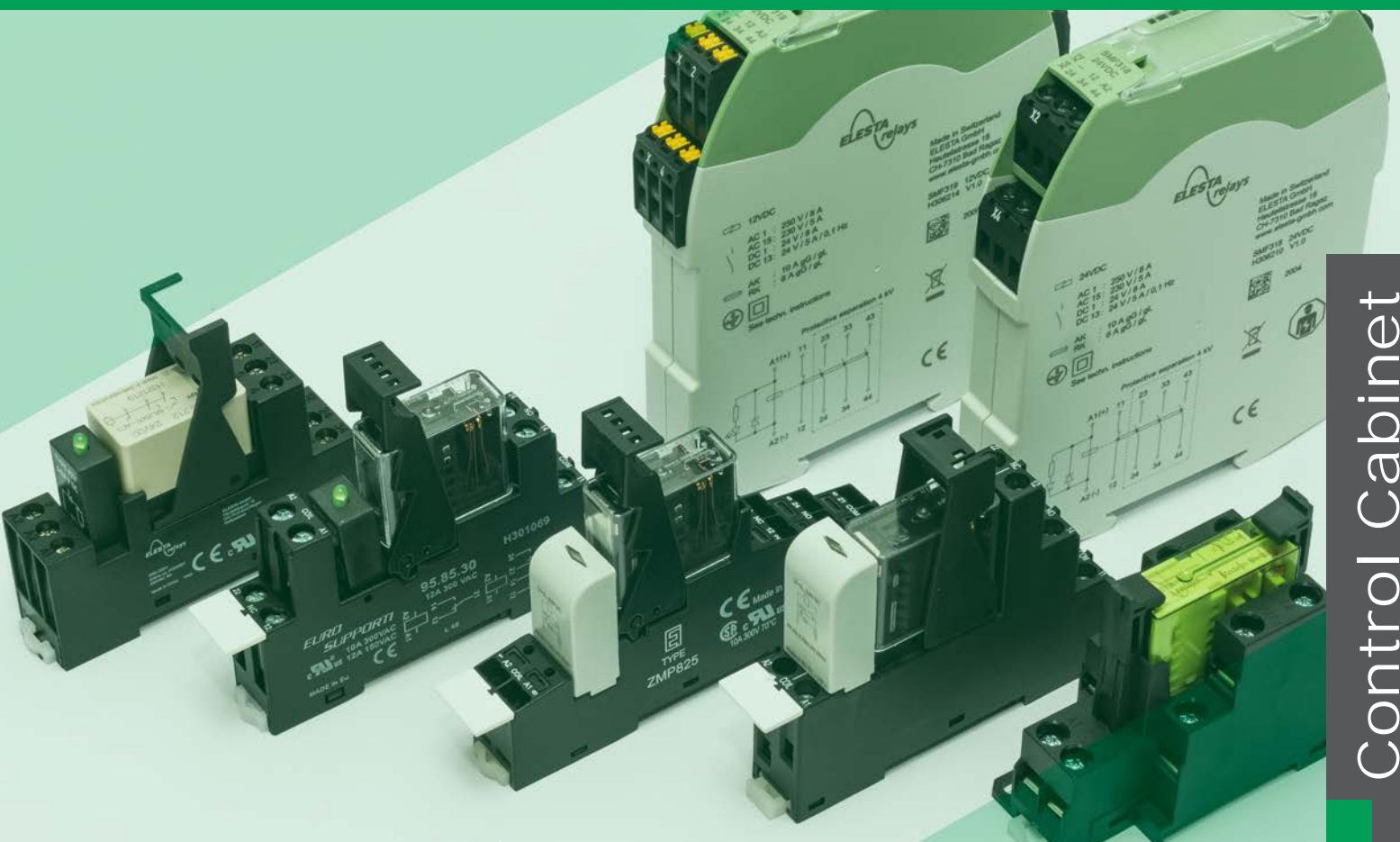


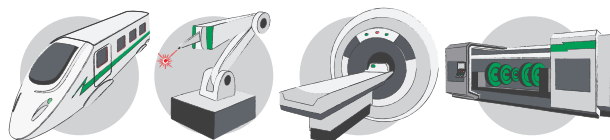
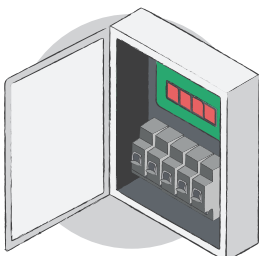
ELESTA Sockets for Relays with forcibly guided contacts and Relay Modules



Control Cabinet



Relays with forcibly guided contacts for your control cabinet application



ELESTA Sockets for Relays with forcibly guided contacts and Relay Modules

ELESTA GmbH - Member of the PILZ Group

Version: 2020-08-07



Relay modules and sockets for relays with forcibly guided contacts for your control cabinet applications

Safety switchgear and safe PLCs are universal helpers in the implementation of safety solutions in mechanical and plant engineering. But from time to time additional contacts are needed. In this brochure you will find simple relay modules without independent function, relay sockets with the corresponding relays with forcibly guided contacts as well as plug-in modules with which you can easily implement contact expansions.

It is also possible to use the products for the increase the contact reliability, for load sharing or for improved separation of aggressive switching loads.

When selecting products, please consider aspects of functional and electrical safety, as well as operating conditions, for safe and reliable operation of the switchboard.

Functional safety aspects / manipulation safety

If the contact extension was not part of the device design, the application must always be re-evaluated, documented and, if necessary, presented to the approval authority. The previously approved Safety Integration Level (SIL) according to IEC 62061 or Performance Level (PL) with the respective category e.g. according to ISO 13849-1 must generally be maintained.

The relay in the socket as well as in the modules has no own safety function. It always remains a relay with forcibly guided contacts. Thus, only the correct wiring enables an evaluation of the suitability in terms of functional safety.

For relays with two changeover contacts, only one NC contact of one changeover contact and one NO contact of the other can be used in safety circuits.

$B10_D$ values can be provided for the calculation of $MTTF_D$ values.

Manipulation security is becoming more and more important. Simple measures such as sealing the connection terminals and screws as well as skilful cable routing can increase manipulation safety.

Operating conditions / Electrical safety

When using relays on sockets under extreme operating conditions, please note that the relays are designed as print relays. Large temperature fluctuations, high stress due to vibration and shock, as well as environmental conditions such as salt climates, high exposure to harmful gases or aerosols can have a negative effect on the contact between relay, protection modules and socket. As a rule, switchgear is designed for such conditions.

Please note that the relays and sockets are matched to each other and approved by the relay manufacturer in this combination only. The use of other combinations is not subject to the responsibility of ELESTA GmbH.

