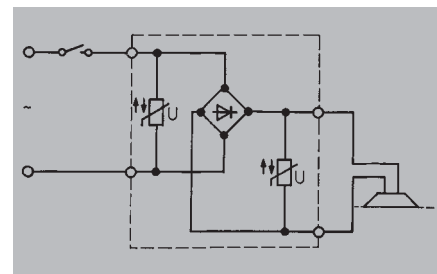
No residual current flow when there is a defective fuse. Thus incorrect information is not possible.

The electronic component receives – via the current of the LED – incorrect data about the switching state of the solenoid valve.

Rectifier circuit

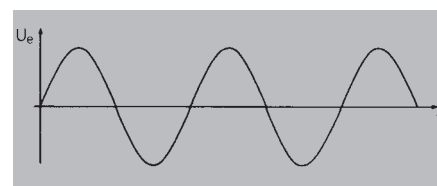
EGD rectifier components in enclosed EG2 electronics housings can be snapped onto the mounting rail.

The bridge circuit consists of four individual diodes with a wide input voltage range of 5...240 V AC.

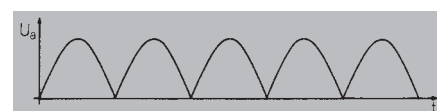


The DC output voltage, without buffer capacitor circuitry, is 90 % of the AC input voltage. The industry-standard rectifier switches are protected from overvoltages on both the input and output sides with varistors.

Input voltage



Output voltage



EGT 1**Switch and button module****EGS****Fuse module with indicator****Technical data**

Nominal data	
Input voltage	
Rated current	
Storage temperature	
Ambient temperature (operation)	
- fitted without spacing on rail	
- fitted with 20 mm spacing on rail	
Humidity	
Insulation coordination as per EN 50 178	
Surge category	
Pollution severity	

max. 250 V~		
	EGT 0	EGT 1 to EGT 6
Resistive load	3 A/250 V~	6 A/250 V~
Inductive load	5 A/30 V-	4 A/250 V~
-40 °C...+100 °C		
-25 °C...+85 °C		
-25 °C...+85 °C		
40 °C / 93 rel. humidity, no condensation		

230 V~ or 24 V- or 42 V~	
max. 6.3 A	
5 x 20 mm fuse	
-40 °C...+100 °C	
-25 °C...+55 °C	
-25 °C...+65 °C	
40 °C / 93 rel. humidity, no condensation	
1	
2	
No fuse is integrated into the component!	

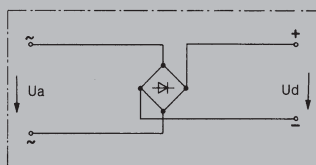
Ordering data

Type	Switching function	Qty.	Order No.
EGT 0	1 NCC, 1 NOC	10	8002290000
EGT 1	Circuit-breaker	10	0126360000
EGT 2	Change-over contact, switching	10	0104060000
EGT 4	Change-over contact, off position in the middle, button to one side, switching to one side	10	0104360000
EGT 5	Change-over contact, off position in the middle, button to both sides	10	0104260000
EGT 6	Change-over contact, button	10	0114660000

Type	Qty.	Order No.
EGS 230 V~	10	1115860000
EGS 24 V-	10	0193860000

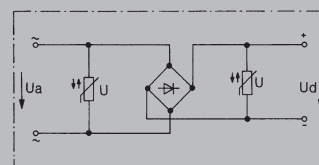
EGD 1

Rectifier circuit



EGD 2

Rectifier circuit with varistor protection circuit



Technical data

Nominal data

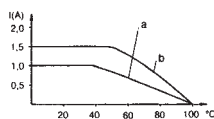
Input voltage
Rated current

5 V~...240 V~, 50...60 Hz
1 A

5 V~...240 V~, 50...60 Hz
1 A

Derating curve

a = fitted without spacing on mounting rail
b = fitted at 20 mm spacing on mounting rail



Max. downstream load capacitor

200 µF

Current load max.

1.5 A (see derating curve)

Surge current limit value

40 A (10 ms)

Conducting-state voltage

≤ 2 V

Output voltage

$U_d = 0.9 \times U_a$

Storage temperature

-45 °C...+100 °C

Ambient temperature (operation)

- fitted without spacing on mounting rail
- fitted at 20 mm spacing on mounting rail

-30 °C...+40 °C
-30 °C...+70 °C

Humidity

40 °C/93 rel. humidity, no condensation

Insulation coordination as per EN 50178

Surge category

II

Pollution severity

2

500 µF

2.5 A (see derating curve)

10 A (10 ms)

≤ 2.2 V

$U_d = 0.9 \times U_a$

-45 °C...+100 °C

-30 °C...+40 °C

-30 °C...+70 °C

40 °C/93 rel. humidity, no condensation

II

2

Ordering data

Type	Qty.	Order No.
EGD 1	10	0546160000

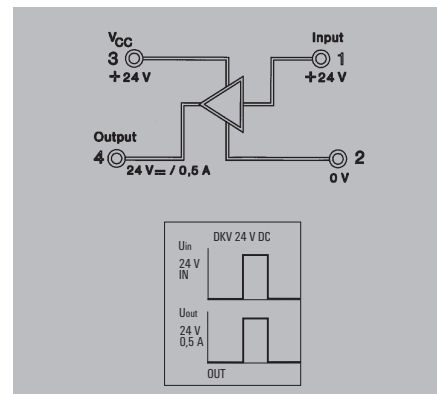
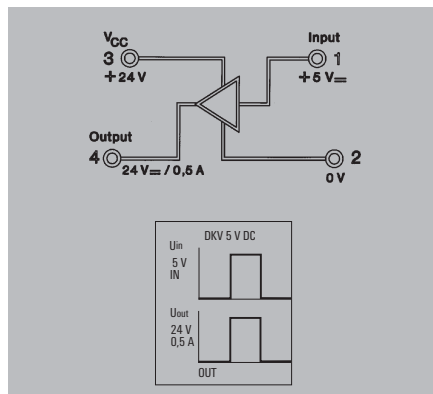
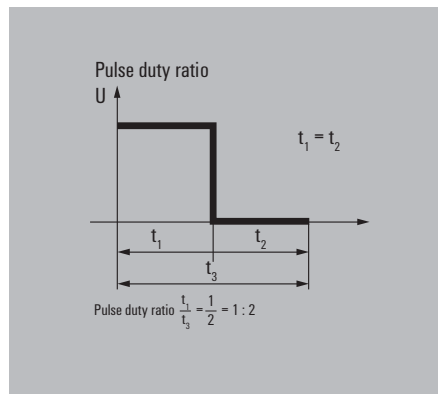
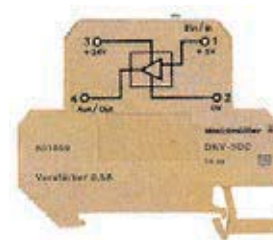
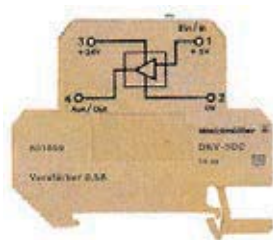
Type	Qty.	Order No.
EGD 2	10	0546260000

Inputs and outputs

Switching amplifier without electrical isolation

DKV 5 V DC

DKV 24 V DC



Technical data

Input voltage	
Switching threshold	
Input current	
Power loss, max.	
Output voltage	
Output current, max.	
Output current, min.	
Switching frequency, max.; duty factor 1:2	
Voltage drop at max. load	
Block-state current	
Insulation coordination as per EN 50178	
Operating temperature	without spacing
	with spacing
Storage temperature	
Humidity	
Conductor	
Conductor cross-section	
Width	

5 V DC ± 10 %	
off: ≤ 1.5 V on: ≥ 4,5 V	
approx. 3 V	
100 µA	
500 µW	
24 V DC	
500 mA	
50 µA	
3 kHz	
≤ 450 mV	
≤ 20 µA	
no galvanic isolation between input and output	
-25 °C...+40 °C	
-25 °C...+50 °C	
-40 °C...+85 °C	
40 °C/93 rel. humidity, no condensation	
AWG 22...12	
0.5...4 mm²	
6 mm	

24 V DC $\pm 10\%$ off: $\leq 6\text{ V}$ on: $\geq 20.4\text{ V}$	
approx. 13 V	
5 mA	
550 mW	
24 V DC	
500 mA	
50 μA	
3 kHz	
$\leq 900\text{ mV}$	
$\geq 50\text{ }\mu\text{A}$	
no galvanic isolation between input and output	
-25 °C...+40 °C	
-25 °C...+50 °C	
-25 °C...+85 °C	
40 °C/93 rel. humidity, no condensation	
AWG 22...12	
0.5...4 mm ²	
6 mm	

Ordering data

for TS 35

Type	Order No.
DKV 5 Vdc	8018590000

Type	Order No.
DKV 24 Vdc	8015790000

Accessories

End plate

Type	Order No.
AP DKT4	0687560000

Type	Order No.
AP DKT4	0687560000

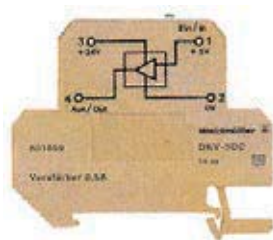
Functional components

Inputs and outputs

- Logic inverter: converts a logical 0 into a logical 1
- Level inverter: converts an NPN signal into a PNP signal

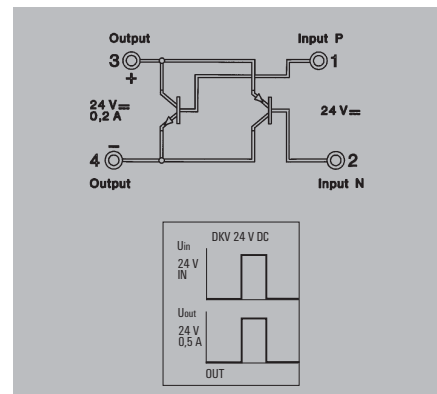
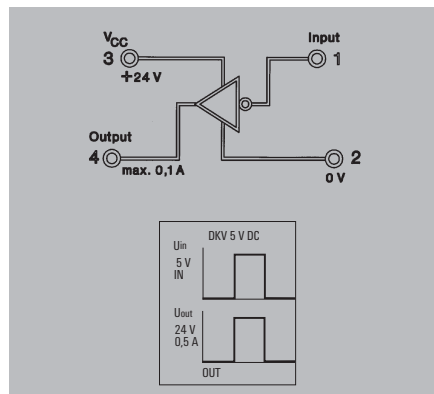
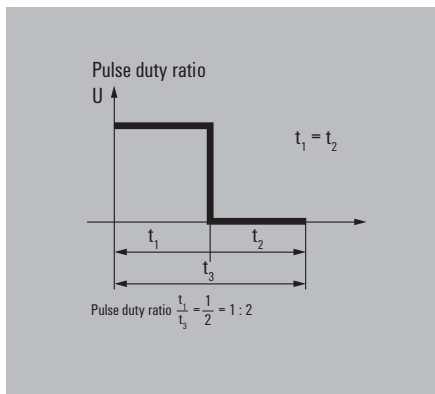
DKLI 24 V DC

Logic inverter



DKPI 24 V DC

Level inverter



Technical data

Input voltage	
Switching threshold	
Input current	
Power loss, max.	
Output voltage	
Output current, max.	
Output current, min.	
Switching frequency, max.; duty factor 1:2	
Voltage drop at max. load	
Block-state current	
Insulation coordination as per EN 50178	
Operating temperature	without spacing
	with spacing
Storage temperature	
Humidity	
Conductor	
Conductor cross-section	
Width	

24 V DC ± 10 %	
off: ≥ 20.4 V on: ≤ 4 V	
approx. 8 V	
7.5 mA	
230 mW	
24 V DC locked	
100 mA 0 mA	
50 µA	
3 kHz	
100 mV	
≤ 50 µA	
no galvanic isolation between input and output	
-25 °C...+40 °C	
-25 °C...+50 °C	
-40 °C...+85 °C	
40 °C/93 rel. humidity, no condensation	
AWG 22...12	
0.5...4 mm²	
6 mm	

P: 24 V DC $\pm 10\%$	
N: -2.4...+2.4 V DC	
P: approx. 18 V / N: approx. 8 V	
approx. 8 mA	
approx. 500 mW	
24 V DC	
200 mA	
50 μ A	
3 kHz	
≤ 1.5 V	
≤ 50 μ A	
no galvanic isolation between input and output	
-25 °C...+40 °C	
-25 °C...+50 °C	
-25 °C...+85 °C	
40 °C/93 rel. humidity, no condensation	
AWG 22...12	
0.5...4 mm ²	
6 mm	

Ordering data

for TS 35

Type	Order No.
DKLI 24 V DC	8010950000

Type	Order No.
DKPI 24 V DC	8019530000

Accessories

End plate

Type	Order No.
AP DKT4	0687560000

Type	Order No.
AP DKT4	0687560000

Weidmüller Solutions & Service

Weidmüller Solutions & Service	Customer specific solutions: best advice, best solutions	V.2
	Digital support: RailDesigner®, Product Assistant for Distribution Boxes, Online product catalogue, M-Print® PRO label designer	V.8

Application specific solutions – Your requirements are our motivation

Each industry has its own requirements calling for more and more individual solutions aside from standard products. Your new product might have to contend with severe conditions. Many applications are subjected to high mechanical strains – through vibration or directly applied forces. Extreme temperature conditions or an application in hazardous areas are further factors your product must be able to comply with. We can offer you highly competent expertise to support you in the selection of ideal products, whatever your application. Feel free to contact us!

From custom product development, customer-specific assembly or application-specific products that are ready for use - we can help you to optimise your working processes and ensure your company's sustained efficiency, today, as well as for the future.

Individual product development

Working closely with you, we can develop individual and future-proof products using the latest technologies and which are specifically tailored to your application.

Customer-specific assembly

Our highly-skilled production expertise and broad product portfolio means that we can deliver superior solutions to meet and exceed your specification requirements.

Application-specific products

Our cross-industrial solutions set standards: Set up for your application, instantly ready for use and available from stock.



Individual product development for your success

We have a passion for simple, innovative solutions

Working with you, we can develop innovative and future-oriented products tailored to your application. Our philosophy is „one customer - one product“. It is not the product that is the starting point, but you, your technical specifications and your requirements.

A connecting partnership

The development of individual products means making the most of the experience and competencies available in the partnership. Our project management provides a professional and quality approach - from concept and design through to development, implementation and production. Our extensive knowledge of electrical connectivity, enclosure and sealing technology, as well as signal conditioning are all at your disposal.

Benefit from a reliable partner:

• Increase the efficiency of your development and production processes

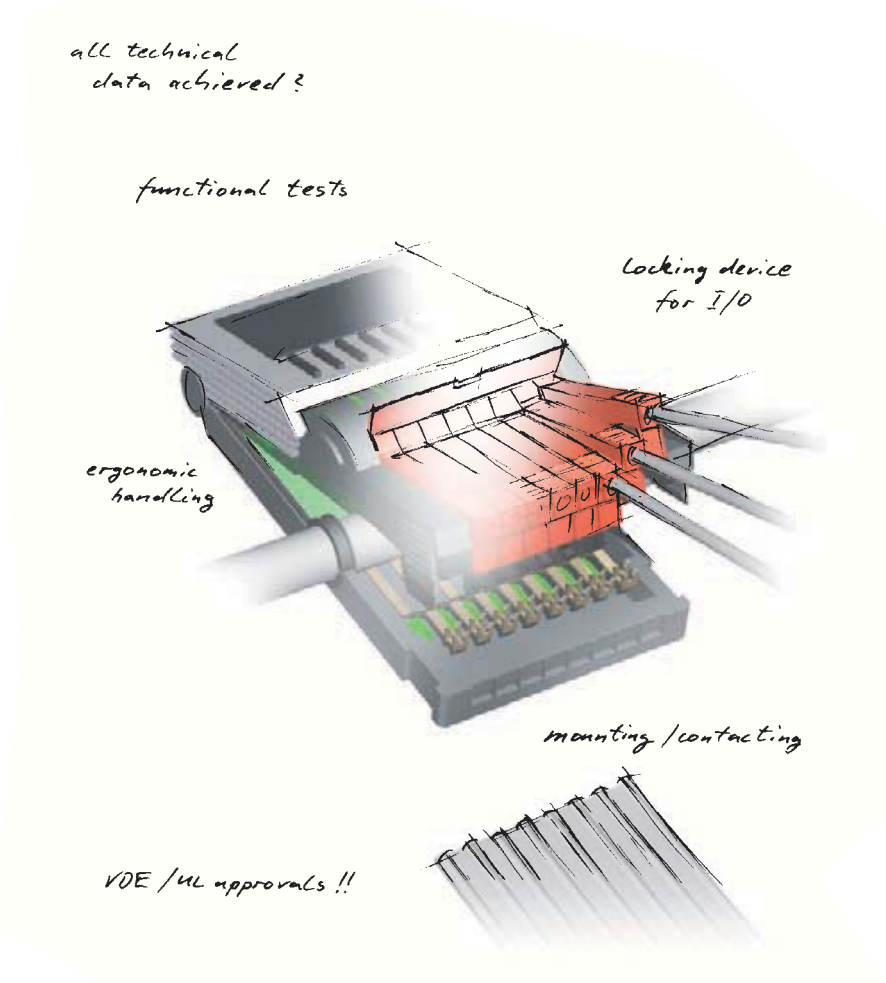
Outsourcing the development and production of your components will shorten your time-to-market. In addition, you have more time to concentrate on your core competencies.

• Take advantage of our applications and production experience and expertise

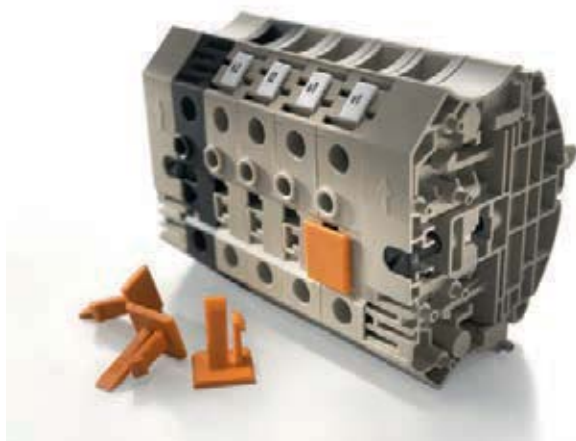
You can draw on the accumulated knowledge of our applications engineers and our specialists in the fields of connection technology, enclosure and surface technology, as well as metal and plastic processing, which is second to none.

• Feel safe with the professional approach of our project management

Through innovation workshops, feasibility studies and profitability analyses we define a requirement profile forming the basis for the further development process. In this way, you can be sure of the best possible products for your needs.



Application specific products – solutions for industries and markets



Industries and applications often have similar or even identical requirements for products or product assemblies. Application specific products that are based on earlier realised solutions are now directly available from stock.

Your advantage: You quickly get a suitable and cost-efficient solution.

Cross industrial solutions as standard

It is our aim to develop solutions that offer the additional advantage of a truly flexible design. Although this may mean an application-specific product may have an additional input or terminal you don't need, it can still be much cheaper than having a custom-made solution. Therefore, you not only save time, but money!



Reap multiple benefits:

- **High availability**
Application specific products are available from stock without delay. So you can rely on the delivery of your products when you need them.
- **Advice from application engineers**
Using the expertise of our applications engineers means that you can develop the solutions that are not only right, but which deliver added value to your applications.
- **Supportive software**
Project planning and evaluation is made easy with our software solutions such as NetCalc, RailDesigner® or Softclinic.
- **Worldwide application centres**
We stay in constant dialogue with our worldwide application centres, ensuring that our own application knowledge is shared, kept up to date and at your disposal anywhere you need us.



Customer specific assembly, tailored configuration



You may be looking to bring costs down and increase your efficiency. It may be that you would like more time to focus on your core competencies. You could be looking for a partner who will sent up intelligent solutions for you, that you can trust to deliver your specific requirements. Here at Weidmüller, we have a wealth of expertise, capability, and capacity to deliver custom solutions that are flexible, economically advantageous and on time.

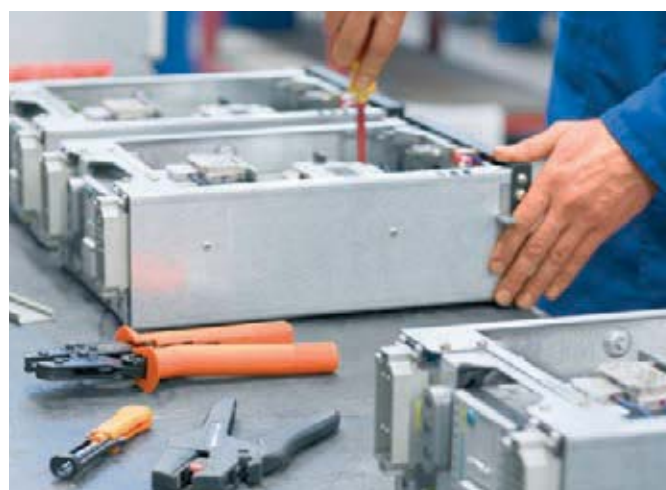
We offer to work closely with you, providing support and advice, and in putting together the job specification. Furthermore, our broad product portfolio means that we can jointly work together on the selection of the best components to make up your custom solution.

Highest levels of professional production

You have complete access to our highly-skilled project management team and our production expertise, for example, in the ATEX area. We can offer you a comprehensive portfolio of customer-specific assemblies, from simple assembly to the modification of existing electronics products.

Our services include:

- Adaptation and assembly of enclosures for all IP protection classes
- ATEX solutions for hazardous areas
- Assembly of heavy duty connectors
- Assembly of terminal strips
- Customer specific electronics solutions
- Cable assembly



Take advantage of:

- **Simple ordering and stockholding information**

One solution – one item number! It will no longer be necessary to order single components. Article variety and stockholding will be reduced.

- **Professional assembly**

All individual components will be pre-assembled, reducing your own assembly time and costs.

- **Less costs for documentation**

Our RailDesigner® software will facilitate the generation of parts lists or drawings.

- **Modern processing of enclosures**

Our CNC processing centres can adapt the enclosures to suit your tailored solution.

Customer specific assembly – consultation, product, development and production – all from a single source

Our application and manufacturing expertise influences decisions on all areas of modern connection technology. They therefore play an integral part of every solution.



Enclosures

Perfect protection and safety

- Enclosures for all IP protection classes
- ATEX enclosures for hazardous areas
- Placement of inspection glasses, drill holes and threads
- Elaborate machining operations like the milling of contours
- Class C5 welding, according to DIN 6700, for stainless steel and sheet steel enclosures
- Surface coating as and when required
- Individual device and system markers



Heavy duty connectors

Perfect connection with system

- Placement of drill holes and cable glands
- Equipped with plug-and-play components
- Wiring of subassemblies
- Cable assembly
- All housings are available with individual laser marking



Terminal strips

Configuration made to measure

- Machining of mounting rails
- Snapping components onto terminal rails
- Placement of cross connections
- Mounting of standard conductors
- Marking of terminals, devices, conductors and cables



Electronics

Individual solution from the beginning

- Modular terminal blocks, component plugs, snap on bases, enclosures for electronics: integration of relevant electronic components
- Snap-on base: Component carrier design or simple wiring of the modules
- Interface units
- Modification of existing electronic products: Modification of the circuitry or specific calibration
- Combination of components: Relays or optocouplers in combination with other components



Cable assembly

Our special service

- Pre cutting of cables and conductors
- Installation of
 - Heavy duty connectors
 - PCB connectors or DIN connectors
- Conditioning of wire ends
- Mounting of wire end ferrules and cable lugs
- Connection of conductors to terminal rails

RailDesigner®

A faster way to configure and order terminal strips



These days, time and cost efficiency are of the essence when it comes to working in planning and production. RailDesigner®, our free configuration and purchasing software, uses its virtual assembly of mounting rails (assembled or unassembled) to help you with the design of your own completely personal solution.

RailDesigner® brings you substantial benefits:

Less time required

It speeds up the process of acquiring quotations and placing orders because, for example, all processes can be initiated directly from the software. You configure your projects and the rest virtually takes care of itself!

User friendly operation

Any potential errors are prevented by automatic installation tips and clear project processing and management. So that you can plan your project realistically, RailDesigner® offers both 2D and 3D displays.

Wide selection from the current product portfolio

"You can easily download software updates for RailDesigner® from the internet. This means that you will always have access to the latest version of our product database."

Project planning that is compatible with your software

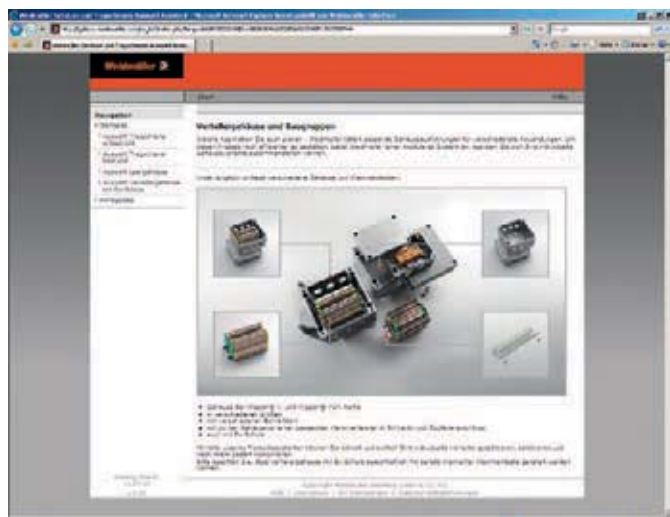
Plan and design your projects easily using your usual CAE software. With the integrated interface, transferring data from your CAE system has never been so simple. You can export component lists and terminal strip designs in various formats. Marking data is automatically transferred to the M-Print® Pro labelling software.

Simple purchasing of terminal strips

Once you have completed the planning stages of your projects in RailDesigner®, you can choose to send all of your data to us by email. Then we take over the assembly and deliver the required configuration to you, along with anything else that you still require for your project.

Download the software for free and discover the advantages to using RailDesigner® at **www.raildesigner.de**

Product assistant for distribution boxes and assemblies – The perfect solution, in the shortest time



You can easily and quickly select, combine and purchase the required components, all with the help of the Weidmüller product assistant for distribution boxes and assemblies. This means that you can rapidly obtain your individual enclosure solutions which may include the following components:

Empty enclosures without holes

Empty enclosures in various sizes of the Klippon® K and Klippon® POK series (aluminium and plastic) with matching mounting rails.

Empty enclosures with pre-threaded holes

Empty enclosures in different sizes from the Klippon® K and Klippon® POK series (aluminium and plastic), that are already equipped with metric threaded holes.

Mounting rails

Exactly tailored mounting rails for the enclosure sizes on offer.

Terminal strips

Mounting rails, which also perfectly match the offered enclosure sizes and are pre-fitted with terminals, optionally with screw or tension clamp connection.

Distribution boxes with Ex-protection

Enclosures that are already assembled with a terminal strip and already equipped with metric threaded holes.

Numerous possible combinations

Enclosures with Ex-protection are supplied exclusively with terminal strips that are already fitted. The product assistant offers you various approaches for industry variants so that you can create the right enclosure variant.

You can start off with any of the listed components and then add further components to the combination. This means that, for example, you can select the required terminal strip and the product assistant will then offer the matching enclosure variants.

Or, you can start with the enclosure, and matching terminal strips or mounting rails will then be chosen. The selected products can then be directly included in the query list.

Provision of all relevant data

During the selection, you can choose filters for the terminal strips, such as length, connection technology or dimensional cross-section and, for the enclosure, you can choose material, size, holes etc. If a product is then selected and combined, the user can view all of the relevant data, including drawings and pictures. This means that you can extensively plan how the enclosure will be integrated into the customer's application.

The product assistant is available at
<http://galaxy.weidmueller.com>

Online product catalogue

If you have questions about the specifications and details of our products, perhaps even outside normal business hours, then our online catalogue at

<http://catalog.weidmueller.com>

is opened 24 hours a day, 365 days a year and is the perfect source for information. Besides product features and part numbers, it contains extensive additional information on all product groups.

For further information, offers and your personal contact, simply consult the Weidmüller website at

www.weidmueller.com

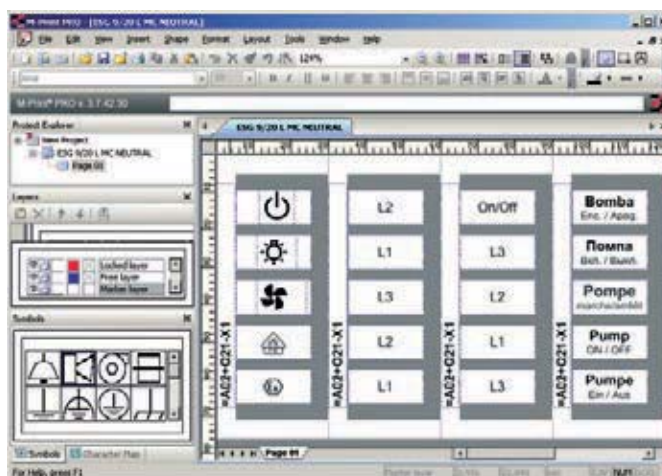


With one click selection for the product data sheet of your choice.

M-Print® PRO label designer

The comprehensive range of Weidmüller services includes the M-Print® PRO software. This is a professional standard, Windows®-based program for printing and ordering labels and markers that is coordinated with our current printing systems and marking materials.

M-Print® PRO enables you to design your labelling materials professionally and quickly. Texts, borders, lines, graphics, barcodes, serial numbers and photographs are all possible. The interface to RailDesigner® or your CAE system enables the transfer of all your configured data.



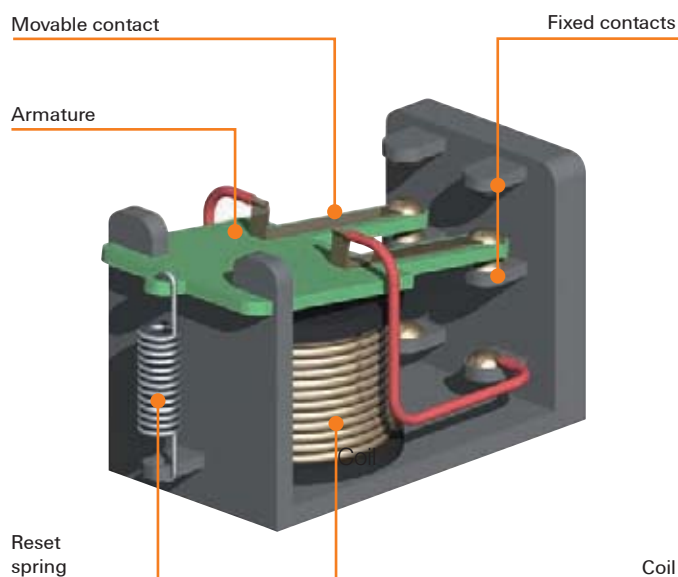
Technical appendix/Glossary

Technical appendix/Glossary	Relay modules and solid-state relays – Comparison	W.2
	Technical appendix: Relay modules	W.4
	Glossary: Relay modules	W.8
	Technical appendix: Solid-state relays	W.28
	Glossary: Solid-state relays	W.36

Relay modules and solid-state relays – Comparison

Advantages of electromechanical relay modules (EMR)

- + AC and DC operation in load circuit possible
Versatile (advantage as interface between different plant equipment)
- + No leakage current in the load circuit
A semi-conductor does not achieve 100 % isolation
- + Low residual voltage in the load circuit
Low voltage drop
- + No power loss in the load circuit
In contrast to the semi-conductor in opto modules there is no electrical resistance in the contacts of the electromechanical relay modules that can lead to a rise in temperature when under load. Therefore, heat sinks are not necessary.
- + Multiple contacts possible
A single control signal can switch several load circuits.
- + Control circuit less sensitive to *transients**)
Unwanted switching operations caused by voltage fluctuations are prevented by the make capacity of the magnetic coil.

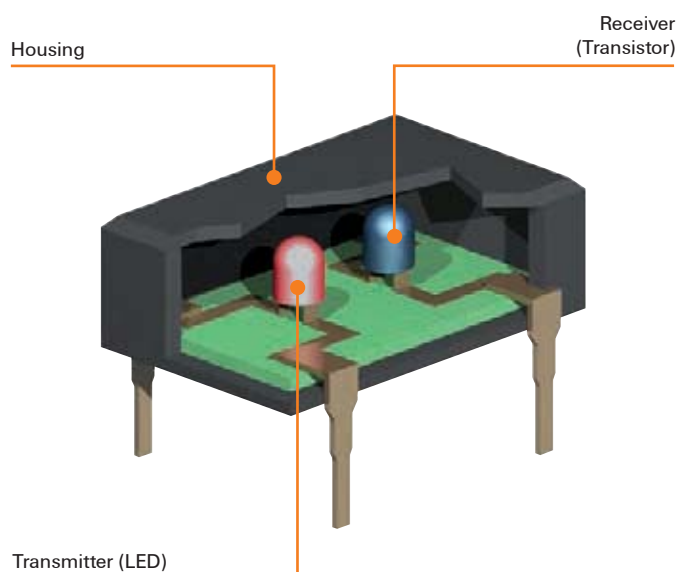


*) Refer to page W.8 in the Glossary for a detailed explanation of this term.

Depending on the requirements, the choice between electromechanical and solid-state relays is made based on the different advantages that the different versions offer:

Advantages of solid-state relays (SSR)

- + Long operational lifetime and reliability
No moving parts or contact wear
- + Small dimensions
Saves space on the PCB and mounting rail
- + Low control power
An LED is activated - no mechanical parts are moved
- + Fast response times
Fast switching, which allows high frequencies to be achieved
- + No contact bounce
Reduces switching delays
- + No switching noise
Suitable for use in noise-sensitive environments
- + Not susceptible to shock and vibration
Prevents unwanted switching statuses
- + No electromagnetic radiation due to switching sparks or coils
No interference of adjacent assemblies or electronics components



Relay modules – an overview

Historical background

The term 'relay' was originally used for a station where stagecoaches were able to change their tired horses for fresh ones. The term 'relay' was given a totally different meaning by the English physicist Charles Wheatstone (1802–1875). In Wheatstone's times, departing trains were advised of by a bell ringing at the next railway station up the line.

This was achieved by connecting a battery in the first station to a bell in the second. However, as the railway stations were generally several kilometres apart the power arriving at the second station was often insufficient to ring the bell. Wheatstone invented a switchgear apparatus that was installed at the second railway station. This continued to function even with low power supply levels. The switchgear apparatus switched a second electrical circuit that actuated the bell. This was the birth of the electromagnetic relay.

How a relay functions

A relay is an electromagnetic switch comprising of two galvanically isolated circuits. Firstly the control circuit and secondly the open circuit with the normally open contact. As soon as the control circuit is energised, the coil creates a magnetic field in the core/yoke and attracts the armature. The actuator now actuates the switch at the output, the normally open contact (make contact) closes and the normally closed contact (break contact) opens. When the control circuit is turned off, the magnetic field diminishes and the return spring returns the armature to its initial position. The actuator moves the normally open (make contact) back to its normal position, the normally open contact opens, the normally closed contact (break contact) closes.

Consequently, with low power input – battery power for example – a relay provides the option of switching heavy loads as well as being able to serve as a switching amplifier. Thanks to the isolation between the input and output, relays are also suitable for providing separation when the power of the control and the open circuits differ. Equipped with several NO (make) contacts, a relay can also be utilised for multiplying signals.

From relay to relay module

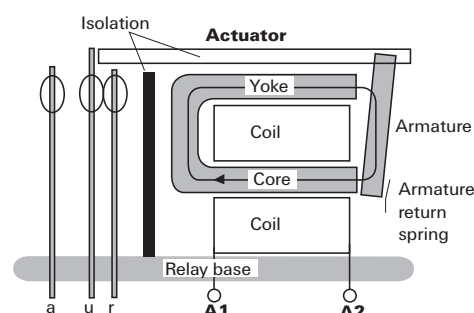
There are two alternative methods that make a relay module suitable for use in industrial applications: mounting onto a PCB – in combination with the corresponding assembly techniques and circuitry – or plugging onto a specially designed relay base.

Generally, the design and rating data determine if a relay coupler is or is not suitable for a particular application.