SMF 3 and SMF 4

- Relay module with 3 or 4 poles relay with forcibly guided contacts
- Protective separation between relay coil and relay contacts
- Switching current max. 8 A / 10 A
- Switching voltage 250 V AC/DC
- With spring or screw terminals
- LED function display and protective circuit
- Mounting on 35 mm mounting rail (IEC 60715)



SRD-SIS3

- Socket for the relay series SIS 2 and SIS 3 with pin length 3.8 mm (L38)
- 2 or 3 contacts with forced guidance can be integrated into the safety circuit
- Switching current max. 6 A
- Switching voltage 250 V AC/DC
- With support for display and protection modules
- Plug-in socket with screw terminals
- Mounting on 35 mm mounting rail (IEC 60715)



SRD-SIM4

- Socket for the relay series SIM 3 and SIM 4
- 3 or 4 contacts with forced guidance can be integrated into the safety circuit
- Switching current max. 8 A
- Switching voltage 250 V AC/DC
- Plug-in socket with screw terminals
- Mounting on 35 mm mounting rail (IEC 60715) or screw mounting 2 x M3





SRD-SGR2A KV2

- Socket for relay series SGR282 ZK
- 2 changeover contacts with forced guidance can be integrated into the safety circuit
- Switching current max. 8 A
- Switching voltage 250 V AC/DC
- Plug-in socket with screw terminals
- With support for display and protection modules
- Mounting on 35 mm mounting rail (IEC 60715) or screw mounting M3



SRD-SGR2A KV2 PIK

- Socket for relay series SGR282 ZK
- 2 changeover contacts with forced guidance can be integrated into the safety circuit
- Switching current max. 8 A
- Switching voltage 250 V AC/DC
- Plug-in socket with push-in connections
- With support for display and protection modules
- Mounting on 35 mm mounting rail (IEC 60715) or screw mounting M3



SRD-SGR2

- Socket for relay series SGR282 ZK
- 2 changeover contacts with forced guidance can be integrated into the safety circuit
- Switching current max. 8 A
- Switching voltage 250 V AC/DC
- Plug-in socket with screw terminals
- With support for display and protection modules
- Mounting on 35 mm mounting rail (IEC 60715) or screw mounting M3

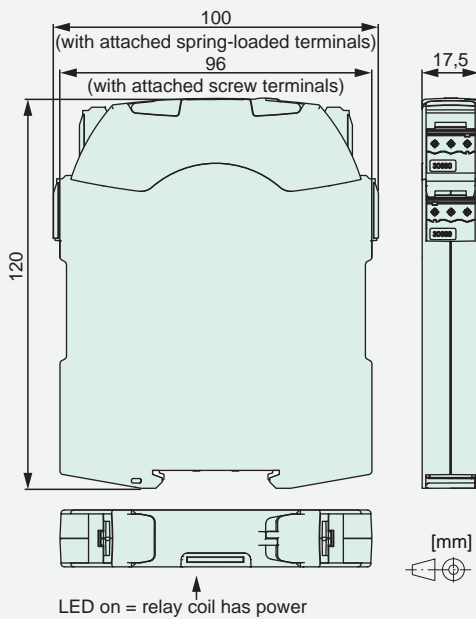
Relay module SMF 3 series



Features

- Relay module with 3-pole relay with forcibly guided contacts according to IEC 61810-3, application type A
- For mounting on 35 mm mounting rail
- Protective separation (see insulation data)
- Contact mounting: SMF218/219 2 NO + 1 NC
- Switching current max. 10 A
- Switching voltage: 250 V AC/DC
- Power consumption: 0,7 ... 1,15 W
- Overvoltage protection
- With spring terminals (SMF219)
- With screw terminals (SMF218)
- Applications: Access control, interfaces, elevators, escalators, transportation, robots, machine tools and railway applications

Dimensions



Contact data

Contact material	AgCuNi + 0,2 ... 0,4 µm Au
Type of contact	Single contact with notched crown
Nominal switching capacity AC-1	2500 VA (250 VAC / 10 A)
Electrical life AC-1 (0,1 Hz, 10% duty cycle)	approx. 100 000
Inrush current max.	30 A for 20 ms
Switching voltage range	5 ... 250 VDC/VAC
Switching current range*	3 mA ... 10 A
Switching power range*	40 mW ... 2500 W(VA)
Contact resistance as new	≤100 mΩ / 6 V / 100 mA

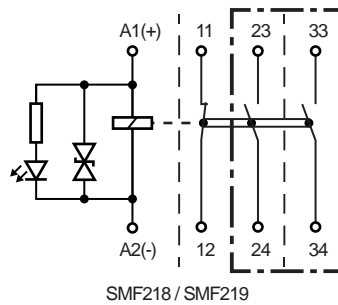
*guidelines

Module data excitation side at 20 °C

Nominal voltage (VDC)	Nominal current (mA)	Pick-up voltage relay coil (VDC)	Drop-out voltage relay coil (VDC)
12	60	≤8,4	≥1,2
24	47	≤16,8	≥2,4
48	20	≤33,6	≥4,8
110	10	≤77,0	≥11,0

other voltage values on request

Circuit diagram



Insulation data

Basic insulation	at 250 VAC
--- Air and creepage distance	>2,5 mm
Test voltage	2500 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
--- Air and creepage distance	>5,5 mm
Test voltage	4000 V _{rms} / 1 min
Test voltage: open contact	1500 V _{rms} / 1 min
Pollution degree	2
Overvoltage category	III

Additional data

Mechanical lifetime	>10 x 10 ⁶ operations
Switching frequency mechanical	max. 15 Hz
Response time (NO closed)	typ. 12 ms
Drop-out time* (NC closed)	typ. 5 ms
Bounce time NO	typ. 1,5 ms
Bounce time NC	typ. 15 ms
Shock resistance 16 ms	NO > 14g / NC > 4g
Vibration resistance (10-200 Hz)	NO > 6g / NC > 4g
Short circuit resistance contacts NO	1000 A
with pre-fuse	SCPD 10 A gG / gL
Short circuit resistance contacts NC	1000 A
with pre-fuse	SCPD 6 A gG / gL
Ambient temperature	-40°C ... +55°C
Thermal resistance	60 K/W
Weight	approx. 110 g
Mounting position	any
Protection class	IP20

Connection data Screw terminal:

- Cross sections for wire:	0,2 - 2,5 mm ² / AWG 24 - 12
- Cross sections for braid:	0,2 - 2,5 mm ² / AWG 24 - 12
- Tightening torque:	0,6 Nm
Connection data spring terminal:	
- Cross sections for wire:	0,2 - 2,0 mm ² / AWG 24 - 14
- Cross sections for braid:	0,2 - 2,5 mm ² / AWG 24 - 12

*without coil wiring

Tests, regulations, standards

Approvals	cULus
UL File	E188953
Standards	EN 50178, IEC 61810-1, IEC 61810-3, UL 508

Options, Accessories

none available

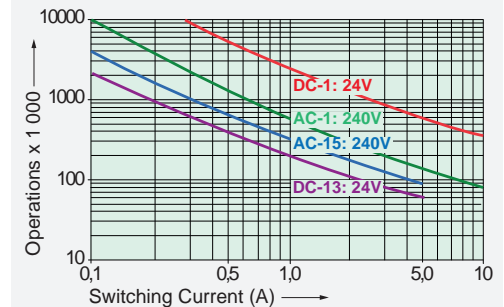
Mounting instructions

Mounting on 35 mm mounting rail (IEC 60715)

Product key

SMF	2	1	8	24VDC
Type designation				
Number of NO contacts	2	1	8	
Number of NC contacts				
Connection type:				
8=screw terminal,				
9=spring terminal				
Nominal voltage				24VDC

Contact life for NO contact



Max. switching capacity (IEC 61810-1 / UL 508)