For example, relay modules with plugged on relays are only partly suitable for use in applications subjected to heavy vibrations. In this case, relay modules with soldered relays should be preferred. Low, compact designs such as those provided by the RIDERSERIES are utilised in small consumer units where the overall available height is limited. Conversely, the compact design of the TERMSERIES helps to save space in electrical cabinets.

Protective separation

It is essential that all electrical equipment required to provide protective separation be designed in such a manner that the insulation cannot be impaired, for example by mechanical errors. If a mechanical error occurs in a relay (bent soldering pin, broken winding wire or broken spring), 'protective separation' must be guaranteed. Relays are specified and tested in accordance with EN 61810-1. However, the standard makes no reference to EN 50178 (Electronic equipment for use in power installations); equally no definition is given for the term 'protective separation'. Things are made worse by the fact that different measurement conditions are given for the test voltages stipulated for relays. As a consequence, the test voltages cannot be applied to the standards EN 50178 or EN 61140. And because the user is nevertheless increasingly deploying electrical equipment that is supposed to guarantee 'protective separation', a large number of manufacturers of relays point to the EN 61140 and carry out the tests accordingly. And of course the values are then 'protective separation' conform.



Standards

The following individual standards are applied in accordance with the corresponding requirements:

Relay modules

- DIN EN 50178:
Electronic equipment for use in power installations

Relays

- DIN EN 61810-1:
Electromechanical elementary relays (electromechanical elementary relays without specified time response characteristics)
Part 1: General and safety requirements

Relay base

- DIN EN 61984
Connectors - Safety requirements and tests

EMC – Electromagnetic compatibility

DIN EN 61000-6-1

Part 6-1: Generic standards; Immunity for residential, commercial and light-industrial environments

DIN EN 61000-6-2

Part 6-2: Generic standards - Immunity for industrial environments

DIN EN 61000-6-3

Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

DIN EN 61000-6-4

Part 6-4: Generic standards - Emission standard for industrial environments

Coil suppression circuit

In DC circuits, the inductance of the relay coil generates a release voltage when de-energised that is capable of damaging or destroying the connected control electronics. A free wheel diode connected in parallel to the coil limits the release voltage, protects the control electronics and prevents induction of the cut-off voltage to other signal lines.

Large circuits or long cable runs are subjected to increased electrical and electromechanical interference and damage. Malfunctions or even total failure of the relay module can result. The radiated interference, and not to forget leakage currents emanating from trigger modules, can also mean that a triggered relay does not drop out. As standards specify that the drop-out voltage is limited to about 15 percent of the rated voltage, the interference voltage generated can be sufficient to prevent the relay from opening. One way of resolving this problem is to connect an RC combination line side to filter out disturbances and provide capacitive suppression of interference voltages.

TERMSERIES products are supplied ex works with these protective circuits already integrated in the electronics; for the RIDERSERIES these are available as modular series electronics.

The same principles apply as with contact protection circuits.

Relay modules – an overview

Switching large and small capacities

Basically, the reliability of the contacts in a relay reaches a maximum at a medium current load thanks to the continuous self-cleaning effect. As the contact load increases and hence leads to more severe erosion of the contacts, the switching reliability decreases with an increasing number of switching operations. This reduces the service life of the contacts. Although at very low loads the minimal erosion of the contacts does raise the service life more or less to the level of the mechanical service life, the lack of a self-cleaning effect contributes to a lower contact reliability.

Reliable contact at low currents, especially when only small voltages are involved as well, depends on the choice of contact material. Contacts of silver-nickel, which is standard for the majority of Weidmüller relays, are generally suitable for currents of approx. 10 mA and higher. Such large-surface contacts can switch both low and high currents. However, at low currents occasional failures can occur due to erosion and the lack of the self-cleaning effect. The higher the current, the more reliable is the contact – thanks to the self-cleaning. Silver-nickel is suitable as a contact material for low currents/voltages. It provides, however, only **moderate switching reliability**. If this is acceptable, then conventional standard relays represent an inexpensive solution.

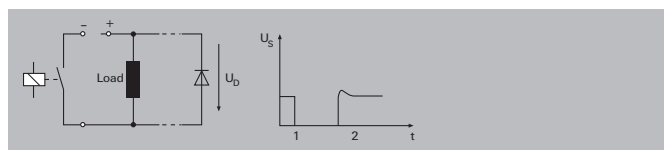
For applications that call for **improved contact reliability** or low currents/voltages, conventional relays with hard-plated gold contacts are preferable because they do not erode and therefore operate more reliably.

If **maximum switching reliability** is necessary, especially for low currents/voltages, a relay should not be your first choice. In these instances Weidmüller advises the use of solid-state relays. Wear and abrasion caused by mechanical movements are non-existent in solid-state relays.

Protective circuits for the contacts

The switching of inductive or capacitive loads produces switching sparks which can influence the electrical service life of the relays. The following protective circuits for the contacts reduce contact wear:

Diode



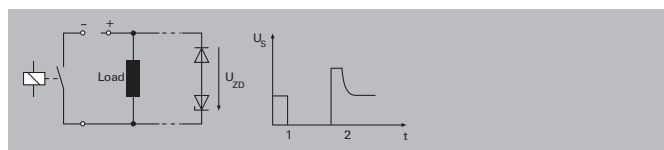
Free-wheeling diodes (DC)

Free-wheeling diodes are used primarily to protect against overvoltages, which occur through self-induction when switching off inductive DC loads (electric motors, relay coils). Voltage spikes are limited to the equivalent value of the diode forward voltage and excess voltage is discharged via the diode. However, this leads to a delay in the voltage drop and as such also delays the switching operation.

Advantage: Can be used for all capacities, low surge, minimum space required, low price

Disadvantage: Very long release delay

Diode and Z-diode



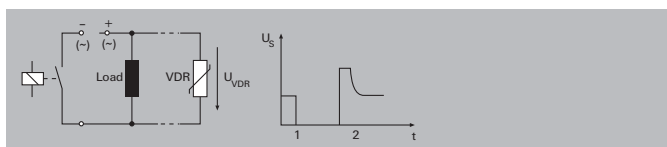
Zener diode / suppressor diode (DC)

These function as normal diodes in the forward conducting direction. In the blocking direction they become low resistant at a certain voltage (breakdown voltage). High levels of overvoltages can lead to the destruction of the zener diode / suppressor diode.

Advantage: Low surge (defined by Z-diode), short release delay

Disadvantage: Cannot be used for large capacities

Varistor

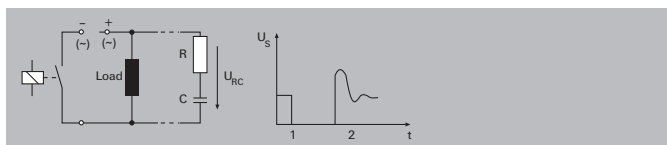


Varistor (AC/DC)

The functional principle of the varistor is also based on a breakdown voltage, but with faster reaction times. This allows higher levels of energy to be shunted, however, these lead to the component aging. This in turn reduces the breakdown voltage over time and increases the leakage current.

- Advantage: Low surge, short release delay
 Disadvantage: High current load on the contacts when switching on; more complicated and expensive at greater capacities

RC combination



RC-element (AC)

The RC element compensates voltage spikes by means of a capacitor. Due to the charging and discharging characteristics interference pulses are filtered out when the voltage is rising and not first when overload is reached. For this reason, RC elements are used to protect against interference pulses and exclude faulty switching operations.

- Advantage: Short release delay, low price
 Disadvantage: Cannot be used for all operating voltages and capacities

U_s = Voltage progression 1 = Closing 2 = Opening

Glossary: Relay modules

A

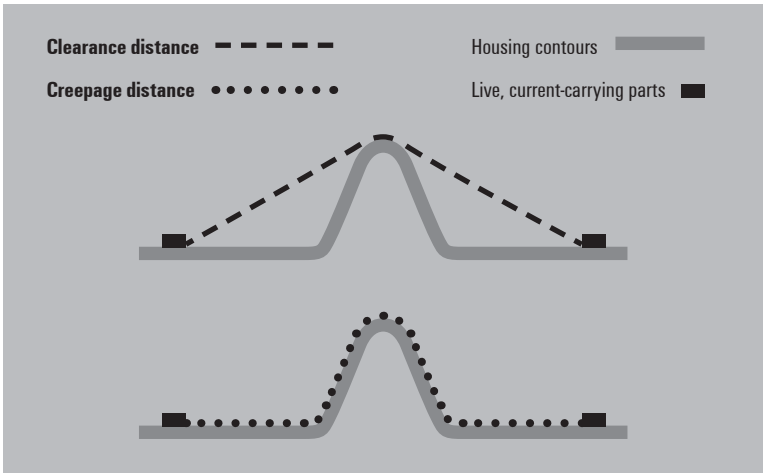
AC	Refers both to alternating values (such as voltage or current) as well as to those devices and variables which reference these devices. Specifications are valid for 50 Hz, unless otherwise indicated.
AC coil, alternating current coil	Relay; excitation with alternating current (AC). Specifications are valid for 50 Hz, unless otherwise indicated.
Adhesion (contacts)	This refers to when the relay armature does not return back to its starting position after the coil voltage has been turned off. The armature can get stuck if there is too much retentivity in the iron core or if the reset force is too small.
Approvals and testing marks	Testing approvals are independent confirmation from governmental or private registration services and testing facilities. They certify that the product complies with the relevant regulations and maintains the specified product characteristics. Note: The ordering scheme gives you the choice of many variations, but not all variations are established as standard types (order numbers). Therefore, they may not be included in the list of approved relays. Technical specifications and list of approved types are available on request. CSA Canadian Standards Association, Canada GL Germanischer Lloyd, Germany TÜV Technical Monitoring Association, Germany UL Underwriters Laboratories, Inc., USA; UR Component Recognition Mark for the United States cUR UL Component Recognition Mark for Canada cURus UL Component Recognition Mark for the United States and Canada cULus UL Component Listing Mark for the United States and Canada VDE VDE testing location, Germany (advisory reports with production monitoring)

B

B10	The number of switching cycles for a load where 10 % of the relays fail. This value is used to determine the probability of system failure.
Bounce (chatter)	An unintended phenomenon that may arise during the closing or opening of a contact circuit when the contact elements touch and separate again before they have reached their final positions.
Bounce times	The time (average value) between the first and last closing (or first and last opening) of a relay contact. These times are valid when the rated voltage is used for excitation, without other components in series or in parallel to the coil, and at the reference temperature.
Breaking capacity	Maximum switching current that a relay contact can switch off under specified conditions, whereby the switching current must not be greater than the nominal current.
Burn-off	Loss of contact material due to switching electrical arcs.

W

C

CE	Abbreviation for Communauté Européenne (the European Community). Manufacturers use the CE label to confirm that their products comply with the corresponding EC directives and the “essential requirements” therein. The EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC are currently binding.
Clearance and creepage distances	Clearance and creepage distances are critical factors that affect the insulating capacity of electrical components. The creepage distance denotes the minimum clearance that two live parts along a surface must have in order to prohibit a flow of current across the insulating material at the specified operating voltage. The operating voltage, the choice of insulation material (material group) and the protective measures taken against contamination (pollution degree) all influence the creepage distance. The clearance distance denotes the minimum direct clearance (through the air) that two live parts must have to one another in order to prohibit a charge passing through the air (an arc). The expected surge voltage (rated impulse voltage) forms the basis for calculating the distances. The surge protection category and pollution severity are further factors that influence dimensional design considerations. 
Coil resistance	DC resistance of a relay coil at the reference temperature (+20 °C); Higher coil temperatures increase the resistance value by 0.4 % / K. For actual operations, the excitation voltage should be adjusted accordingly (> sparkover value). For AC coils, the inductive resistance is much greater than the DC value. This is why the current consumption of the coil is also specified at nominal excitation.
Coil specifications	The coil specifications are specified according to IEC 61810-1. Unless otherwise specified, these values apply under the following conditions: ambient temperature 23 °C; coil at ambient temperature (cold coil, without pre-excitation); 50 Hz for AC voltage excitation; operating range of class 2; densely assembled (mounting gap of 0 mm). A relative duty cycle of 100 % (continuous excitation) is permitted.

Combination of relay and plug-in socket, Insulation requirements

The combination of relay and plug-in socket is described in the new relay standard IEC 61810-1. The relay sockets must meet the requirements of IEC 61984 and the insulation requirements of IEC 60664-1. Even if the socket itself already meets (or surpasses) the insulation requirements, there may still be reduced clearance and creepage distances (and thus reduced insulation rated voltage) for the combination of the relay and plug-in socket. Restrictions – such as a reduced voltage range or reduced pollution degree – should be expected for the relay/socket combination. This should be taken into consideration for miniature multi-pole relays with plug-in sockets which have minimal gaps between the contact circuits.

In addition to the insulation properties, the thermal properties of the combined relay/socket are very important (refer to the derating curves). The plug-in frames from different manufacturers cannot be compared directly, which is why the technical specifications are only guaranteed for approved relay/socket combinations. Possible risks of fire or reduced dielectric strength may result when non-approved combinations are in use.

Contact material

The list below provides an overview of the most important performance coatings and contact materials. The load capacity of the contacts and their life span can vary depending on the contact material and construction used. It is important to achieve the best combination of relay function and contact material. The specifications for individual relay types are only partially valid for other variants.

1) Performance coatings:

Pure gold – the best corrosion resistance but too soft when used as solid metal; high tendency toward cold welding in layer thickness > 1 µm (gold-flashed); only functions as a gold gilding and does not protect against corrosive gases.

Hard gold (hard gold-plated) - Very good corrosion resistance for dry loads; measuring and switching circuits; control inputs (1 mV – 10 V, 0.1 mA – 100 mA); low and constant contact resistance with the smallest switching power; low cold-welding tendency and low current/voltage switching; recommended operating range > 1 V, 1 mA, 50 mW.

2) Contact material::

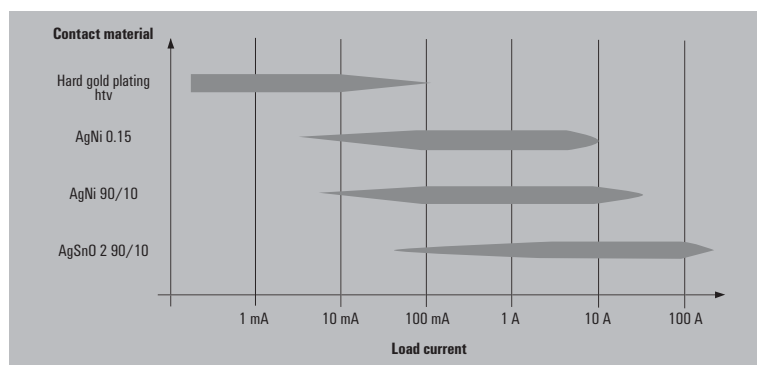
Silver Nickel AgNi90/10 - High resistance to burn-off; minimal tendency towards cold welding; higher contact resistance than AgNi0,15; circuits with medium to high loads; DC and AC circuits (solenoid valves, fans, heaters); not suitable for high capacitive in-rush currents; range of use > 12 V, 10 mA.

Fine-grain silver AgNi0,15 - Relatively low contact resistance; low resistance to corrosive gases; all-purpose use for average loads and low loads; preferably in DC circuits (solenoid valves, fans, heaters); not suitable for high currents; range of use > 12 V, 10 mA.

Silver-tin-oxide AgSnO₂ - Minimal tendency to weld; high resistance to burn-off at high switching capacity; low material migration; circuits with high input and output loads; DC and AC circuits (lamp loads, capacitive loads, fluorescent tubes, switching power supplies, etc.). Well suited for resistive, inductive and capacitive DC applications due to low occurrence of material migration, range of use > 12 V, 100 mA..

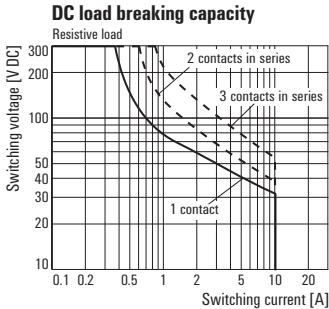
Silver-cadmium oxide AgCdO – minimal tendency to weld; high resistance to burn-off; especially suitable for switching inductive loads; AC circuits, range of use > 12 V, 100 mA.

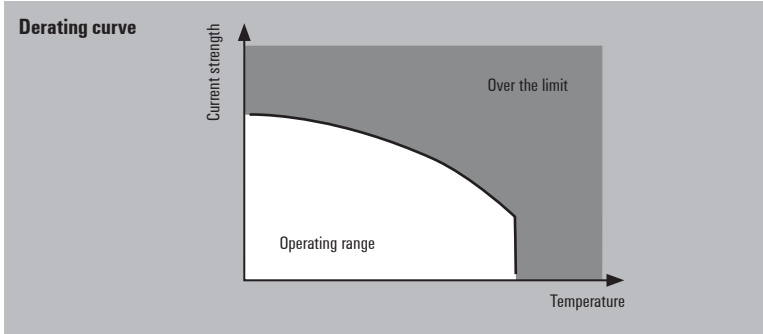
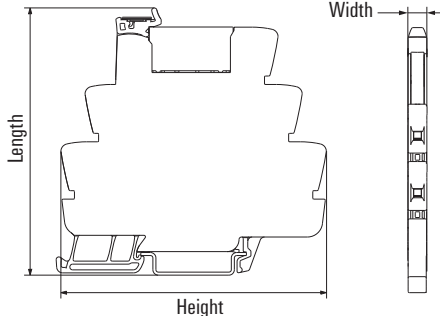
Tungsten W – highest melting point; for high switching frequency at minimal duty cycle; as a lead contact in circuits with high in-rush and switch-off loads.



Continuous current limit	The highest current value (RMS value for AC) which a closed contact can continuously conduct at specified temperature limits; this corresponds to the thermal continuous current limit I_{th}. Unless otherwise specified, the data refers to the following conditions: equal load on all contact circuits, input voltage is 110 % of rated coil voltage, maximum ambient temperature, opened vent, dense mounting (mounting clearances of 0 mm), and test conditions according to the positioning for the heating test in IEC EC 61810-1 Appendix B.
Continuous current	The current that can be continuously conducted without exceeding the contact-overheating values under defined conditions.
Continuous operation	Operating mode in which a relay remains energised until it reaches thermal equilibrium.

D

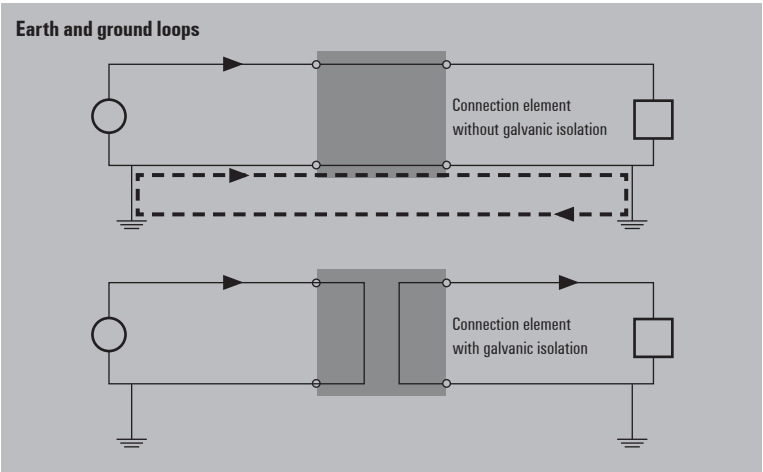
DC	Refers to the electrical variables such as voltage or current (DC, DC voltage) that are not dependent on time.
DC switch-off capacity, Direct-current switch-off capacity	Values below the DC switch-off capacity curve (for max. permitted switching voltage/current at resistive load) can be switched on and off reliably; e.g. an arc is extinguished (max. arc duration is 10 ms at resistive load). The position and shape of the load-limit curve is influenced by the contact material and relay construction (contact gap, opening speed of the contacts, etc.). Information about the electrical lifespan should not be derived from these curves!  The graph, titled "DC load breaking capacity", plots "Switching voltage [V DC]" on the y-axis (logarithmic scale from 10 to 300) against "Switching current [A]" on the x-axis (logarithmic scale from 0.1 to 20). It shows three curves for "Resistive load": "1 contact", "2 contacts in series", and "3 contacts in series". The curves show that as the number of contacts in series increases, the switching capacity (both voltage and current) also increases.

Derating / derating curve	The continuous current is reduced at higher ambient temperatures; this is shown using a derating curve (a load reduction curve). Current flow generates heat, which increases as the current increases. Electrical components have an upper temperature limit which limits their ability to function. The temperature influencing the components is a combination of the ambient temperature and the heat generated by the current. So to ensure that the limit temperature is not exceeded, the current must be reduced when the overall temperature rises. The derating curve depicts the relationship between the prevailing temperature and the resulting maximum amperage with regards to the temperature limit. 
Dielectric strength, test voltage	Voltage (RMS value for AC voltage, 50 Hz, 1 min) which can be applied between mutually insulated relay components during the voltage test.
Dimensions	Dimensions in millimetres. 
DIN rail	Unless otherwise noted, Weidmüller's products are built and tested for mounting on DIN rail (rails according to TH35-7.5 / EN60175). Other installations (e.g. TH35-15) may function but have not been tested or approved.
Duty cycle, relative duty cycle	Describes the ratio of the excitation duration of a relay (duty cycle) to the entire cycle time in intermittent, continuous or short-time operations. The duty cycle is expressed as a percentage of the total cycle duration.

E

Earth and ground loops

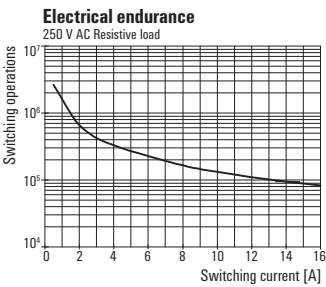
Denotes the connection of two potentials via their earth or ground connection. A potential difference between the earth or ground connection of two devices (for example, a sensor and controller) that are directly wired to one another causes current flow via the earth of the shared housing. These interference currents can lead to different problems, for example in the acquisition of measurement signals or when controlling actuators. When transmitting switching or measurement signals using a device with electrical isolation between the control and load circuits, it is important that a closed circuit via the earth or ground connection can never occur – so that no interference currents are generated.



Electrical lifespan curve

The curve for the electrical lifespan specifies the typical lifespan as the mean cycles to failure (MCTF) and is based on the Weibull distribution. No guaranteed minimum values can be interpreted from this statistical data.

Note: The curve for the electrical lifespan applies only to the specified contact materials (or those in the datasheet). The lifespans for other contact materials cannot be derived from this curve. It is also not possible to derive information about the electrical lifespan by extrapolating the curve.



Electrical lifespan, lifespan of contact	Number of switching cycles for a relay with electrical contact load under full operational capacity (according to IEC 61810-1 and IEC 61810-2). Unless indicated otherwise, the contact data and electrical lifespan are valid under the following conditions: • On NO contact, • AC mains frequency of 50 Hz, • 50 % relative duty cycle, • Nominal switching frequency, • Contact load, schedule A, • Resistive load, • Rated voltage (coil), • Ambient temperature 23 °C, • Protection degree RTII - flux-proof • Individual assembly • Vertically installed (the connections of a PCB relay point downwards). The electrical lifespan is specified according to the criteria for “useful life”, severity level B according to IEC 61810-2. The data does not cover all usage beyond the specified electrical lifespan. The user is obliged to avoid such situations. Experience shows that the electrical lifespan remains relatively constant up to a 0.8 power factor. When working with loads that have a power factor less than 0.8, we recommend consulting with the user.
Error, relay failure	According to IEC 61810, a relay failure is defined as the occurrence of malfunctions that exceed a certain number: • Malfunction On contact closing • Malfunction on contact opening (contact bridging for CO contact, as special type of malfunction during contact opening) or as • Insufficient dielectric strength. Such malfunctions must be considered in the scope of the application – they should not create any risks. Depending on the specific loads and the contact power, a malfunction can cause excessive heat or even a fire. The user is responsible for taking the necessary precautions in accordance with the relevant regulations.

F

Flammability according to UL	Indicates the flammability class according to the specification from UL 94 (Underwriters Laboratories, Inc., USA). Flammability tests according to UL 94: for testing plastic materials and classifying the propagation/extinction characteristics when the material burns. The UL 94 flammability classes which are relevant to relays are V-0, V-1, V-2 and HB.
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G

Galvanic isolation	Potential-free isolation between electrical components. Electrical (or galvanic) isolation means that no charge can flow from one circuit to another. There is no conductive electrical connection between the circuits. The circuits can nevertheless exchange electrical power or signals via magnetic fields, infrared radiation or by charge displacements.
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H

Humidity / condensation	Standard conditions: annual average relative humidity > 75 % at an ambient temperature of 21 °C, in 30 days, evenly distributed throughout the year, and 95 % at ambient temperature w of 25 °C. On other days: occasionally 85 % at 23 °C. No icing or condensation is allowed - affects storage and/or operation. When storing or operating under other conditions, you must take steps to avoid temperature changes which could cause icing or condensation. Operating and storage should be within the limits specified in the graphic. Environmental conditions
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I

Impulse withstand voltage	The highest withstand voltage of a specified shape and polarity that does not lead to an insulation breakthrough or flash-over, under the specific conditions.
Inductive loads	Refer to usage categories.
Inrush current	Specified as the switching current by resistive loads that can turn on a relay under defined conditions. The data refers to the NO contact, nominal voltage, and a current value for a duration of max. 20 ms for at least 100 switching cycles, or 4 seconds with a relative duty cycle of 10 %, unless otherwise indicated.

W

Insulating material group	According to their CTI (comparative tracking index) values, the insulating materials are categorised in one of the following four groups: Group I 600 CTI Group II 400 CTI < 600 Group IIIa 175 CTI < 400 Group IIIb 100 CTI < 175 The figures for the comparative tracking index, according to IEC 60112 (DIN IEC 60112 / DIN VDE 0303-1) are determined using special samples prepared for this purpose with test solution A.
Insulation according to EN 50178	Specifications for insulation coordination with: • Type of insulation • Nominal voltage of the supply system • Pollution severity level • Impulse withstand voltage • Surge voltage category

M

Max. switching current	The max. switching current indicates the maximum level of current that can be switched.
Max. switching frequency at rated load	The number of switching operations that occur in a specific unit of time. The maximum switching frequency for average loads may be higher than the value specified for the nominal load when the switching characteristics of the load (such as arcing) do not cause the contact temperature to increase. The maximum switching frequency for no-load switching can also be used for loads where no arcing will take place (purely resistive loads cause no significant arcs up to 12 V or 50 mA at 12 – 250 V, because the arc breaks off fairly quickly through the contact opening (insulation)).
Max. switching power	The switching capacity is calculated as the product of the switching voltage and the switching power (in VA for AC; in W for DC).
Mechanical service life	Number of switching cycles for de-energised relay contacts, where a relay must remain functional within specific conditions.
Micro-switch-off	Reasonable contact opening in at least one contact that ensures functional safety. Note: The contact opening has a requirement for the dielectric strength but not for the dimensions.
Minimum switching capacity	Calculated product of switching current and switching voltage – a measure of reliable switching. Low contact resistance values are realised only above a certain load. Greatly increased resistances may occur at lower switching loads which can prevent the load circuit from being safely switched. The minimum contact loads for different contact materials should also be taken into account.
Mono-stable relay, switching behaviour	A relay is referred to as mono-stable when its contacts return to the idle state automatically after the energising parameter (the input voltage) is switched off.
Mono-stable, non-polarized relay, neutral relay	The switch position change in a neutral, mono-stable relay does not depend on the polarity of its excitation.

Mounting distance	Distance between two adjacent components when using parallel, uni-directional positioning; or the distance to other electrical components. Because of the insulation requirements, you may need to increase the minimum gap between the components or select a different positioning. These values refer to components in "single-file arrangement", unless otherwise indicated. Also relevant for this definition: • Density of assembly: assembled with minimum mounting clearances; this minimum distance is determined by the insulation requirements at 230 V AC and/or mechanical requirements for the installation(e.g. use of sockets), • Individual installation: components are mounted with gaps so that there is NO thermal influences from adjacent components.
Mounting position	Mechanical and electronic relays can usually be installed in any position when there are no qualifying limitations. To ensure the proper current flow and heat dissipation, the connections must be properly contacted and the cross-sections must be adequate. Several factors must be taken into consideration when positioning: including the insulation requirements, heat dissipation and the possible mutual magnetic influence.

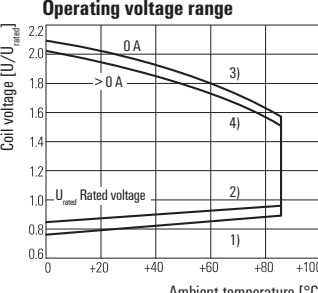
N

Nominal current (contact)	Current that a relay contact can switch off or on under specific conditions, or the current that the relay accessories can conduct. The nominal current specification covers the following data, unless otherwise specified: • Contact current, switching current • Continuous current limit The conditions for the relay are specified under the contact lifespan; For accessories, the nominal current is specified for a relative duty cycle of 50 %, at the nominal switching frequency, and for an ambient temperature of 23 °C.
Nominal switching voltage (contact)	Voltage between the switching contacts - before the contact closes or after it opens.
Nominal torque	The specified value for the torque of the screws (screw connection) must not be exceeded.
Number of contacts	Number of working contacts in a relay (normally-open, normally-closed or change-over)

O

Operating temperature	Permissible ambient temperature – relative to a specific relative humidity – at which a product should be operated at nominal load.
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W

Operational voltage range	Allowable input voltage range – depending on the ambient temperature. The top part of the range is specified by the maximum voltage; the lower part of the range is specified by the response/minimum voltage. Curve 1: response time/minimum voltage U_0 (without pre-excitation) Curve 2: response time/minimum voltage U_1 (after pre-excitation) Curve 3: maximum voltage U_2, contact current = 0 A Curve 4: maximum voltage at contact current I_{nom} 
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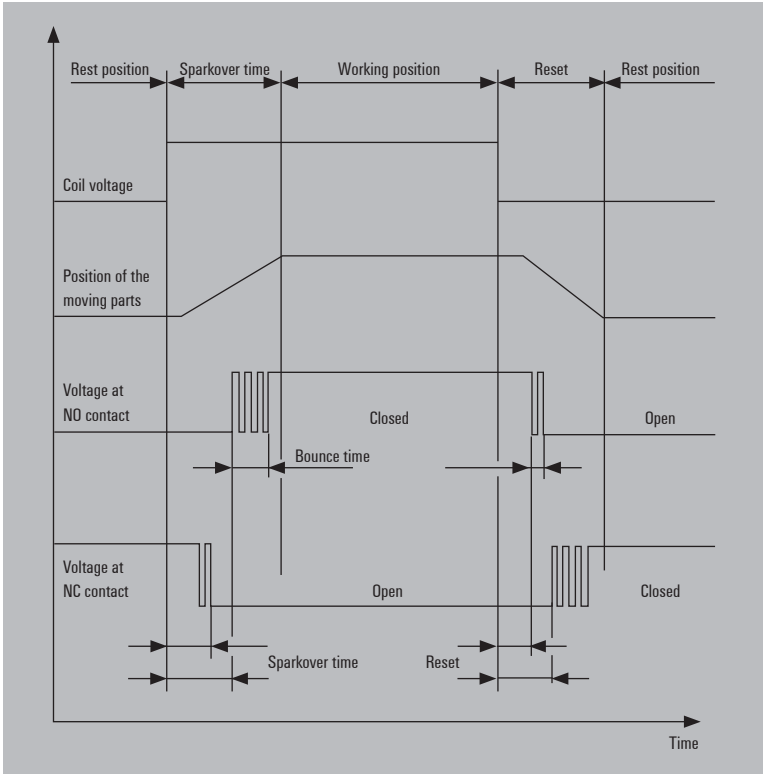
P

Packing unit	Indicates the smallest amount (a pack, for example) or the quantity per carton.
Plug-in cycles	Sockets and accessories are designed for 10 insertion cycles without electrical load – unless otherwise specified.
Pollution severity level	Pollution (contamination) includes any foreign material – whether it is solid, liquid or gaseous (ionised gas) – which is capable of influencing the surface resistance of the insulating material. The standard defines four degrees of pollution. Their numbering and classification is based on the quantity of the contaminant or the frequency with which the contaminant reduces the dielectric strength and/or surface resistance. Pollution degree 1: - there is no contamination or only dry occurrences of non-conductive pollution. The pollution has no influence. Pollution degree 2: - there is only non-conductive pollution. Temporary occurrences of conductivity caused by condensation may also occur. Pollution degree 3: - conductive pollution or dry, non-conductive pollution that can become conductive due to condensation is likely to occur. Pollution degree 4: - the contamination leads to continual conductivity which can be caused by contaminants such as conductive dust, rain or snow. Note: Pollution degree 3 is typical for industrial environments and similar settings; pollution degree 2 is typical for households or similar.

Positively-driven contacts	Arrangement of contacts in accordance with EN 50205, with at least one NO and one NC contact; mechanically constructed so that the NO and NC contacts of the entire contact system can never (even in the event of a malfunction) be closed at the same time. Such relays are used in safety engineering controls in order to prevent injury and property damage.
Power rating	The nominal value of the power that is converted when the nominal control voltage is applied.
Protection degree - (IEC 60529), IP	The degree of protection afforded by an enclosure is indicated by the IP Code (IP = International Protection). This specification is equally valid for industrial relays and accessories. For the purposes of "component" relays (such as PCB relays), refer to the RT protection degree. A two-digit number is used to indicate the protection provided against touch contact and foreign bodies (the first number) and against humidity (the second number). Protection levels for touch contact and foreign bodies (the first digit): the first digit indicates the degree of protection inside the housing against ingress of solid foreign objects and against any human access to hazardous parts. 0: no protection 1: protection for large body parts with a diameter > 50 mm 2: finger protection (diameter 12 mm) 3: tools and wires (diameter > 2.5 mm) 4: tools and wires (diameter > 1 mm) 5: full protection against touch contact 6: full protection against touch contact Degree of water protection (the second digit) The second digit indicates the degree of protection provided against the ingress of water into the housing: 0: no protection 1: protection against vertically falling drops of water 2: protection against water droplets falling diagonally (up to 15°) 3: protection against water spray that falls at an angle up to 60° from vertical 4: protection against splashed water from all sides 5: protection against water jets 6: protection against powerful jets of water (flooding) 7: protection against sporadic submersion 8: protection against constant submersion
Pull-in / drop-out current, AC/DC coil	Value of the coil current at which a relay responds (spark-over) or drops out.

R

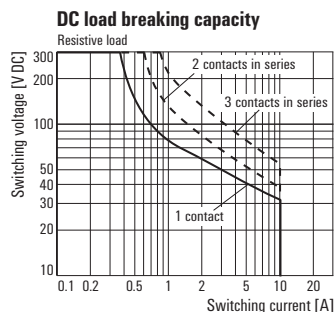
Rated control voltage	The nominal value of the sparkover voltage for the relay.
Rated voltage (Isolation)	Voltage level at which the insulation specifications are measured – this is the basis for sizing the creepage distance.

Relay times (time response)	Because of the self-inductance of the coil and the inertia of the moving parts, the steps involved in operating a relay do not occur instantaneously. The following chart illustrates several time-function terms for the main contact variants of non-delayed switching relays. These specified times are valid when the rated voltage is used for excitation, without other components in series or in parallel to the coil, and at the reference temperature. • Sparkover time • Drop-out/reset time • Bounce time • Min. excitation period 
Relays and sockets	The relays in this catalogue have been designed, specified and tested in accordance with the relay standard IEC 61810-1 "Electro-mechanical elementary relays - part 1: General considerations and safety-related requirements". Where the appropriate approvals have been specified in the data sheet, the relays and sockets have been tested according to IEC 61810 or EN 61984 and UL 508.
Reliability	Electro-mechanical components such as relays are subject to wear (both mechanical and electrical). A typical "bathtub curve" depicts the reliability. This means that there may be isolated statistical exceptions which are below the typical levels of reliability.
Reset	Process in which a mono-stable relay resets from the working position to the rest position.