AC-1: 240 V / 10 A

AC-15: 240 V / 5 A

DC-1: 24 V / 10 A

DC-13: 24 V / 5 A

B300

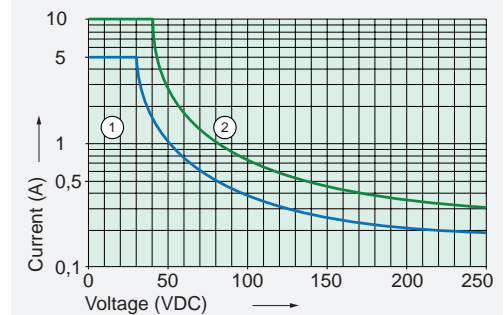
R300

Maximum continuous current per contact at load of:

1 contact 10 A

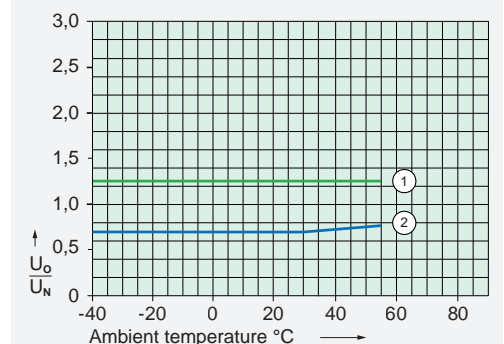
2 contacts 8 A

Contact load limit curve (DC)



- 1) Inductive load L/R 40 ms
- 2) Resistive load

Operating voltage range



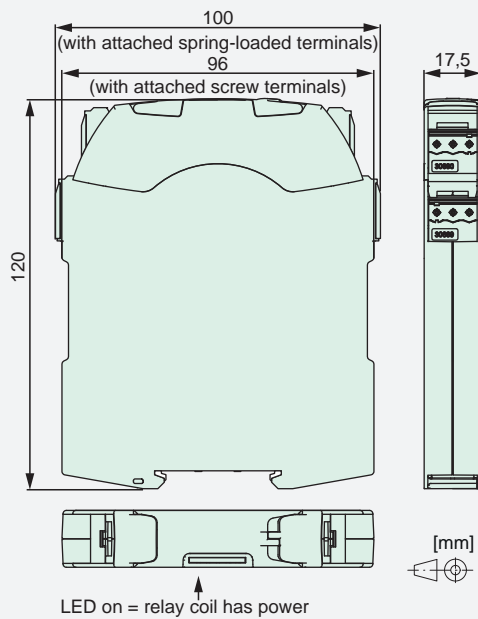
- 1) Max. excitation voltage with contact current ≤ 6 A
 - 2) Min. excitation voltage without previous operation - test conditions:
- Duty cycle 100%



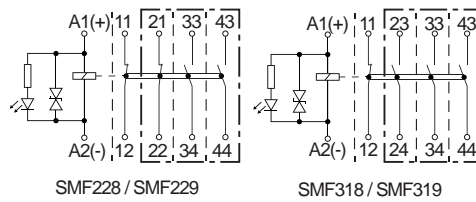
Features

- Relay module with 4-pole relay with forcibly guided contacts according to IEC 61810-3, application type A
- For mounting on 35 mm mounting rail
- Protective separation (see insulation data)
- Contact mounting: SMF228/229 2 NO + 2 NC
SMF318/319 3 NO + 1 NC
- Switching current max. 8 A
- Switching voltage: 250 V AC/DC
- Power consumption: 0,8 ... 1,25 W
- Overvoltage protection
- With spring terminals (SMF229/319)
- With screw terminals (SMF228/318)
- Applications: Access control, interfaces, elevators, escalators, transportation, robots, machine tools and railway applications

Dimensions



Circuit diagram



Insulation data

Basic insulation	at 250 VAC
Air and creepage distance	>2,5 mm
Test voltage	2500 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
Air and creepage distance	>5,5 mm
Test voltage	4000 V _{rms} / 1 min
Test voltage: open contact	1500 V _{rms} / 1 min
Pollution degree	2
Overvoltage category	III

Additional data

Mechanical lifetime	>10 x 10 ⁶ operations
Switching frequency mechanical	max. 15 Hz
Response time (NO closed)	typ. 12 ms
Drop-out time* (NC closed)	typ. 5 ms
Bounce time NO	typ. 1,5 ms
Bounce time NC	typ. 15 ms
Shock resistance 16 ms	NO > 14g / NC > 4g
Vibration resistance (10-200 Hz)	NO > 6g / NC > 4g
Short circuit resistance contacts NO with pre-fuse	1000 A SCPD 10 A gG / gL
Short circuit resistance contacts NC with pre-fuse	1000 A SCPD 6 A gG / gL
Ambient temperature	-40°C ... +55°C
Thermal resistance	60 K/W
Weight	approx. 110 g
Mounting position	any
Protection class	IP20
Connection data Screw terminal:	
- Cross sections for wire:	0,2 - 2,5 mm ² / AWG 24 - 12
- Cross sections for braid:	0,2 - 2,5 mm ² / AWG 24 - 12
- Tightening torque:	0,6 Nm
Connection data spring terminal:	
- Cross sections for wire:	0,2 - 2,0 mm ² / AWG 24 - 14
- Cross sections for braid:	0,2 - 2,5 mm ² / AWG 24 - 12

*without coil wiring

Tests, regulations, standards

Approvals	cULus
UL File	E188953
Standards	EN 50178, IEC 61810-1, IEC 61810-3, UL 508

Options, Accessories

none available

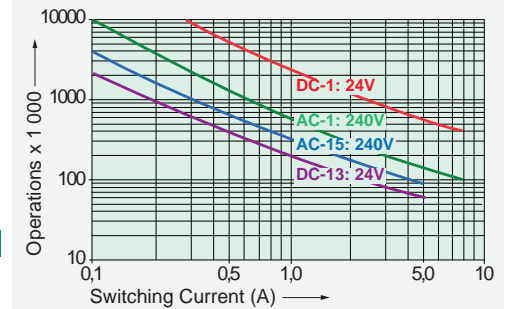
Mounting instructions

Mounting on 35 mm mounting rail (IEC 60715)

Product key

SMF	3	1	8	24VDC
Type designation	Number of NO contacts	Number of NC contacts	Connection type: 8-screw terminal, 9-spring terminal	Nominal voltage

Contact life for NO contact



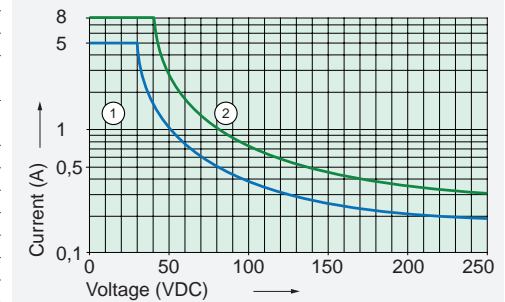
Max. switching capacity (IEC 61810-1 / UL 508)

AC-1:	240 V / 8 A	B300
AC-15:	240 V / 5 A	R300
DC-1:	24 V / 8 A	
DC-13:	24 V / 5 A	

Maximum continuous current per contact at load of:

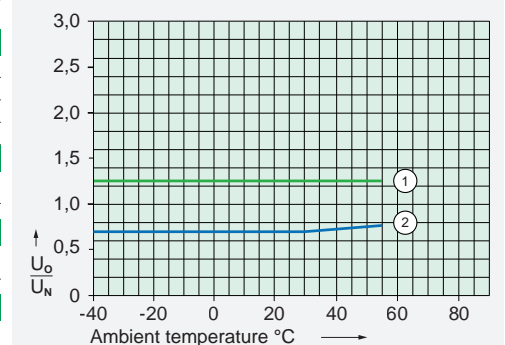
1 contact	8 A
2 contacts	8 A
3 contacts	6 A