Reset time	Time interval (average) between when a mono-stable relay is in its working state with the coil voltage switched off and the time at which the final output circuit is closed or opened (not including the bounce time). These specified times are valid when the rated voltage is used for excitation, without other components in series or in parallel to the coil, and at the reference temperature.
Reset voltage	Value of the input voltage at which a mono-stable relay reliably returns to the rest position while at the reference temperature.
Response	The process in which the relay transitions from the normally-closed (break) contact position into the normally-open (make) contact position.
Response voltage / drop-out voltage AC/DC coil	Value of the coil voltage at which a relay responds (spark-over) or drops out.
Rest position	The switched position of a mono-stable relay in its unexcited state.
RoHS Directive 2002/95/EC	RoHS stands for "Restriction of (the use of certain) Hazardous Substances". According to the EU Directive 2002/95/EC from 01.07.2006, all EU member nations must forbid the use of hazardous substances which damage human health and the environment (including mercury (Hg), cadmium (Cd), lead (Pb), hexavalent chrome (Cr6), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)) in new electrical and electronic devices. The term "compliant" means that the entire product group meets the requirements of the RoHS Directive. The maximum weight percentage in homogeneous materials is below the limits specified in the directive: 0.1 % for lead, hexavalent chrome, mercury, PBB and PBDE; and below 0.01 % for cadmium, or qualifies for an exemption in accordance with the annex to the RoHS Directive .

S

Self-heating	The heating up of an operational component based on the power loss from the relay coil and the switching contacts.
Series-circuit relay contacts	When two or more NO contacts in a relay are connected in series, the contact opening is increased while switching off. Arcs which occur from DC loads are cleared more quickly which results in reduced burn-off on the contact. This increases the electrical lifespan and the breaking (switch-off) capacity. DC load breaking capacity



SIL	Safety Integrity Level. The components must meet the requirements of IEC 61508 in order to reduce risk. This standard provides general requirements for avoiding and minimising device and equipment outages. It stipulates organisation and technical requirements concerning device design and operation. Four safety levels are defined (from SIL1 for minimal risk to SIL4 for very high risk) for classifying facilities and risk-reduction measures. Measures taken to reduce risk must be more reliable when the classified risk level is higher.
Standardised labelling of connections	A1, A2: coil 13, 14: NO contact (contact closes when applying a voltage to the coil) 11, 12: NC contact 11, 12, 14: CO contact (11 is the common contact, i.e. the root)
Status indicator	The status LED display on the input control circuit can differ from the state of the contact circuit in the following cases: • when there are welded-together or broken switching elements, • when there is interference or residual voltages on the signal lines. A reduction in light intensity may result when the ambient temperatures are greater than 50 °C.
Storage temperature	The permitted ambient temperature, related to a specific relative humidity level, for which the product should be stored while in a current-free state.
Surge voltage category	The overvoltage category of a circuit or an electrical system is numbered conventionally (from I to IV) and is based on limiting the assumed surge voltage values that can occur in a circuit (or electrical system with different mains voltages). The assignment to a particular overvoltage category is dependent on the measures which are used to influence (reduce) the surge voltages. Overvoltage category I • Devices that are intended to be connected to the permanent electrical building installation. The measures for limiting transient surge voltages to the proper level are taken outside of the device. The protective mechanisms can either be in the permanent installation or between the permanent installation and the device. Overvoltage category II • Devices that are intended to be connected to the permanent electrical building installation (such as household appliances or portable tools). Overvoltage category III • Devices that are a part of the permanent installation and other devices where a higher degree of availability is required. This includes the distributor panels, power switches, distribution systems (including cable, busbars, distributor boxes, switches and outlets) that are part of the permanent installation, devices intended for industrial use, and devices that are continually connected to the permanent installation (such as stationary motors). Overvoltage category IV • Devices that are intended to be used on or near the power feed in a building's electrical installation – ranging from the main distribution to the mains power system. This includes electrical meters, surge protection switches and ripple control equipment.

Switch-off delay	Usual time interval from switching off the coil voltage of a switched relay until the first opening or closing of the last output circuit (not including the bounce time).
Switch-on delay	Usual time interval from switching on the coil voltage of an idle relay until the first opening or closing of the last output circuit (not including the bounce time). Coil voltage: pulse or square wave excitation, with rated voltage at the reference temperature of 20 °C.
Switching capacity	The calculated product of the switching current and switching voltage (in W for DC, in VA for AC).
Switching current	Current strength required to switch a relay on or off.
Switching cycle	A single occurrence of the sparkover and subsequent reset.
Switching voltage	The voltage between the switch contacts (contact elements) that is applied prior to the closing or after the opening of the contact (DC for DC voltage; AC for AC voltage).
Switching voltage, max.	The maximum allowable voltage between the contact elements prior to closing and after opening a relay contact.

T

Test button, manual operation	For operating the relay manually: the test button is used only for test purposes during the initial commissioning and testing of equipment. The test button is not appropriate for normal on/off switching and has not been designed for continuous electrical load while in the mechanical ON position. The button should also not be used as a switch. Before pressing the test button, make sure there is no danger posed by loads or other connected devices. Only trained personnel should operate the test button. This prevents the facility's safety mechanisms from being circumvented and the insulation requirements from being compromised.
Transients	Transients are short-term current or voltage spikes caused by interferences in the mains supply grid or by electromagnetic radiation. On the control side of the optocoupler these can trigger unintended switching operations or, in extreme cases, cause the destruction of the component. In an AC-driven load circuit, transients can lead to the maximum permissible forward voltage being exceeded, which in turn can activate the thyristor or TRIAC. As these operate at quite high switching speeds, even very short pulses can suffice to falsely trigger a switching operation.
Type code	The ordering scheme gives you the choice of many variations, but not all possible variations in the current product line are established as standard types (building codes, ordering designations). Special versions are available on request to meet customer specifications.

W

Type of contact	DIN 41020 describes various switching functions of the relay contacts and the specific contact configurations, constructions and descriptions based on these functions. • NO (normally open) contact: contact which is closed in the relay's operating position and open in its rest position. • NC (normally closed) contact: contact which is closed in the relay's rest position and open in its working position. • CO (change-over) contact: a CO consists of an NO and an NC contact with a common terminal (root) connection. When changing the switch position, first the previously closed contact opens and then the previously opened contact closes. Note: A temporary electrical connection may be established between the NC and NO contacts due to the switch-off arc.
Type of insulation	Quality of the insulation system, depending on the design and application conditions: • Functional insulation: insulation between live components – necessary so the relay functions properly. • Basic insulation: insulation of live parts to provide basic protection against electrical shock. • Doubled insulation: consisting of a base insulation and additional insulation. • Reinforced insulation: a single "enhanced" insulation of active components, which ensures the same protection against electric shock as doubled insulation. The doubled insulation is composed of a base insulation and an additional insulation; the extra insulation protects against electric shock if the basic insulation fails.

U

Usage category according to EN 60947 (mechanical relays)	AC1: non-inductive or slightly inductive load, such as heating elements AC14: small electro-magnetic loads (< 72 VA), such as mini-contactors AC15: small electro-magnetic loads (< 72 VA), such as power contactors DC1: non-inductive or slightly inductive load, such as heating elements DC13: electro-magnetic loads, such as solenoid valves
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W

Wash resistant	Wash-resistant relays can withstand a washing process. During the wash process, none of the cleaning agent should be able to penetrate inside the relay.
Withstand test voltage	The voltage applied to a device under specific test conditions which causes no breakthrough or flash-over of the test piece.

Definition / mode of operation

Opto modules – mode of operation

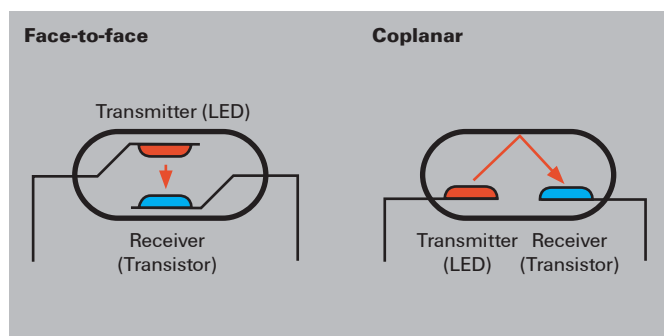
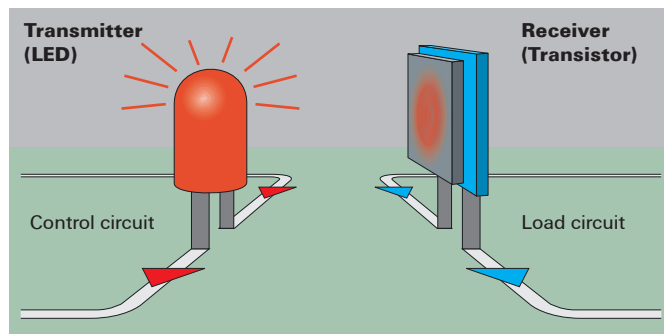
Opto modules are electronic components for switching load circuits by means of a control circuit. On the one hand this allows applications with different performance ratings to be operated by relatively low switching currents. And on the other *electrical isolation**) between control and load circuits is provided to assure protection of components should a malfunction occur.

In contrast to electromechanical relay modules opto modules do not have any mechanical parts that are prone to wear. To enable the switching operation a light signal is triggered via an LED in the control circuit that causes a light-sensitive semiconductor receiver to complete a connected load circuit. Transmitter (LED) and receiver (for example a phototransistor) are embedded in a light conducting plastic material and encased in a light-proof casing that protects against outside influences.

Two design types are differentiated:

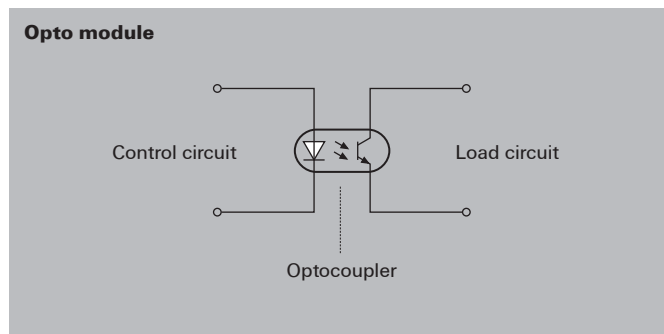
Face-to-face design with LED and transistor mounted across from each other with direct light contact

Coplanar design with LED and transistor on the same level. In this case the beam of light is transferred by reflection according to the principle of fibre-optics.



Opto module

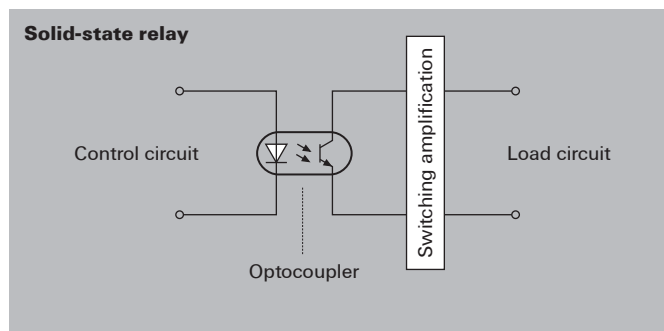
The voltage, which can be applied to the opto output itself, is restricted by the sensitivity of the semiconductor receiver (phototransistor). In applications in which only low currents or voltages are required in the load circuit it is possible to use the component without an additional auxiliary circuit in an opto module.



Solid-State Relay

In order to switch higher currents it is necessary to make adaptations to accommodate the different performance levels of the phototransistor and the load circuit (switching amplification).

Modules other than optos equipped with a switching amplifier are called **solid-state relays** (SSR).



* Refer to page W.36 in the Glossary for a detailed explanation of this term.

Basic functions

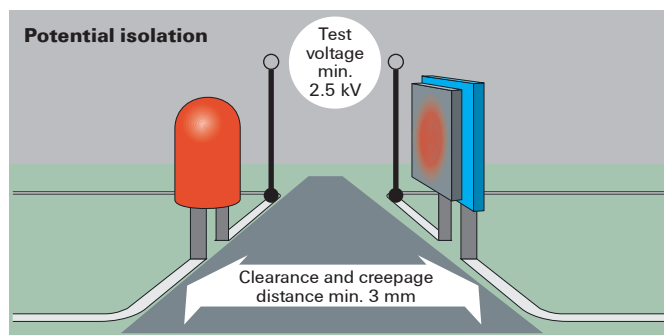
Opto modules and solid-state relays are generally used in the following fields of applications:

Potential isolation

Many applications require that the control circuit is electrically isolated from the load circuit. This primarily protects the control level from interference from the field, such as:

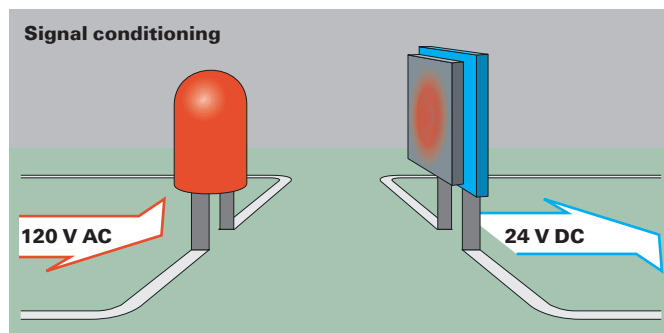
- Interference currents e.g. from *earth and ground loops**)
- Interference pulses e.g. from inductive effects of *transients**)

The separation of the control and load circuits in the opto module provides the required isolation. However, this must withstand an isolation test of at least 2.5 kV in all opto modules and solid-state relays. To guarantee isolation it is necessary that a minimum of 3 mm clearance and *creepage distance**) be maintained in all components.



Signal conditioning

The separation of the load and control circuits, in conjunction with the variety of options this offers to configure both circuits separately, means that opto modules are often used for signal conditioning purposes. This allows the different electrical potentials of signals from the control and load circuits (for example sensors and control) to be equalised.



Switching amplification

Applications with current and voltage values that exceed the capacity of the phototransistor require an auxiliary circuit on the output side of the opto module for switching amplification purposes. During the switching operation the opto module LED activates a base current in the phototransistor. This activates a second semiconductor (transistor, thyristor) selected to meet application requirements which then becomes conductive for the load current.

* Refer to page W.36 in the Glossary for a detailed explanation of this term.

Control circuit

The input circuits (control circuit)

Most industrial applications cannot be connected directly to an opto module, generally requiring voltage regulation by means of series-connected resistances or capacitors. To obtain exact-as-possible switching points a *Schmitt Trigger**) can be used to assign the control signals an unambiguous status (0 - 1) when moving from high to low or low to high, which is then passed on to the opto module.

Depending on the design, all Weidmüller opto modules and solid-state relays are equipped with suitable protective devices (varistors, diodes) and filters to protect against interference pulses from the control circuit.

DC input:

An additional reverse-polarity protection diode guarantees protection against the opto module being destroyed if the control voltage is incorrectly wired. The switching status of the control circuit is signalled by a status indicator.

AC/DC input:

A rectifier with smoothing capacitor is connected in series for AC control voltages. Reverse polarity protection for DC current is not necessary. The following construction corresponds to a DC circuit.

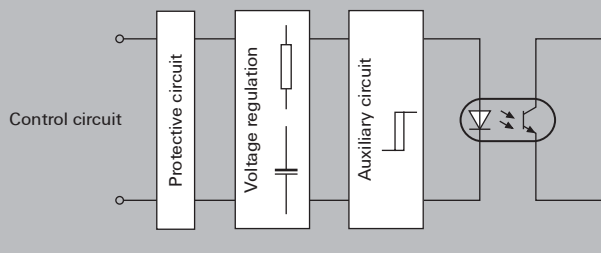
Due to the smoothing capacitor the switching frequency of AC control signals is fundamentally less than half the mains frequency. A higher switching frequency would result in the control signal being constantly switched through in rhythm with the mains frequency.

The advantage of being able to choose between an AC or a DC current input contrasts with the disadvantage that the smoothing capacitor also restricts the switching frequency of the DC control signal.

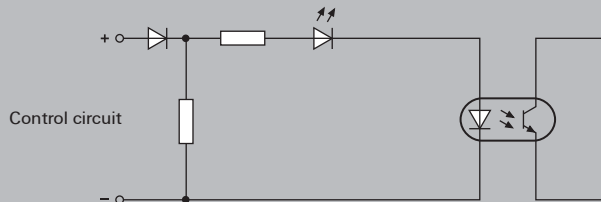
AC input:

The circuit diagram corresponds in principle with an AC/DC circuit. Instead of series resistors it is possible to use capacitors to regulate the voltage in a purely AC operation. In contrast to resistors there is no power loss with capacitors and as a result no heat that needs to be dissipated.

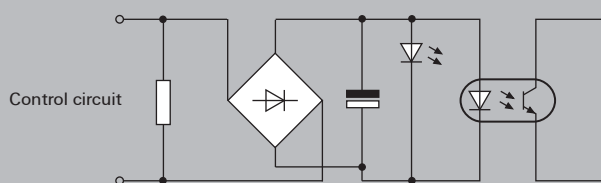
Input configuration



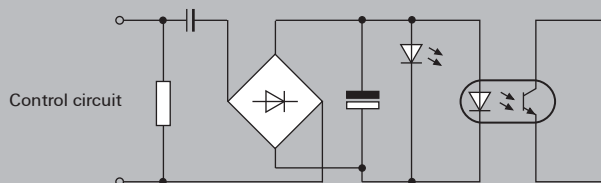
DC input



AC/DC input



AC input



*) Refer to page W.36 in the Glossary for a detailed explanation of this term.

Load circuit

The output circuit (load circuit)

As a rule, an operating voltage range is stated for the rated switching voltage of opto modules and solid-state relays (for example 5 ... 48 V DC); it is not permitted to exceed or fall below this value.

The same applies to continuous current. Exceeding this value too often can result in premature wear-out and destruction of the opto modules semiconductor.

As a direct correlation exists between the current and ambient temperature a *derating curve**) is provided for all opto modules and solid-state relays.

Overvoltages are shunted by protective devices such as diodes or varistors.

To prevent damage caused by current spikes (for example starting or off pulses) some modules are equipped with a *power boost**) which is capable of carrying higher levels of current than the maximum stated for a short period of time.

It is possible to connect AC or DC loads subject to the output circuit having corresponding amplifier semiconductors.