Contact load limit curve (DC)



- 1) Inductive load L/R 40 ms
- 2) Resistive load

Operating voltage range



- 1) Max. excitation voltage with contact current ≤ 5 A
 - 2) Min. excitation voltage without previous operation
- test conditions:
• Duty cycle 100%

Contact data

Contact material	AgCuNi + 0,2 ... 0,4 μm Au
Type of contact	Single contact with notched crown
Nominal switching capacity AC-1	2000 VA (250 VAC / 8 A)
Electrical life AC-1 (0,1 Hz, 10% duty cycle)	approx. 100 000
Inrush current max.	30 A for 20 ms
Switching voltage range	5 ... 250 VDC/VAC
Switching current range*	3 mA ... 8 A
Switching power range*	40 mW ... 2000 W(VA)
Contact resistance as new	≤100 mΩ / 6 V / 100 mA

*guidelines

Module data excitation side at 20 °C

Nominal voltage (VDC)	Nominal current (mA)	Pick-up voltage relay coil (VDC)	Drop-out voltage relay coil (VDC)
12	69	≤8,4	≥1,2
24	51	≤16,8	≥2,4
48	33	≤33,6	≥4,8
110	11	≤77,0	≥11,0

other voltage values on request

Mounting rail socket SRD-SIS3

Socket for the relay series SIS 2 and SIS 3
with pin length 3,8 mm

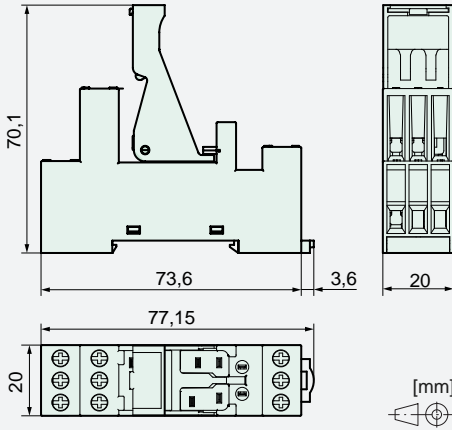


Features

- Plug-in socket with screw terminals
- For relays of the SIS 2 and SIS 3 series with 3,8 mm pin length
- With plastic retaining bracket
- Mounting on 35 mm mounting rail (IEC 60715)



Dimensions

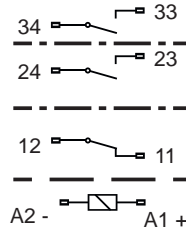


Technical Data

Limit continuous current*	6 A
Rated voltage	250 VAC
Connections:	
- Cross sections for wire	2 x 2,5 mm ²
- Cross sections for stranded wire	2 x 1,5 mm ²
- Torque	max. 0,8 Nm

*note max. contact load in the relay data sheet

Circuit diagram



Insulation data

Basic insulation	at 250 VAC
--- Air and creepage distance	>4 mm
Test voltage	2500 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
--- Air and creepage distance	>5,5 mm
Test voltage	4000 V _{rms} / 1 min
Creepage resistance	CTI 250
Pollution degree	2
Overvoltage category	III

Additional data

Weight	approx. 45 g
Ambient temperature	-25°C ... +70°C

Tests, regulations, standards

Approvals	UL, cULus
UL File	E238167
Insulation group according to IEC 60664-1	250 VAC
Standards	IEC 61810-1, UL 508

Options, Accessories

Display and protection modules	SRD-SGR2-M01, SRD-SGR-M03, SRD-SGR-M05
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Mounting instructions

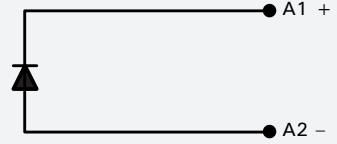
Mounting	on 35 mm mounting rail (IEC 60715)
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Product key

	SRD	SIS3
Socket type		
Relay series		

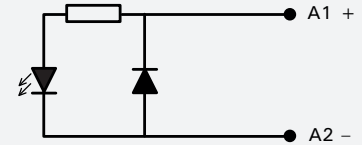
Module SRD-SGR2-M01

- For mounting rail socket SRD-SGR2 and SRD-SIS3
- Integrated freewheeling diode
- Suitable for 6 VDC to 230 VDC (+ at terminal A1)



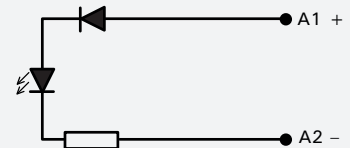
Module SRD-SGR2-M03

- For mounting rail socket SRD-SGR2 and SRD-SIS3
- Integrated freewheeling diode
- Green LED with current limiting resistor
- Suitable for 6 VDC to 24 VDC(+ at terminal A1)



Module SRD-SGR2-M05

- For mounting rail socket SRD-SGR2 and SRD-SIS3
- Green LED and reverse polarity protection
- Suitable for 6 VDC to 24 VDC (+ at terminal A1)



Relays

SIS 3 L38 series

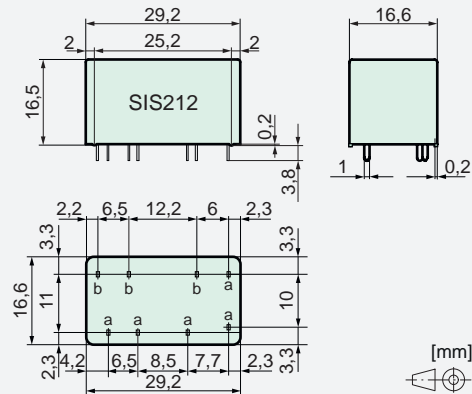
for socket SRD-SIS3



Features

- Relay with forcibly guided contacts according to IEC 61810-3, application type A
- Suitable for mounting on PCB with board thickness up to min. 3,0 mm and relay socket SRD-SIS3
- Protective separation (see insulation data)
- Contact mounting:
SIS212 2 NO + 1 NC
- Small outer dimensions
- Nominal coil power: typ. 0,60 W
- Coil holding power: typ. 0,18 W
- Coils according to EN 50155 possible (railway applications)

Dimensions



Pin dimension a	1,0 x 0,3 mm
Pin dimension b	1,0 x 0,4 mm
Recommended drilling on PCB	Ø 1,3 mm

Contact data

Contact material	AgCuNi + 0,2 ... 0,4 µm Au
Type of contact	Single contact with notched crown
Nominal switching capacity AC-1	1500 VA (250 VAC / 6 A)
Electrical life AC-1 (0,1 Hz, 10% duty cycle)	>90 000
Inrush current max.	30 A for 20 ms
Switching voltage range	5 ... 250 VDC/VAC
Switching current range*	3 mA ... 6 A
Switching power range*	40 mW ... 1500 W(VA)
Contact resistance as new	≤100 mΩ / 6 V / 100 mA

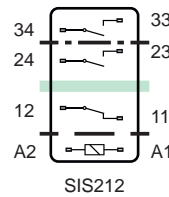
*guidelines

Coil data at 20 °C

nominal voltage (VDC)	Pick-up voltage (VDC)	Drop-out voltage (VDC)	Nominal current (mA)	Resistance (Ohm)
6	≤3,5	≥0,6	100	60 ± 10%
12	≤8,4	≥1,2	50	240 ± 10%
18	≤12,6	≥1,8	33	540 ± 10%
24	≤16,8	≥2,4	25	960 ± 10%
48	≤33,6	≥4,8	13	3840 ± 10%
60	≤42,0	≥6,0	10	6000 ± 13%
110	≤77,0	≥11,0	5	20150 ± 15%

other voltage values on request

Circuit diagram (top view)



Insulation data

Basic insulation	at 250 VAC
Air and creepage distance	>4 mm
Test voltage	2500 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
Air and creepage distance	>5,5 mm
Test voltage	4000 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
Air and creepage distance	>8 mm
Test voltage	4000 V _{rms} / 1 min
Test voltage: open contact	1500 V _{rms} / 1 min
Creepage resistance	CTI 175
Pollution degree	2
Overvoltage category	III
Insulation resistance at U _p 500 VDC	>100 MΩ

Technical data

Mechanical lifetime	> 10x10 ⁶ operations
Switching frequency mechanical	max. 15 Hz
Response time (NO closed)	typ. 10 ms
Drop-out time* (NC closed)	typ. 3 ms
Bounce time NO	typ. 2 ms
Bounce time NC	typ. 15 ms
Shock resistance (16 ms)	NO > 17 g / NC > 10 g
Vibration resistance (10-200 Hz)	NO > 7 g / NC > 3 g
Short circuit resistance of contacts	1000 A
with pre-fuse	SCPD 6 A gG / gL
Ambient temperature	-40 °C ... +85 °C
Thermal resistance	55 K/W
Coil limit temperature	120 °C
Weight	approx. 20 g
Mounting position	any
Mounting distance	recommendation >1 mm
Test method	A / group assembly
Protection class	RT III
Solder bath temperature	270 °C / 5 s

*without coil wiring

Tests, regulations, standards

Approvals	cULus, TÜV
UL File	E188953 Sec. 5
Insulation group according to IEC 60664-1	250 VAC
Fire protection conditions	UL 94 / V-0
Standards	IEC 61810-1, IEC 61810-3, UL 508

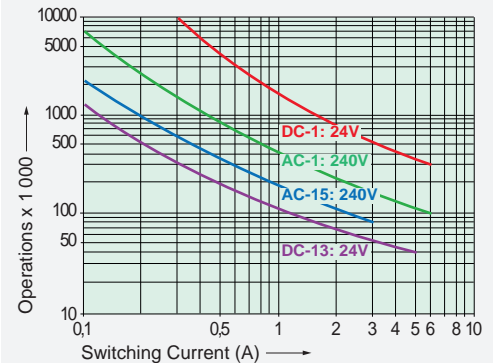
Options, Accessories

Mounting rail socket	SRD-SIS3
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Product key

SIS	2	1	2	24VDC	L38
Type designation	Number of NO contacts	Number of NC contacts	Solder terminals	Nominal coil voltage	Pin variant

Contact life for NO contact



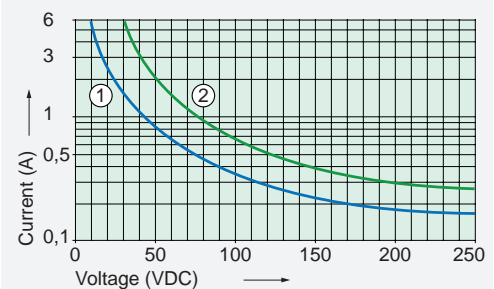
Max. switching capacity (IEC 61810-1, UL 508)

AC-1:	240 V / 6 A	B300
AC-15:	240 V / 3 A	R300
DC-1:	24 V / 6 A	
DC-13:	24 V / 5 A	

Maximum continuous current per contact at load of:

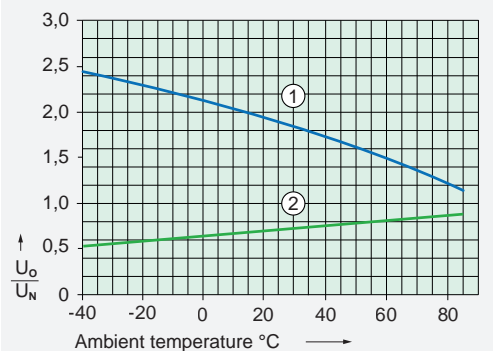
1 contact	6 A
2 contacts	6 A

Contact load limit curve (DC)



- 1) Inductive load L/R 40 ms
- 2) Resistive load

Coil excitation voltage range



- 1) Max. excitation voltage with contact current ≤ 4 A
 - 2) Min. excitation voltage without previous operation
- test conditions:
- Free-standing relay on PCB
 - Duty cycle 100%

Mounting rail socket SRD-SIM4 for relays SIM 4

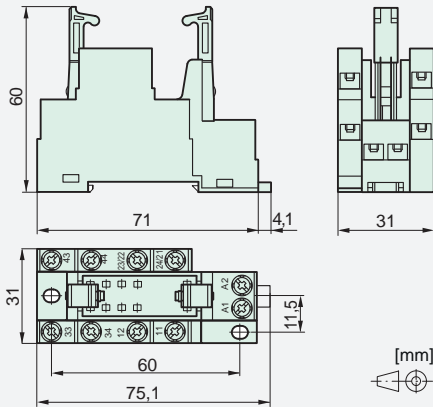


Features

- Plug-in socket with screw terminals
- For relay series SIM 4
- With plastic retaining bracket
- Mounting on 35 mm mounting rail (IEC 60715)
- Mounting with 2 x M3 screws



Dimensions

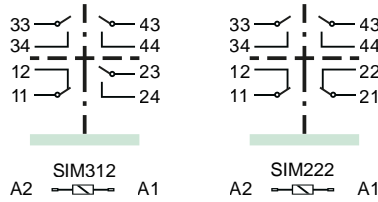


Technical Data

Limit continuous current*	8 A
Rated voltage	250 VAC
Connections:	
- Cross sections for wire	2 x 2,5 mm ²
- Cross sections for stranded wire	2 x 1,5 mm ²
- Torque	max. 0,8 Nm

*note max. contact load in the relay data sheet

Circuit diagram



Insulation data

Basic insulation	at 250 VAC
--- Air and creepage distance	>4 mm
Test voltage	2500 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
--- Air and creepage distance	>5,5 mm
Test voltage	3000 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
--- Air and creepage distance	>14 mm
Test voltage	4000 V _{rms} / 1 min
Creepage resistance	CTI 250
Pollution degree	2
Overvoltage category	III

Additional data

Weight	approx. 65 g
Ambient temperature	-25°C ... +70°C

Tests, regulations, standards

Approvals	cULus
UL File	E238167
Insulation group according to IEC 60664-1	250 VAC
Standards	IEC 61810-1, UL 508

Options, Accessories

none available

Mounting instructions

Mounting	on 35 mm mounting rail (IEC 60715)
Mounting	with 2 x screw M3
- Torque	max. 1,28 Nm

Product key

SRD	SIM4
Socket type	Relay series

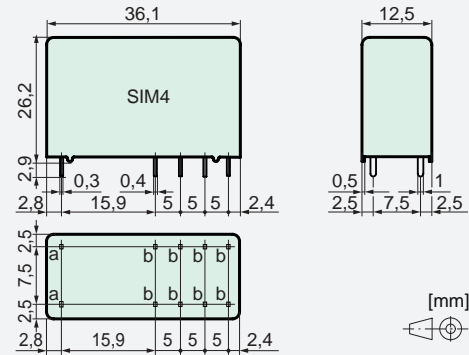
Relays SIM 4 series for socket SRD-SIM4



Features

- Relay with forcibly guided contacts according to IEC 61810-3, application type A
- Suitable for print mounting
- Protective separation (see insulation data)
- Contact mounting:
SIM312 3 NO + 1 NC
SIM222 2 NO + 2 NC
- Small outer dimensions
- Nominal coil power: typ. 1 W
- Coil holding power: typ. 0,29 W