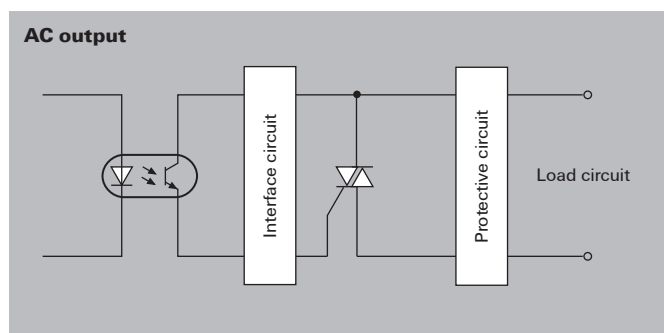
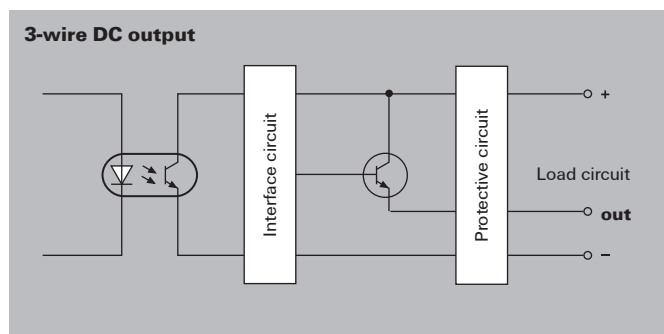
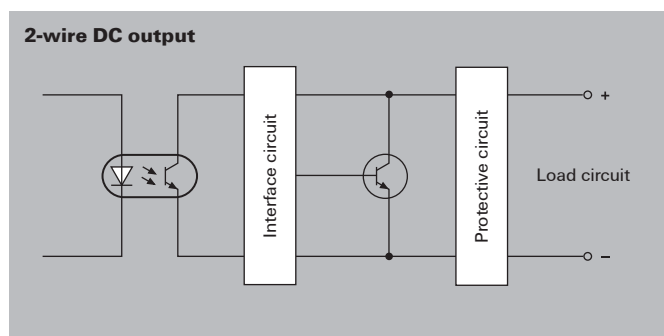
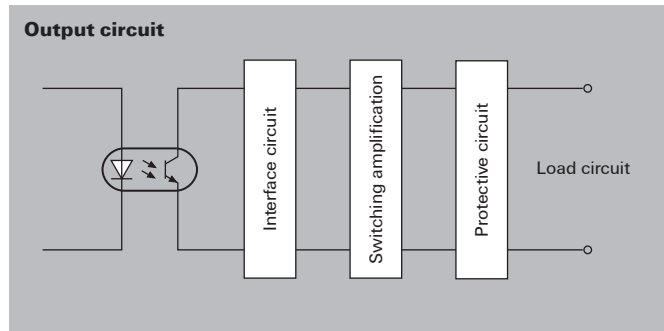
DC output:

With a 2-pole DC output the connection terminals are to be considered in the same manner as with a conventional switch. All that is required is that care is taken to observe the predetermined polarity.

With a 3-pole DC connection an auxiliary voltage assists the output circuit to control the amplifying transistor more precisely. Several applications also require this auxiliary voltage for short-circuit protection in the interface or protective circuitry.

AC output:

To activate AC switching and control devices a semiconductor is connected on the load side of the opto module component to switch the AC voltage (TRIAC or thyristor).



* Refer to page W.36 in the Glossary for a detailed explanation of this term.

Switching amplification

The phototransistor of the opto module has a low current and voltage rating. As a consequence, an additional semiconductor element is accessed for larger output loads that is capable of switching the corresponding rated switching voltages and rated switching currents.

Bipolar Transistor (DC)

Used for low currents (0.5 A).

The bipolar transistor has short response times, which makes high switching frequencies possible as a result.

MOSFET (DC)

Used for high load currents (up to 10 A).

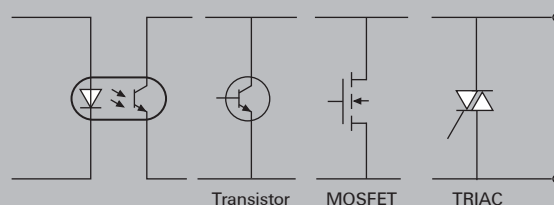
The low contact resistance of the MOSFET create only very small leakage currents ($< 10 \mu\text{A}$) with low power loss.

TRIAC (AC)

A TRIAC combines the functional principle of antiparallel connected thyristors in a single component.

The mode of function of a thyristor is comparable with that of a one-way diode. Therefore, an opposing parallel circuit configuration consisting of two thyristors is used for AC currents.

Switching amplification



Switching diverse loads

The different types of loads resulting from the possible applications (resistive, inductive, capacitive loads) represent a particular challenge for the load circuit arrangements of opto modules and solid-state relays. With reference to the planned application, one should always be aware of what effects the loads will have on the modules and how the corresponding protective devices have to be designed.

Generally speaking, it must be ensured that the power loss at the amplifier semiconductor does not exceed the permitted limit for any length of time. This would lead to overheating and finally to the destruction of the component.

Switching resistive loads

Due to the fact that in resistive loads the amperage in the load circuit and the voltage across the amplifier semiconductor are inversely proportional to one another these do not generally pose a problem. It is sufficient to adhere to the maximum current and voltage ratings of the modules.

Switching glow lamps represents a special case. It is possible that when being switched on that overcurrents 10 to 20 times the operating current can occur due to the low cold resistance.

Therefore, the components must be designed to cope with these possible overloads situations which correspond to the effect of capacitive loads.

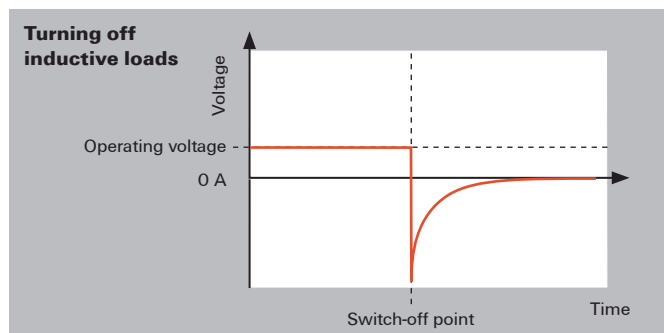
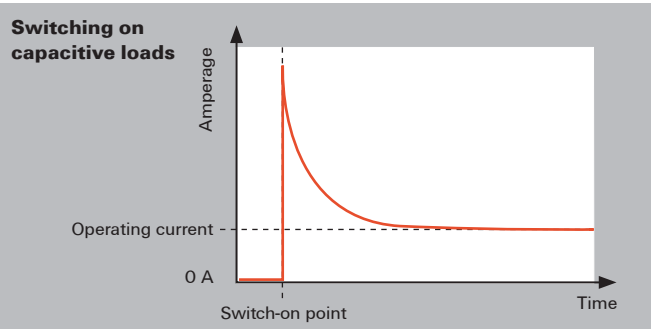
Switching capacitive loads

Capacitive loads occur if there is a capacitor in the load circuit. The effect is similar to a short-circuit at the point of activation and results in a high inrush current. If this current is not limited it can lead to the destruction of the amplifier semiconductor.

Switching inductive loads

Problems can arise with inductive loads when they are being switched off, in particular when coils are used in the load circuit. The flow of current in the coil builds up a magnetic field that suddenly collapses and creates a high induction voltage.

This voltage spike has to be short-circuited via a diode connected in parallel (free-wheeling diode). However, the time required leads to delayed release.



Protective measures

The construction of the opto module enables fast and sensitive switching, however, the component is also more prone to interference. For this reason, all Weidmüller opto modules and solid-state relays are equipped with a variety of measures to protect against overloading and interference pulses.

Free-wheeling diodes (DC)

Free-wheeling diodes are used primarily to protect against overvoltages, which occur through self-induction when switching off inductive DC loads (electric motors, relay coils). Voltage spikes are limited to the equivalent value of the diode forward voltage and excess voltage is discharged via the diode. However, this leads to a delay in the voltage drop and as such also delays the switching operation.

Zener diode / suppressor diode (DC)

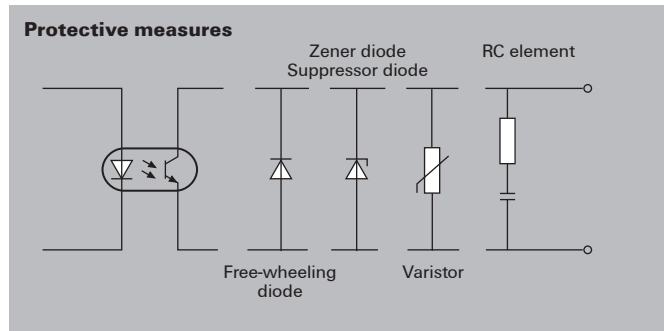
These function as normal diodes in the forward conducting direction. In the blocking direction they become low resistant at a certain voltage (breakdown voltage). High levels of overvoltages can lead to the destruction of the zener diode / suppressor diode.

Varistor (AC/DC)

The functional principle of the varistor is also based on a breakdown voltage, but with faster reaction times. This allows higher levels of energy to be shunted, however, these lead to the component aging. This in turn reduces the breakdown voltage over time and increases the leakage current.

RC-element (AC)

The RC element compensates voltage spikes by means of a capacitor. Due to the charging and discharging characteristics interference pulses are filtered out when the voltage is rising and not first when overload is reached. For this reason, RC elements are used to protect against interference pulses and exclude faulty switching operations.



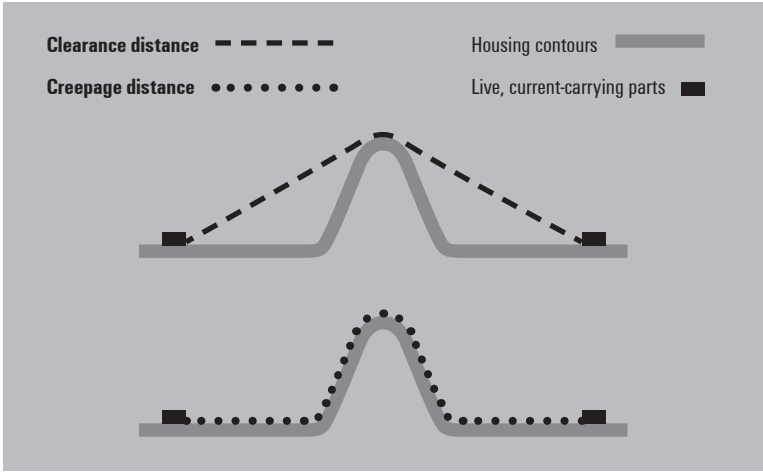
Glossary: Solid-state relays

A

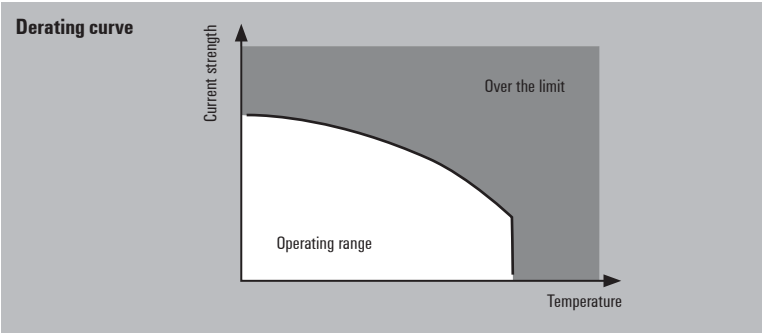
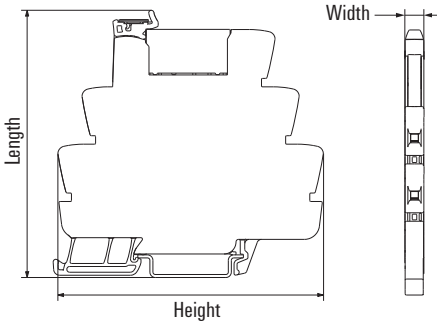
AC	Refers both to alternating values (such as voltage or current) as well as to those devices and variables which reference these devices. Specifications are valid for 50 Hz, unless otherwise indicated.
Approvals and testing marks	Testing approvals are independent confirmation from governmental or private registration services and testing facilities. They certify that the product complies with the relevant regulations and maintain the specified product characteristics. Note: The ordering scheme gives you the choice of many variations, but not all variations are established as standard types (order numbers). Therefore, they may not be included in the list of approved relays. Technical specifications and list of approved types are available on request. CSA Canadian Standards Association, Canada GL Germanischer Lloyd, Germany TÜV Technical Monitoring Association, Germany UL Underwriters Laboratories, Inc., USA; UR Component Recognition Mark for the United States cUR UL Component Recognition Mark for Canada cURus UL Component Recognition Mark for the United States and Canada cULus UL Component Listing Mark for the United States and Canada VDE VDE testing location, Germany (advisory reports with production monitoring)

C

CE	Abbreviation for Communauté Européenne (the European Community). The CE marking is a way for the manufacturer to confirm that their product complies with the relevant EC directives and the "essential requirements" contained therein. The EMC Directive 2004/108/EC and Low Voltage Directive 2006/95/EC are currently binding.
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Clearance and creepage distances	Clearance and creepage distances are critical factors which influence the insulation capability of electrical components. The creepage distance denotes the minimum clearance that two live parts along a surface must have in order to prohibit a flow of current across the insulating material at the specified operating voltage. In addition to the operating voltage, the choice of insulating material (material group) and the protective measures to counteract pollution (pollution severity) affect the creepage distance. The clearance distance denotes the minimum direct clearance (through the air) that two live parts must have to one another in order to prohibit a charge passing through the air (an arc). The expected surge voltage (rated impulse voltage) forms the basis for calculating the distances. The surge protection category and pollution severity are further factors that influence dimensional design considerations. 
Continuous current	The current can be continuously conducted without exceeding the overheating values under defined conditions.
Cut-in (switch-on) voltage	The voltage level at which an opto module or solid-state relay is conductive.

D

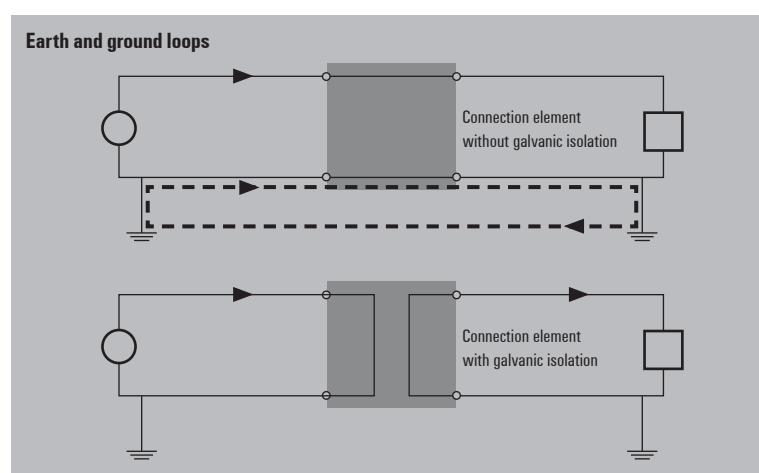
DC	Refers to the electrical variables such as voltage or current (DC, DC voltage) that are not dependent on time.
Derating / derating curve	The continuous current is reduced at higher ambient temperatures; this is shown using a derating curve (a load reduction curve). Current flow generates heat, which increases as the current increases. Electrical components have an upper temperature limit which limits their ability to function. The temperature influencing the components is a combination of the ambient temperature and the heat generated by the current. So to ensure that the limit temperature is not exceeded, the current must be reduced when the overall temperature rises. The derating curve depicts this relationship between the prevailing temperature and the resulting maximum amperage with regard to the limit temperature. 
Dimensions	Dimensions in millimetres. 
DIN rail	Unless otherwise noted, Weidmüller's products are built and tested for mounting on DIN rail (rails according to TH35-7.5 / EN60175). Other installations (e.g. TH35-15) may function but have not been tested or approved.
Dropout voltage	The voltage level at which an opto module or solid-state relay blocks itself.

W

E

Earth and ground loops

Denote the connection of two potentials via their earth or ground connection. A potential difference between the earth or ground connection of two devices (for example, a sensor and controller) that are directly wired to one another causes current flow via the earth of the shared housing. These interference currents can lead to different problems, for example in the acquisition of measurement signals or when controlling actuators. When transmitting switching signals or measurement signals using a device with electrical isolation between the control and load circuits, it is important that a closed circuit via the earth or ground connection can never occur – so that no interference currents are generated.



F

Flammability according to UL

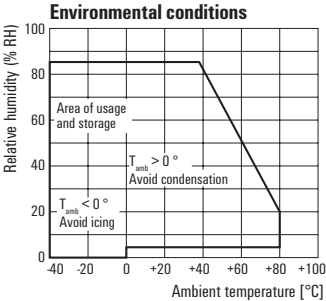
Indicates the flammability class according to the specification from UL 94 (Underwriters Laboratories, Inc., USA). Flammability tests according to UL 94: for testing plastic materials and classifying the propagation/extinction characteristics when the material burns. The UL 94 flammability classes which are relevant to the relay are V-0, V-1, V-2 and HB.

G

Galvanic isolation

Potential-free isolation between electrical components. Electrical (or galvanic) isolation means that no charge can flow from one circuit to another. There is no conductive electrical connection between the circuits. The circuits can nevertheless exchange electrical power or signals via magnetic fields, infrared radiation or by charge displacements.