Dimensions



Pin dimension a	1,0 x 0,3 mm
Pin dimension b	1,0 x 0,4 mm
Recommended drilling on PCB	Ø 1,3 mm

Contact data

Contact material	AgSnO ₂ + 0,2 ... 0,4 µm Au
Contact type	crown contact
Nominal switching capacity AC-1	2000 VA (250 VAC / 8 A)
Electrical life AC-1 (0,1 Hz, 10% duty cycle)	approx. 100000
Inrush current max.	20 A for 20 ms
Switching voltage range	5 ... 250 VDC/VAC
Switching current range*	10 mA ... 8 A
Switching power range*	60 mW ... 2000 W(VA)
Contact resistance as new	≤100 mΩ / 6 V / 100 mA

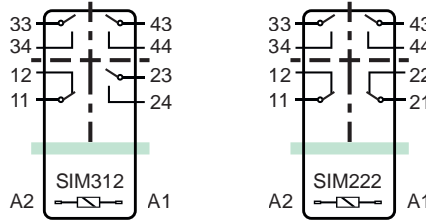
*guidelines

Coil data at 20 °C

Nominal voltage (VDC)	Pick-up voltage (VDC)	Drop-out voltage (VDC)	Nominal current (mA)	Resistance (Ohm)
6	≤4,2	≥0,6	167	36 ± 10%
12	≤8,4	≥1,2	86	140 ± 10%
18	≤12,6	≥1,8	55	330 ± 10%
24	≤16,8	≥2,4	40	600 ± 10%
48	≤33,6	≥4,8	21	2300 ± 10%
60	≤42,0	≥6,0	17	3600 ± 13%
110	≤77,0	≥11,0	9	12100 ± 15%

other voltage values on request

Circuit diagram (top view)



Insulation data

Basic insulation	at 250 VAC
Air and creepage distance	>4 mm
Test voltage	2500 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
Air and creepage distance	>5,5 mm
Test voltage	4000 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
Air and creepage distance	>14 mm
Test voltage	5000 V _{rms} / 1 min
Test voltage: open contact	1500 V _{rms} / 1 min
Creepage resistance	CTI 175
Pollution degree	2
Overvoltage category	III
Insulation resistance at Up 500 VDC	>100 MΩ

Additional data

Mechanical lifetime	> 10x10 ⁶ operations
Switching frequency mechanical	max. 15 Hz
Response time (NO closed)	typ. 8 ms
Drop-out time* (NC closed)	typ. 4 ms
Bounce time NO	typ. 6 ms
Bounce time NO	typ. 12 ms
Shock resistance (16 ms)	NO > 10 g / NC > 2,5 g
Vibration resistance (10-200 Hz)	NO > 10 g / NC > 1 g
Short circuit resistance of contacts	1000 A
with pre-fuse	SCPD 10 A gG / gL
Ambient temperature	-40 °C ... +70 °C
Thermal resistance	50 K/W
Coil limit temperature	120 °C
Weight	approx. 25 g
Mounting position	any
Mounting distance	recommendation >5 mm
Test method	A / group assembly
Protection class	RT II
Solder bath temperature	270 °C / 5 s

*without coil wiring

Tests, regulations, standards

Approvals	cULus, TÜV
UL File	E188953 Sec. 3
Insulation group according to IEC 60664-1	250 VAC
Fire protection conditions	UL 94 / V-0
Standards	IEC 61810-1, IEC 61810-3, UL 508

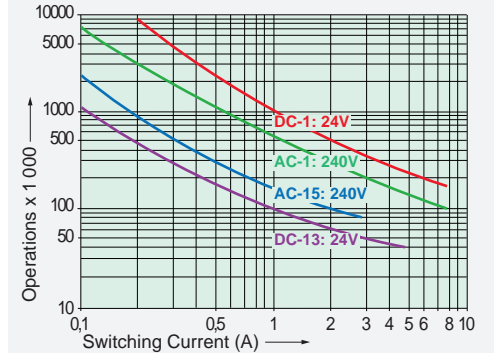
Options, Accessories

Mounting rail socket	SRD-SIM4
PCB socket	SRP-SIM4

Product key

SIM	3	1	2	24VDC
Type designation	Number of NO contacts	Number of NC contacts	Solder terminals	Nominal coil voltage

Contact life for NO contact



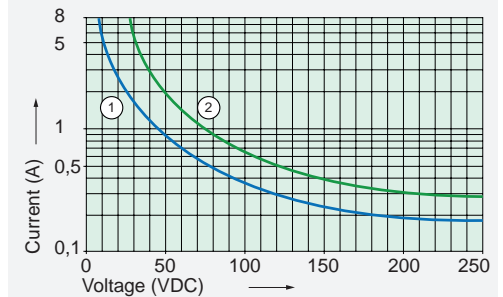
Max. switching capacity (IEC 61810-1, UL 508)

AC-1:	240 V / 8 A	C150
AC-15:	240 V / 3 A	R300
DC-1:	24 V / 8 A	
DC-13:	24 V / 6 A	

Maximum continuous current per contact at load of:

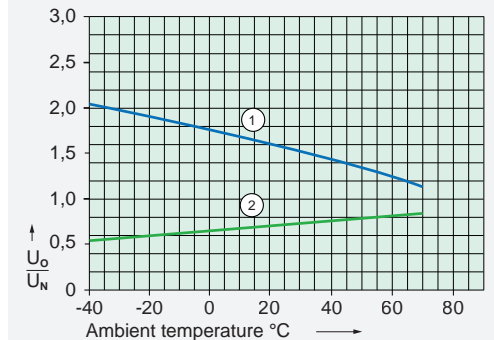
1 contact	8 A
2 contacts	8 A
3 contacts	6 A

Contact load limit curve (DC)



- 1) Inductive load L/R 40 ms
- 2) Resistive load

Coil excitation voltage range



- 1) Max. excitation voltage with contact current ≤ 6 A
 - 2) Min. excitation voltage without previous operation
- test conditions:
- Free-standing relay on PCB
 - Duty cycle 100%

Mounting rail socket SRD-SGR2A KV2 for SGR282 ZK

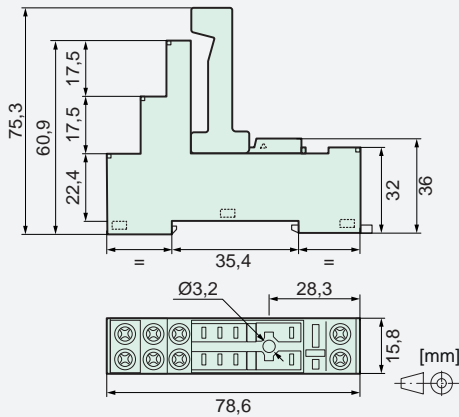


Features

- Plug-in socket with screw terminals
- For relay series SGR282 ZK
- Protective separation between coil and contacts
- With plastic retaining bracket
- Identification plate (1 piece)
- Mounting on 35 mm mounting rail (IEC 60715)
- Central fastening with M3 screw