H

Humidity / condensation	Standard conditions: annual average relative humidity > 75 % at an ambient temperature of 21 °C, in 30 days, evenly distributed throughout the year, and 95 % at ambient temperature w of 25 °C. On other days: occasionally 85 % at 23 °C. No icing or condensation is allowed - affects storage and/or operation. When storing or operating under other conditions, you must takes steps to avoid temperature changes which could cause icing or condensation. Operating and storage should be within the limits specified in the graphic. 
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I

Impulse withstand voltage	The highest withstand voltage of a specified shape and polarity that does not lead to an insulation breakthrough or flash-over, under the specific conditions.
Inductive loads	Refer to load category
Input frequency	The number of switching operations that occur in a specific unit of time. The maximum switching frequency for medium loads may be higher than the value specified for the nominal load, as long as the switching of the load does not result in an increased temperature.
Insulating material group	According to their CTI (comparative tracking index) values, the insulating materials are categorised into one of the following four groups: Group I 600 CTI Group II 400 CTI < 600 Group IIIa 175 CTI < 400 Group IIIb 100 CTI < 175 The figures for the comparative tracking index, according to IEC 60112 (DIN IEC 60112 / DIN VDE 0303-1) are determined using special samples prepared for this purpose with test solution A.
Insulation according to EN 50178	Specifications for insulation coordination with: - Type of insulation - Nominal voltage of the supply system - Pollution severity level - Impulse withstand voltage - Surge voltage category

W

L

Leakage current	The current on the load side of an opto module or solid-state relay that flows towards the output stage while in a blocked state.
Load category (solid-state relay)	Classification of the load of a solid state relay, in accordance with EN 62314 LC A – resistive loads or minimally inductive loads LC B – motor loads LC C – electrical discharge lamps LC D – incandescent filament lamps LC E – transformers LC F – capacitive loads

M

Max. switching current	The max. switching current indicates the maximum level of current that can be switched.
Max. switching power	The switching capacity is calculated as the product of switching voltage and switching current (in VA for AC / in W for DC).
Mounting distance	Distance between two adjacent components in parallel, uni-directional positioning; or the proximity to other electrical components. Because of the insulation requirements, you may need to increase the minimum distance between the components or select a different positioning. These values refer to components in "single-file arrangement", unless otherwise indicated. Also relevant for this definition: • density of assembly: assembled with minimum mounting clearances; this minimum distance is determined by the insulation requirements at 230 V AC and/or mechanical requirements for the installation(e.g. use of sockets), • individual installation: components are mounted with gaps so that there are no thermal influences from adjacent components.
Mounting position	Mechanical and electronic relays can usually be installed in any position when there are no qualifying limitations. To ensure the proper current flow and heat dissipation, the connections must be properly contacted and the cross-sections must be adequate. Several factors must be taken into consideration when positioning: including the insulation requirements, heat dissipation and the possible mutual magnetic influence.

N

Nominal control current	Input current that is required, under specific conditions, to switch the output.
Nominal switching voltage	Voltage at the output - before the closing or opening of the contact.
Nominal torque	The specified value for the torque of the screws (screw connection) must not be exceeded.

O

Operating temperature	Permissible ambient temperature – relative to a specific relative humidity – at which a product should be operated at nominal load.
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W

P

Packing unit	Indicates the smallest amount (a pack, for example) or the quantity per carton.
Plug-in cycles	Sockets and accessories are designed for 10 insertion cycles without electrical load – unless otherwise specified.
Pollution severity level	Pollution (contamination) includes any foreign material – whether it is solid, liquid or gaseous (ionised gas) – which is capable of influencing the surface resistance of the insulating material. The standard defines four degrees of pollution. Their numbering and classification is based on the quantity of the contaminant or the frequency with which the contaminant reduces the dielectric strength and/or surface resistance. Pollution degree 1: - there is no contamination or only dry occurrences of non-conductive pollution. The pollution has no influence. Pollution degree 2: - there is only non-conductive pollution. Temporary occurrences of conductivity caused by condensation may also occur. Pollution degree 3: - conductive pollution or dry, non-conductive pollution that can become conductive due to condensation is likely to occur. Pollution degree 4: - the contamination leads to continual conductivity which can be caused by contaminants such as conductive dust, rain or snow. Note: Pollution degree 3 is typical for industrial environments and similar settings; pollution degree 2 is typical for households or similar.
Power rating	The nominal value of the power that is converted when the nominal control voltage is applied.

W

Protection degree - (IEC 60529), IP	The degree of protection afforded by an enclosure is shown using the IP Code (IP = International Protection). This information is equally relevant for industrial relays and accessories. For the purposes of “component” relays (such as PCB relays), refer to the RT protection degree. A two-digit number is used to indicate the protection provided against touch contact and foreign bodies (the first number) and against humidity (the second number). Protection levels for touch contact and foreign bodies (the first digit): the first digit indicates the degree of protection inside the housing against ingress of solid foreign objects and against any human access to hazardous parts. 0: no protection 1: protection for large body parts with a diameter > 50 mm 2: finger protection (diameter 12 mm) 3: tools and wires (diameter > 2.5 mm) 4: tools and wires (diameter > 1 mm) 5: full protection against touch contact 6: full protection against touch contact Degree of water protection (the second digit) The second digit indicates the degree of protection provided against the ingress of water into the housing: 0: no protection 1: protection against vertically falling drops of water 2: protection against water droplets falling diagonally (up to 15°) 3: protection against water spray that falls at an angle up to 60° from vertical 4: protection against splashed water from all sides 5: protection against water jets 6: protection against powerful jets of water (flooding) 7: protection against sporadic submersion 8: protection against constant submersion
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R

Rated control voltage	The nominal value of the sparkover (response) voltage for the solid-state relay
Rated voltage (Isolation)	Voltage level at which the insulation specifications are measured – this is the basis for sizing the creepage distance.
ROHS Directive 2002/95/EC	RoHS stands for the “Restriction of (the use of certain) Hazardous Substances” According to the EU Directive 2002/95/EC from 01.07.2006, all EU member nations must forbid the use of hazardous substances which damage human health and the environment (including mercury (Hg), cadmium (Cd), lead (Pb), hexavalent chrome (Cr6), polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)) in new electrical and electronic devices. The term “compliant” means that the entire product group meets the requirements of the RoHS Directive. The maximum weight percentage in homogeneous materials is below the limits specified in the directive: 0.1 % for lead, hexavalent chrome, mercury, PBB and PBDE; and below 0.01 % for cadmium, or qualifies for an exemption in accordance with the annex to the RoHS Directive .

W

S

Schmitt trigger	Strictly speaking, switching voltages for digital control follow an analogue pattern (no changeover from 0 to 1 between maximum and minimum voltages). This can lead to inaccuracies in switching results, above all when signals are being transmitted rapidly. In this case, the Schmitt trigger functions as a threshold switch. If the threshold voltage set in the Schmitt Trigger is exceeded, the output assumes the maximum possible output voltage (logic 1). Otherwise it is the minimum possible output voltage (logic 0). The Schmitt trigger is normally designed with a hysteresis. The threshold voltage set for activating is higher than that for deactivating. That prevents small irregularities from triggering a switching operation.
Self-heating	The heating up of an operational component based on the power loss from the relay coil and the switching contacts. For semiconductors (such as a transistor output), the increase in heat is caused by power loss.
Short-circuit-proof	Shuts off the output stage of a solid-state relay when there is a short circuit, in order to prevent the output circuit from being damaged.
Solid-state relay	Semiconductor relay that uses an electronic component as the switching mechanism, such as a transistor, thyristor or Triac. Semiconductor relays function with no wearing parts and have a high switching frequency compared with normal relays. But compared to normal relays they have a higher power loss in the load current circuit. An integrated optocoupler is used for galvanic isolation.
Status indicator	The status LED display on the input control circuit can differ from the state of the contact circuit in the following cases: • when there are welded-together or broken switching elements, • when there is interference or residual voltages on the signal lines. A reduction in light intensity may result when the ambient temperatures are greater than 50 °C.
Storage temperature	The permitted ambient temperature, related to a specific relative humidity level, for which the product should be stored while in a current-free state.

W

Surge voltage category	The overvoltage category of a circuit or an electrical system is numbered conventionally (from I to IV) and is based on limiting the assumed surge voltage values that can occur in a circuit (or electrical system with different mains voltages). The assignment to a particular overvoltage category is dependent on the measures which are used to influence (reduce) the surge voltages. Overvoltage category I • Devices that are intended to be connected to the permanent electrical building installation. The measures for limiting transient surge voltages to the proper level are taken outside of the device. The protective mechanisms can either be in the permanent installation or between the permanent installation and the device. Overvoltage category II • Devices that are intended to be connected to the permanent electrical building installation (such as household appliances or portable tools). Overvoltage category III • Devices that are a part of the permanent installation and other devices where a higher degree of availability is required. This includes the distributor panels, power switches, distribution systems (including cables, busbars, distributor boxes, switches and outlets) that are part of the permanent installation, devices intended for industrial use, and devices that are continually connected to the permanent installation (such as stationary motors).
Switch-off delay	The usual time interval from switching off the control voltage of a conducting solid-state relay to the time when the output circuit is blocked.
Switch-on delay	The usual time interval from switching on the control voltage of a closed solid-state relay to the time when the output circuit is conductive.

T

Transients	Transients are short-term current or voltage peaks caused by interferences in the mains supply grid or by electromagnetic radiation. On the control side of the optocoupler these can trigger unintended switching operations or, in extreme cases, cause the destruction of the component. In an AC-driven load circuit, transients can lead to the maximum permissible forward voltage being exceeded, which in turn can activate the thyristor or TRIAC. As these operate at quite high switching speeds, even very short pulses can suffice to falsely trigger a switching operation.
Type of insulation	Quality of the insulation system, depending on the design and application conditions: • Functional insulation: insulation between live components – necessary so the relay functions properly. • Basic insulation: insulation of live parts to provide basic protection against electrical shock. • Doubled insulation: consisting of a base insulation and additional insulation. • Reinforced insulation: a single “enhanced” insulation of active components, which ensures the same protection against electric shock as doubled insulation. The doubled insulation is composed of a base and an additional insulation; the extra insulation protects against electric shock if the basic insulation fails.

V

Voltage drop	The reduction of voltage via the opto module, when measured under full load
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W

Withstand test voltage	The voltage applied to a device under specific test conditions which causes no breakthrough or flash-over of the test piece.
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RSM 4R 24VDC LP GEM.-	1112361001	B.57
RSM 4RS 115VUC LP	1114561001	B.57
RSM 4RS 230VAC LP	1114661001	B.57
RSM 4RS 24VDC LP GEM.-	1113361001	B.57
RSM 4RS 24VDC LP GEM.+	1113461001	B.57
RSM 4RS 24VUC LP	1173461001	B.57
RSM 8R 24VDC LP GEM.-	1107761001	B.57
RSM 8RS 115VUC LP	1114661001	B.57
RSM 8RS 230VAC LP	1114961001	B.57
RSM 8RS 24VDC GEM.+	1113661001	B.57
RSM 8RS 24VDC LP GEM.-	1113561001	B.57
RSM 8RS 24VUC LP	1173561001	B.57
RSD 30/DV 5-24V CC/SA	9443110000	B.58
RSD 30/DV 5-24V CC/SC	9443100000	B.58
RSO31-QAC24/F	9430320000	B.59
RSO31-0DC24/F	9430820000	B.59
RSS112005 05VDC-REL1U	1174540000	A.33
RSS112012 12VDC-REL1U	1220670000	A.33
RSS112024 24VDC-REL1U	4061590000	A.33
RSS112060 60VDC-REL1U	4061600000	A.33
RSS113005 05VDC-REL1U	4061580000	A.33
RSS113012 12VDC-REL1U	4061610000	A.33
RSS113024 24VDC-REL1U	4060120000	A.33
RSS113060 60VDC-REL1U	4061630000	A.33
RT314024 24VDC 1CO	4058480000	B.57
RT314024 24VDC 1CO	8630780000	B.57
RT314110 110VDC 1CO	4058500000	B.57
RT314110 110VDC 1CO	8630770000	B.57
RT315048 48Vdc-Rel1U	4058740000	B.57
S		
SAI-Y-5S PARA 2M12	1783430000	E.7
SAIL-M12GM12G-4-0.3U	9457150000	E.7
SAIL-M12GM12G-4-0.6U	9457160000	E.7
SAIL-M12GM12G-4-1.5U	9457190000	E.7
SAIL-M12GM12G-5-0.3U	9457340030	E.7
SAIL-M12GM12G-5-0.6U	9457340060	E.7
SAIL-M12GM12G-5-1.5U	9457340150	E.7
SCM-I 2CO	8869440000	B.19
SCM-I 2CO P	8876220000	B.19
SCM-I 3CO N	8869410000	B.22
SCM-I 4CO	8869420000	B.25
SCM-I 4CO N	8869390000	B.25
SCM-I 4CO P	8869430000	B.25
SCM-I CLIP M	8869450000	B.25
SCM-I CLIP N	8869450000	B.22
SCM-I CLIP P	8869450000	B.19
SCM-I CLIP P	8869440000	B.19
SCM-I CLIP P	8869460000	B.25
SCM-I MARK	8869460000	B.22
SCM-I MARK	8869460000	B.19
SCM-I QV P	8870850000	B.25
SCM-I QV P	8870850000	B.19
SCM-I QV S	1132080000	B.25
SCM-I QV S	1132080000	B.22
SCM-I QV S	1132080000	B.19
Screwty-M12-DM	1900001000	E.7
SD 0,5x3,0x80	9008320000	C.6
SD 0,6x3,5x100	9008330000	B.42
SD 0,6x3,5x100	9008330000	B.38
SD 0,6x3,5x100	9008330000	A.68
SD 0,6x3,5x100	9008330000	A.57
SD 0,6x3,5x100	9008330000	A.46
SD 0,6x3,5x100	9008330000	A.35
SD TO 0,6X3,0	1323880000	A.35
SDK PHO	9008470000	A.35
SPZ P22	9008540000	C.6
SPW 3CO	8697680000	B.42
SRC-I 2CO	8869490000	B.12
SRC-I 2CO	8869490000	B.8
SRC-I 2CO N	8869480000	B.12
SRC-I 2CO P	8869500000	B.12
SRC-I 2CO P	8869500000	B.8
SRC-I CLIP HM RCI	1132090000	B.12
SRC-I CLIP HM RCI	1132090000	B.8
SRC-I CLIP HP	8869510000	B.12
SRC-I CLIP HP	8869510000	B.8
SRC-I MARK	8869530000	B.12
SRC-I MARK	8869530000	B.8
SRC-I QV P	8870840000	B.12
SRC-I QV P	8870840000	B.8
SRC-I QV S	1132070000	B.12
SRC-I QV S	1132070000	B.8
SRD-I 2CO	8869360000	B.38

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SSR 24VDC/0-24VDC 3,5A	1132310000	A.34
SSR 24VDC/max.240VAC 1A	1132290000	A.34
SSS RELAIS 24V/230V 1AAC	4061210000	A.34
SSS RELAIS 24V/24V 0,1ADC	4061180000	A.34
SSS RELAIS 24V/24V 2ADC	4061190000	A.34
SSS RELAIS 5V/230V 1AAC	1132260000	A.34
SSS RELAIS 5V/24V 0,1ADC	4064320000	A.34
SSS RELAIS 5V/24V 2ADC	4064310000	A.34
SSS RELAIS 60V/230V 1AAC	4061220000	A.34
SSS RELAIS 60V/24V 0,1ADC	4061230000	A.34
SSS RELAIS 60V/24V 2ADC	4061200000	A.34
T		
TIMER BTDS-S	8647660000	D.7
TIMER BTDS-Z	8647670000	D.7
TIMER BTM-S	8647700000	D.5
TIMER BTM-Z	8647710000	D.5
TIMER BTMF-S	8647680000	D.6
TIMER BTMF-Z	8647690000	D.6
TIMER BTR-S	8647720000	D.6
TIMER BTR-Z	8647730000	D.6
TIMER BTIT-S	8647740000	D.7
TOP 110VDC/230VAC 0,1A	8951200000	A.43
TOP 110VDC/48VDC 0,1A	8950800000	A.39
TOP 110VDC/48VDC 0,5A	8951000000	A.41
TOP 120VAC/230VAC 0,1A	8951280000	A.43
TOP 120VAC/48VDC 0,1A	8950880000	A.39
TOP 120VAC/48VDC 0,5A	8951080000	A.41
TOP 120VAC/48VDC 0,5A RC	1188830000	A.44
TOP 12VDC/230VAC 0,1A	8951170000	A.43
TOP 12VDC/48VDC 0,1A	8950770000	A.39
TOP 12VDC/48VDC 0,5A	8950970000	A.41
TOP 220VDC/230VAC 0,1A	8951210000	A.43
TOP 220VDC/48VDC 0,1A	8950810000	A.39
TOP 220VDC/48VDC 0,5A	8951010000	A.41
TOP 230VAC/230VAC 0,1A	8951290000	A.43
TOP 230VAC/48VDC 0,1A	8950890000	A.39
TOP 230VAC/48VDC 0,5A	8951090000	A.41
TOP 230VAC/48VDC 0,5A RC	1189260000	A.44
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TOP 24VAC/48VDC 0,5A	8951060000	A.41
TOP 24VDC/230VAC 0,1A	8951180000	A.43
TOP 24VDC/24VDC 4A	1254880000	A.45
TOP 24VDC/48VDC 0,1A	8950780000	A.39
TOP 24VDC/48VDC 0,5A	8950980000	A.41
TOP 48-60VAC/230VAC 0,1A	8951270000	A.43
TOP 48-60VAC/48VDC 0,1A	8950870000	A.39
TOP 48-60VAC/48VDC 0,5A	8951070000	A.41
TOP 48-60VDC/230VAC 0,1A	8951190000	A.43
TOP 48-60VDC/48VDC 0,1A	8950790000	A.39
TOP 48-60VDC/48VDC 0,5A	8950990000	A.41
TOP 5VDC/230VAC 0,1A	8951160000	A.43
TOP 5VDC/48VDC 0,1A	8950760000	A.39
TOP 5VDC/48VDC 0,5A	8950960000	A.41
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TOS 110VDC/48VDC 0,1A	8950740000	A.39
TOS 110VDC/48VDC 0,5A	8950940000	A.41
TOS 120VAC RC 230VAC1A	1127480000	A.27
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TOS 120VAC RC 48VDC0,1A	1127000000	A.19
TOS 120VAC/230VAC 0,1A	8951240000	A.43
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TOS 120VAC/48VDC 0,5A	8951040000	A.41
TOS 120VAC/48VDC 0,5A RC	1180290000	A.44
TOS 120VUC 230VAC1A	1127450000	A.27
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TOS 12VDC 230VAC1A	1127400000	A.27
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TOS 12VDC/230VAC 0,1A	8951110000	A.43
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TOS 220VDC/230VAC 0,1A	8951150000	A.43
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TOS 230VAC/230VAC 0,1A	8951250000	A.43
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TOS 230VUC 48VDC0,1A	1126990000	A.19
TOS 24-230VDC 230VAC1A	1127500000	A.28
TOS 24-230VUC 230VAC1A	1127690000	A.31
TOS 24-230VDC 24VDC2A	1127250000	A.24
TOS 24-230VUC 24VDC0,5A	1127640000	A.30
TOS 24-230VDC 48VDC0,1A	1127020000	A.20
TOS 24-230VUC EMPTY	1127730000	A.32
TOS 24VAC/230VAC 0,1A	8951220000	A.43
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TRS 24-230VUC 1C0 EMPTY	1123330000	A.32
TRS 24-230VUC 2C0	1123580000	A.16
TRS 24-230VUC 2C0 AU	1123820000	A.17
TRS 24-230VUC 2C0 EMPTY	1124070000	A.32
TRS 24VDC 1C0	1122770000	A.7
TRS 24VDC 1C0 AU	1123000000	A.9
TRS 24VDC 1C0 EMPTY	1123240000	A.32
TRS 24VDC 2C0	1123490000	A.13
TRS 24VDC 2C0 AU	1123730000	A.15
TRS 24VDC 2C0 EMPTY	1123980000	A.32
TRS 24VUC 1C0	1122780000	A.7
TRS 24VUC 1C0 AU	1123010000	A.9
TRS 24VUC 1C0 EMPTY	1123250000	A.32
TRS 24VUC 2C0	1123500000	A.13
TRS 24VUC 2C0 AU	1123740000	A.15
TRS 24VUC 2C0 EMPTY	1123990000	A.32
TRS 48VUC 1C0	1122790000	A.7
TRS 48VUC 1C0 AU	1123020000	A.9
TRS 48VUC 1C0 EMPTY	1123270000	A.32
TRS 48VUC 2C0	1123510000	A.13
TRS 48VUC 2C0 AU	1123750000	A.15
TRS 48VUC 2C0 EMPTY	1124000000	A.32
TRS 5VDC 1C0	1122740000	A.7
TRS 5VDC 1C0 AU	1122980000	A.9
TRS 5VDC 1C0 EMPTY	1123220000	A.32
TRS 5VDC 2C0	1123470000	A.13
TRS 5VDC 2C0 AU	1123710000	A.15
TRS 5VDC 2C0 EMPTY	1123950000	A.32
TRS 60VUC 1C0	1122800000	A.7
TRS 60VUC 1C0 AU	1123030000	A.9
TRS 60VUC 1C0 EMPTY	1123280000	A.32
TRS 60VUC 2C0	1123520000	A.13
TRS 60VUC 2C0 AU	1123770000	A.15
TRS 60VUC 2C0 EMPTY	1124010000	A.32
TRZ 120VAC RC 1C0	1122940000	A.7
TRZ 120VAC RC 1C0 AU	1123190000	A.9
TRZ 120VAC RC 1C0 EMPTY	1123430000	A.32
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TRZ 120VUC 1C0 EMPTY	1123410000	A.32
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TRZ 12VDC 1C0 EMPTY	1123350000	A.32
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TRZ 24VUC 2C0 AU	1123870000	A.15
TRZ 24VUC 2C0 EMPTY	1124110000	A.32
TRZ 48VUC 1C0	1122900000	A.7
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TRZ 48VUC 1C0 EMPTY	1123390000	A.32
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TRZ 48VUC 2C0 AU	1123880000	A.15
TRZ 48VUC 2C0 EMPTY	1124120000	A.32
TRZ 5VDC 1C0	1122860000	A.7
TRZ 5VDC 1C0 AU	1123100000	A.9
TRZ 5VDC 1C0 EMPTY	1123340000	A.32
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Z0V 4N/10 GE	1758260000	A.57
Z0V 4N/10 GE	1758260000	A.46
Z0V 4N/10 RT	1794040000	A.68
Z0V 4N/10 RT	1794040000	A.57
Z0V 4N/10 RT	1794040000	A.46
Z0V 4N/10 SW	1794060000	A.68
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Z0V 4N/10 SW	1794060000	A.46
Z0V 4N/2 BL	1793960000	A.68
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Z0V 4N/20 BL	1909100000	A.68
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Z0V 4N/4 RT	1794010000	A.57
Z0V 4N/4 RT	1794010000	A.46
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0110000000

0114660000	EGT6 EG2/EN	E.9
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0126360000	EGT1 EG2/EN SCHALT.1X1U	E.9
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1100220000	RS 30 24VDC LD BL/SL 1U	B.49
1100260000	RS 30 24VDC BL/SL 1U	B.49
1100360000	RS 30 24VDC BL/SL 1U	B.49
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1100860000	RS 30 230VAC BL/SL 1U	B.49
1100911001	RS 30 24VDC LD LP 1R	B.49
1100921001	RS 30 24VDC LD LP 1R	B.49
1100961001	RS 30 24VDC LP 1R	B.49
1101611001	RS 30 24VDC LD LP 1A	B.49
1101621001	RS 30 24VDC LD LP 1A	B.49
1101661001	RS 30 24VDC LP 1A	B.49
1101711001	RS 30 24VUC LD LP 1A	B.49
1101721001	RS 30 24VUC LD LP 1A	B.49
1102111001	RS 30 115VAC LD LP 1A	B.49
1102121001	RS 30 115VAC LD LP 1A	B.49
1102211001	RS 30 230VAC LD LP 1A	B.49
1102221001	RS 30 230VAC LD LP 1A	B.49
1102261001	RS 30 230VAC LP 1A	B.49
1107761001	RSM 8R 24VDC LP GEM.-	B.57
1107861001	RSM 16R 24VDC LP GEM.-	B.57

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1112361001	RSM 4R 24VDC LP GEM.-	B.57
1113361001	RSM 4RS 24VDC LP GEM.-	B.57
1113461001	RSM 4RS 24VDC LP GEM.+	B.57
1113561001	RSM 8RS 24VDC LP GEM.-	B.57
1113661001	RSM 8RS 24VDC GEM.+	B.57
1113761001	RSM 16RS 24VDC GEM.-	B.57
1113861001	RSM 16RS 24VDC LP GEM.+	B.57
1114561001	RSM 4RS 115VUC LP	B.57
1114661001	RSM 8RS 115VUC LP	B.57
1114761001	RSM 16RS 115VUC LP	B.57
1114861001	RSM 4RS 230VAC LP	B.57
1114961001	RSM 8RS 230VAC LP	B.57
1115061001	RSM 16RS 230VAC LP	B.57
1115860000	EGS EG2 EN 230VAC	E.9

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1122661001	RS 32 24-48VUC LD LP 2U	B.54
1122740000	TRS 5VDC 1CO	A.7
1122750000	TRS 12VDC 1CO	A.7
1122761001	RS 32 115-230VUC LD 2U	B.54
1122770000	TRS 24VDC 1CO	A.7
1122780000	TRS 24VUC 1CO	A.7
1122790000	TRS 48VUC 1CO	A.7
1122800000	TRS 60VUC 1CO	A.7
1122810000	TRS 120VUC 1CO	A.7
1122820000	TRS 230VUC 1CO	A.7

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1122830000	TRS 120VAC RC 1CO	A.7
1122840000	TRS 230VAC RC 1CO	A.7
1122850000	TRS 24-230VUC 1CO	A.10
1122860000	TRZ 5VDC 1CO	A.7
1122870000	TRZ 12VDC 1CO	A.7
1122880000	TRZ 24VDC 1CO	A.7
1122890000	TRZ 24VUC 1CO	A.7
1122900000	TRZ 48VUC 1CO	A.7
1122910000	TRZ 60VUC 1CO	A.7
1122920000	TRZ 120VUC 1CO	A.7
1122930000	TRZ 230VUC 1CO	A.7
1122940000	TRZ 120VAC RC 1CO	A.7
1122950000	TRZ 230VAC RC 1CO	A.7
1122970000	TRZ 24-230VUC 1CO	A.10
1122980000	TRS 5VDC 1CO AU	A.9
1122990000	TRS 12VDC 1CO AU	A.9
1123000000	TRS 24VDC 1CO AU	A.9
1123010000	TRS 24VUC 1CO AU	A.9
1123020000	TRS 48VUC 1CO AU	A.9
1123030000	TRS 60VUC 1CO AU	A.9
1123040000	TRS 120VUC 1CO AU	A.9
1123050000	TRS 230VUC 1CO AU	A.9
1123070000	TRS 120VAC RC 1CO AU	A.9
1123080000	TRS 230VAC RC 1CO AU	A.9
1123090000	TRS 24-230VUC 1CO AU	A.11
1123100000	TRZ 5VDC 1CO AU	A.9
1123110000	TRZ 12VDC 1CO AU	A.9
1123120000	TRZ 24VDC 1CO AU	A.9
1123130000	TRZ 24VUC 1CO AU	A.9
1123140000	TRZ 48VUC 1CO AU	A.9
1123150000	TRZ 60VUC 1CO AU	A.9
1123170000	TRZ 120VUC 1CO AU	A.9
1123180000	TRZ 230VUC 1CO AU	A.9
1123190000	TRZ 120VAC RC 1CO AU	A.9
1123200000	TRZ 230VAC RC 1CO AU	A.9
1123210000	TRZ 24-230VUC 1CO AU	A.11
1123220000	TRS 5VDC 1CO EMPTY	A.32
1123230000	TRS 12VDC 1CO EMPTY	A.32
1123240000	TRS 24VDC 1CO EMPTY	A.32
1123250000	TRS 24VUC 1CO EMPTY	A.32
1123270000	TRS 48VUC 1CO EMPTY	A.32
1123280000	TRS 60VUC 1CO EMPTY	A.32
1123290000	TRS 120VUC 1CO EMPTY	A.32
1123300000	TRS 230VUC 1CO EMPTY	A.32
1123310000	TRS 120VAC RC 1CO EMPTY	A.32
1123320000	TRS 230VAC RC 1CO EMPTY	A.32
1123330000	TRS 24-230VUC 1CO EMPTY	A.32
1123340000	TRZ 5VDC 1CO EMPTY	A.32
1123350000	TRZ 12VDC 1CO EMPTY	A.32
1123370000	TRZ 24VDC 1CO EMPTY	A.32
1123380000	TRZ 24VUC 1CO EMPTY	A.32
1123390000	TRZ 48VUC 1CO EMPTY	A.32
1123400000	TRZ 60VUC 1CO EMPTY	A.32
1123410000	TRZ 120VUC 1CO EMPTY	A.32
1123420000	TRZ 230VUC 1CO EMPTY	A.32
1123430000	TRZ 120VAC RC 1CO EMPTY	A.32
1123440000	TRZ 230VAC RC 1CO EMPTY	A.32
1123450000	TRZ 24-230VUC 1CO EMPTY	A.32
1123470000	TRS 5VDC 2CO	A.13
1123480000	TRS 12VDC 2CO	A.13
1123490000	TRS 24VDC 2CO	A.13
1123500000	TRS 24VUC 2CO	A.13
1123510000	TRS 48VUC 2CO	A.13
1123520000	TRS 60VUC 2CO	A.13
1123530000	TRS 120VUC 2CO	A.13
1123540000	TRS 230VUC 2CO	A.13
1123550000	TRS 120VAC RC 2CO	A.13
1123570000	TRS 230VAC RC 2CO	A.13
1123580000	TRS 24-230VUC 2CO	A.16
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1123600000	TRZ 12VDC 2CO	A.13
1123610000	TRZ 24VDC 2CO	A.13
1123620000	TRZ 24VUC 2CO	A.13
1123630000	TRZ 48VUC 2CO	A.13
1123640000	TRZ 60VUC 2CO	A.13
1123650000	TRZ 120VUC 2CO	A.13
1123670000	TRZ 230VUC 2CO	A.13
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1123750000	TRS 48VUC 2CO AU	A.15
1123770000	TRS 60VUC 2CO AU	A.15
1123780000	TRS 120VUC 2CO AU	A.15
1123790000	TRS 230VUC 2CO AU	A.15
1123800000	TRS 120VAC RC 2CO AU	A.15
1123810000	TRS 230VAC RC 2CO AU	A.15
1123820000	TRS 24-230VUC 2CO AU	A.17
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1123870000	TRZ 24VUC 2CO AU	A.15
1123880000	TRZ 48VUC 2CO AU	A.15
1123890000	TRZ 60VUC 2CO AU	A.15
1123900000	TRZ 120VUC 2CO AU	A.15
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1123970000	TRS 12VDC 2CO EMPTY	A.32
1123980000	TRS 24VDC 2CO EMPTY	A.32
1123990000	TRS 24VUC 2CO EMPTY	A.32
1124000000	TRS 48VUC 2CO EMPTY	A.32
1124010000	TRS 60VUC 2CO EMPTY	A.32
1124020000	TRS 120VUC 2CO EMPTY	A.32
1124030000	TRS 230VUC 2CO EMPTY	A.32
1124040000	TRS 120VAC RC 2CO EMPTY	A.32
1124050000	TRS 230VAC RC 2CO EMPTY	A.32
1124070000	TRS 24-230VUC 2CO EMPTY	A.32
1124080000	TRZ 5VDC 2CO EMPTY	A.32
1124090000	TRZ 12VDC 2CO EMPTY	A.32
1124100000	TRZ 24VDC 2CO EMPTY	A.32
1124110000	TRZ 24VUC 2CO EMPTY	A.32
1124120000	TRZ 48VUC 2CO EMPTY	A.32
1124130000	TRZ 60VUC 2CO EMPTY	A.32
1124140000	TRZ 120VUC 2CO EMPTY	A.32
1124150000	TRZ 230VUC 2CO EMPTY	A.32
1124170000	TRZ 120VAC RC 2CO EMPTY	A.32
1124180000	TRZ 230VAC RC 2CO EMPTY	A.32
1124190000	TRZ 24-230VUC 2CO EMPTY	A.32
1126920000	TOS 5VDC 48VDC0,1A	A.19
1126930000	TOS 12VDC 48VDC0,1A	A.19
1126940000	TOS 24VDC 48VDC0,1A	A.19
1126950000	TOS 24VUC 48VDC0,1A	A.19
1126960000	TOS 48VUC 48VDC0,1A	A.19
1126970000	TOS 60VUC 48VDC0,1A	A.19
1126980000	TOS 120VUC 48VDC0,1A	A.19
1126990000	TOS 230VUC 48VDC0,1A	A.19
1127000000	TOS 120VAC RC 48VDC0,1A	A.19
1127010000	TOS 230VAC RC 48VDC0,1A	A.19
1127020000	TOS 24-230VUC 48VDC0,1A	A.20
1127030000	TOZ 5VDC 48VDC0,1A	A.19
1127040000	TOZ 12VDC 48VDC0,1A	A.19
1127050000	TOZ 24VDC 48VDC0,1A	A.19
1127060000	TOZ 24VUC 48VDC0,1A	A.19
1127070000	TOZ 48VUC 48VDC0,1A	A.19
1127080000	TOZ 60VUC 48VDC0,1A	A.19
1127090000	TOZ 120VUC 48VDC0,1A	A.19
1127100000	TOZ 230VUC 48VDC0,1A	A.19
1127110000	TOZ 120VAC RC 48VDC0,1A	A.19
1127120000	TOZ 230VAC RC 48VDC0,1A	A.19
1127130000	TOZ 24-230VUC 48VDC0,1A	A.20
1127140000	TOS 5VDC 24VDC2A	A.23
1127150000	TOS 12VDC 24VDC2A	A.23
1127170000	TOS 24VDC 24VDC2A	A.23
1127180000	TOS 24VUC 24VDC2A	A.23
1127190000	TOS 48VUC 24VDC2A	A.23
1127200000	TOS 60VUC 24VDC2A	A.23
1127210000	TOS 120VUC 24VDC2A	A.23
1127220000	TOS 230VUC 24VDC2A	A.23
1127230000	TOS 120VAC RC 24VDC2A	A.23
1127240000	TOS 230VAC RC 24VDC2A	A.23
1127250000	TOS 24-230VUC 24VDC2A	A.24
1127270000	TOZ 5VDC 24VDC2A	A.23
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1127290000	TOZ 24VDC 24VDC2A	A.23
1127300000	TOZ 24VUC 24VDC2A	A.23
1127310000	TOZ 48VUC 24VDC2A	A.23
1127320000	TOZ 60VUC 24VDC2A	A.23
1127330000	TOZ 120VUC 24VDC2A	A.23
1127340000	TOZ 230VUC 24VDC2A	A.23
1127350000	TOZ 120VAC RC 24VDC2A	A.23
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1127390000	TOS 5VDC 230VAC1A	A.27
1127400000	TOS 12VDC 230VAC1A	A.27
1127410000	TOS 24VDC 230VAC1A	A.27
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1127440000	TOS 60VUC 230VAC1A	A.27
1127450000	TOS 120VUC 230VAC1A	A.27
1127470000	TOS 230VUC 230VAC1A	A.27
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1127500000	TOS 24-230VUC 230VAC1A	A.28
1127510000	TOZ 5VDC 230VAC1A	A.27
1127520000	TOZ 12VDC 230VAC1A	A.27
1127530000	TOZ 24VDC 230VAC1A	A.27
1127540000	TOZ 24VUC 230VAC1A	A.27
1127550000	TOZ 48VUC 230VAC1A	A.27
1127570000	TOZ 60VUC 230VAC1A	A.27
1127580000	TOZ 120VUC 230VAC1A	A.27
1127590000	TOZ 230VUC 230VAC1A	A.27
1127600000	TOZ 120VAC RC 230VAC1A	A.27
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1127620000	TOZ 24-230VUC 230VAC1A	A.28
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1127640000	TOS 24-230VUC 24VDC3,5A	A.30
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1762620000	Z0V 4N/4 GE	A.68
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1793960000	Z0V 4N/2 BL	A.68
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1793970000	Z0V 4N/2 SW	A.68
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1793990000	Z0V 4N/3 BL	A.68
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1794000000	Z0V 4N/3 SW	A.68
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1794020000	Z0V 4N/4 BL	A.57
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1794030000	Z0V 4N/4 SW	A.68
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1794040000	Z0V 4N/10 RT	A.57
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1794050000	Z0V 4N/10 BL	A.68
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1850000000

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8010000000

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8320000000

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8360000000

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8420000000

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8460000000

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8570000000

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8647720000	TIMER BTR-S	D.6
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8921100000	RCMKITP1 115VAC 2CO LD	B.18
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8950910000	TOS 12VDC/48VDC 0,5A	A.41
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