Dimensions

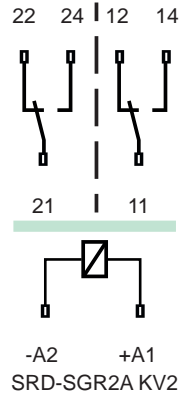


Technical data

Limit continuous current*	8 A
Rated voltage	250 VAC
Connections:	
- Cross sections for wire	1 x 6 mm ² or 2 x 2,5 mm ²
- Cross sections for stranded wire	1 x 6 mm ² or 2 x 2,5 mm ²
- Torque	max. 0,5 Nm

*note max. contact load in the relay data sheet

Circuit diagram



Insulation data

Basic insulation	at 250 VAC
--- Air and creepage distance	>4 mm
Test voltage	2500 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
— Air and creepage distance	>8 mm
Test voltage	4000 V _{rms} / 1 min
Creepage resistance	CTI 250
Pollution degree	2
Overvoltage category	III

Additional data

Weight	approx. 46 g
Ambient temperature	-40°C ... +70°C

Tests, regulations, standards

Approvals	cULus
UL File	E135170
Insulation group according to IEC 60664-1	250 VAC
Standards	IEC 61810-1, UL 508

Options, Accessories

Display and protection modules	SRD-SGR2A-M01, SRD-SGR2A-M03
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Mounting instructions

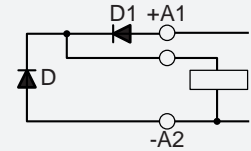
Mounting	on 35 mm mounting rail (IEC 60715)
Mounting	with central fastening Screw M3
- Torque	max. 1,28 Nm

Product key

SRD	SGR2	A	KV2
Socket type	Relay series	Socket variant	Contact variant

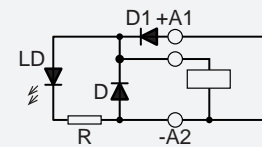
Module SRD-SGR2A-M01

- For mounting rail socket SRD-SGR2A KV2 and SRD-SGR2A KV2 PIK
- Integrated freewheeling diode
- Integrated reverse polarity protection
- Suitable for 6 VDC to 220 VDC



Module SRD-SGR2A-M03

- For mounting rail socket SRD-SGR2A KV2 and SRD-SGR2A KV2 PIK
- Integrated freewheeling diode
- Integrated reverse polarity protection
- Green LED with current limiting resistor
- Suitable for 6 VDC to 24 VDC



Mounting rail socket SRD-SGR2A KV2 PIK for SGR282 ZK

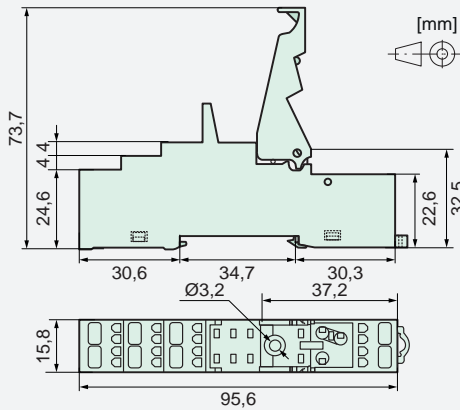


Features

- Plug-in socket with push-in contacts (PIK)
- For relay series SGR282 ZK
- Protective separation between coil and contacts
- With plastic retaining bracket
- Identification plate (1 piece)
- Mounting on 35 mm mounting rail (IEC 60715)
- Central fastening with M3 screw



Dimensions

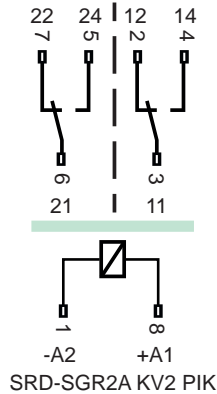


Technical data

Limit continuous current*	8 A
Rated voltage	250 VAC
Connections:	
- Cross sections for wire	2 x 0,2 ... 2,5 mm ²
- Cross sections for stranded wire	2 x 0,2 ... 1,5 mm ²

*note max. contact load in the relay data sheet

Circuit diagram



Insulation data

Basic insulation	at 250 VAC
--- Air and creepage distance	>4 mm
Test voltage	2500 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
--- Air and creepage distance	>8 mm
Test voltage	4000 V _{rms} / 1 min
Creepage resistance	CTI 250
Pollution degree	2
Overvoltage category	III

Additional data

Weight	approx. 40 g
Ambient temperature	-40°C ... +70°C

Tests, regulations, standards

Approvals	cULus
UL File	E135170
Insulation group according to IEC 60664-1	250 VAC
Standards	IEC 61810-1, UL 508

Options, Accessories

Display and protection modules	SRD-SGR2A-M01, SRD-SGR2A-M03
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Mounting instructions

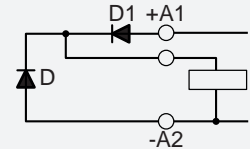
Mounting	on 35 mm mounting rail (IEC 60715)
Mounting	with central fastening Screw M3
- Torque	max. 1,28 Nm

Product key

SRD	SGR2	A	KV2	PIK
Socket type	Relay series	Socket variant	Contact variant	Connection technology

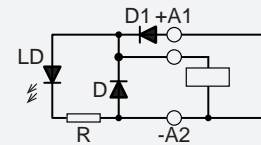
Module SRD-SGR2A-M01

- For mounting rail socket SRD-SGR2A KV2 and SRD-SGR2A KV2 PIK
- Integrated freewheeling diode
- Integrated reverse polarity protection
- Suitable for 6 VDC to 220 VDC



Module SRD-SGR2A-M03

- For mounting rail socket SRD-SGR2A KV2 and SRD-SGR2A KV2 PIK
- Integrated freewheeling diode
- Integrated reverse polarity protection
- Green LED with current limiting resistor
- Suitable for 6 VDC to 24 VDC



Mounting rail socket SRD-SGR2 for SGR282 ZK

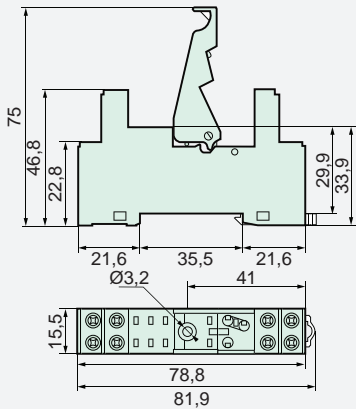


Features

- Plug-in socket with screw terminals
- For relay series SGR282 ZK
- With plastic retaining bracket
- Identification plate (1 piece)
- Mounting on 35 mm mounting rail (IEC 60715)
- Central fastening with M3 screw



Dimensions



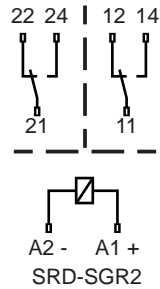
[mm]

Technical data

Limit continuous current*	8 A
Rated voltage	300 VAC
Connections:	
- Cross sections for wire	2 x 2,5 mm ²
- Cross sections for stranded wire	2 x 1,5 mm ²
- Torque	max. 0,8 Nm

*note max. contact load in the relay data sheet

Circuit diagram



Insulation data

Basic insulation at	250 VAC
--- Air and creepage distance	>4 mm
Test voltage	2500 V _{rms} / 1 min
Creepage resistance	CTI 250
Pollution degree	2
Overvoltage category	III

Additional data

Weight	approx. 40 g
Ambient temperature	-25°C ... +70°C

Tests, regulations, standards

Approvals	cULus
UL File	E140923
Insulation group according to IEC 60664-1	250 VAC
Standards	IEC 61810-1, UL 508

Options, Accessories

Display and protection modules	SRD-SGR2-M01, SRD-SGR-M03, SRD-SGR-M05
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Mounting instructions

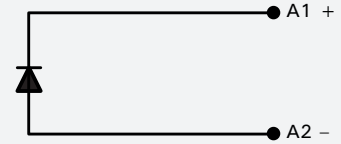
Mounting	on 35 mm mounting rail (IEC 60715)
Mounting	with central fastening Screw M3
- Torque	max. 1,28 Nm

Product key

SRD	SGR2
Socket type	Relay series

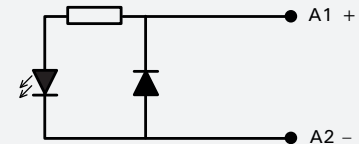
Module SRD-SGR2-M01

- For mounting rail socket SRD-SGR2 and SRD-SIS3
- Integrated freewheeling diode
- Suitable for 6 VDC to 230 VDC (+ at terminal A1)



Module SRD-SGR2-M03

- For mounting rail socket SRD-SGR2 and SRD-SIS3
- Integrated freewheeling diode
- Green LED with current limiting resistor
- Suitable for 6 VDC to 24 VDC(+ at terminal A1)



Module SRD-SGR2-M05

- For mounting rail socket SRD-SGR2 and SRD-SIS3
- Green LED with current limiting resistor
- Integrated reverse polarity protection
- Suitable for 6 VDC to 24 VDC (+ at terminal A1)



Relays

SGR282 ZK series

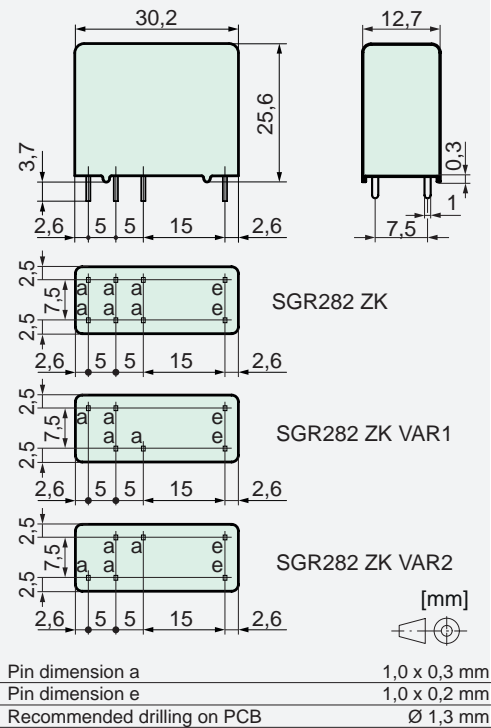
for socket SRD-SGR2A KV2,
SRD-SGR2A KV2 PIK, SRD-SGR2



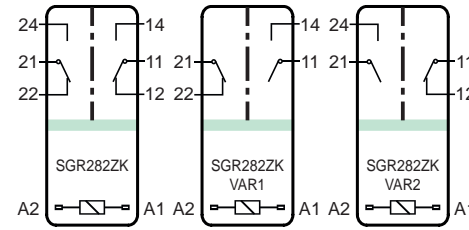
Features

- Relay with forcibly guided contacts according to IEC 61810-3, application type B and application type A (for VAR1 and VAR2)
- Suitable for print mounting
- Protective separation (see insulation data)
- Contact mounting:
 - SGR282 ZK 2 CO
 - SGR282 ZK VAR1 1 NO + 1 NC
 - SGR282 ZK VAR2 1 NO + 1 NC
- Nominal coil power: typ. 0,70 W
- Coil holding power: typ. 0,21 W

Dimensions



Circuit diagram (top view)



Insulation data

Double or reinforced insulation	at 250 VAC
--- Air and creepage distance	>5,5 mm
Test voltage	4000 V _{rms} / 1 min
Double or reinforced insulation	at 250 VAC
--- Air and creepage distance	>14 mm
Test voltage	5000 V _{rms} / 1 min
Test voltage: open contact	1500 V _{rms} / 1 min
Creepage resistance	CTI 550
Pollution degree	2
Overvoltage category	III
Insulation resistance at Up 500 VDC	>100 MΩ

Additional data

Mechanical lifetime	> 10x10 ⁶ operations
Switching frequency mechanical	max. 15 Hz
Response time (NO closed)	typ. 12 ms
Drop-out time* (NC closed)	typ. 5 ms
Bounce time NO	typ. 4 ms
Bounce time NO	typ. 8 ms
Shock 16 ms	NO > 10 g / NC > 2,5 g
Vibration resistance (10-55 Hz)	NO > 10 g / NC > 1,5 g
Short circuit resistance NO with pre-fuse	1000 A SCPD 10 A gG / gL
Short circuit resistance NC with pre-fuse	1000 A SCPD 6 A gG / gL
Ambient temperature	-40 °C ... +70 °C
Thermal resistance	50 K/W
Coil limit temperature	120 °C
Weight	approx. 20 g
Mounting position	any
Mounting distance	recommendation >5 mm
Test method	A / group assembly
Protection class	RT II
Solder bath temperature	270 °C / 5 s
*without coil wiring	

Tests, regulations, standards

Approvals	cULus, TÜV
UL File	E188953 Sec. 1
Insulation group according to IEC 60664-1	250 VAC
Fire protection conditions	UL 94 / V-1
Standards	IEC 61810-1, IEC 61810-3, UL 508

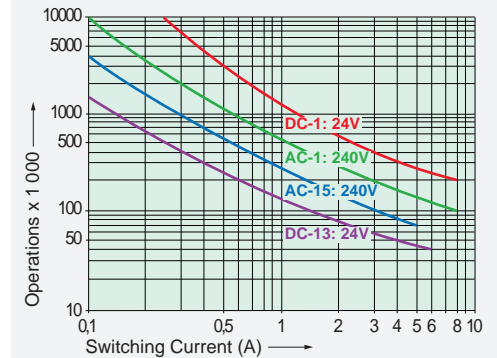
Options, Accessories

Mounting rail socket	SRD-SGR2, SRD-SGR2A KV2, SRD-SGR2A KV2 PIK
PCB socket	SRP-SGR2

Product key

SGR282ZK	VAR1	24VDC
Type designation	Contact variant NO/NC	Nominal coil voltage

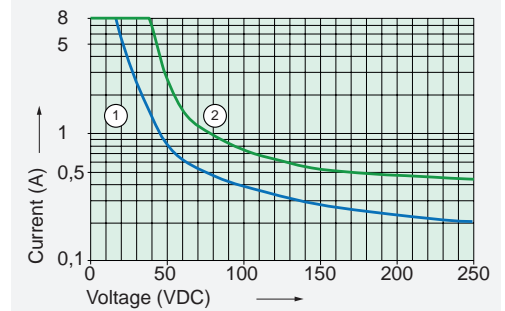
Contact life for NO contact



Max. switching capacity (IEC 61810-1, UL 508)
AC-1: 240 V / 8 A
AC-15: 240 V / 5 A
DC-1: 24 V / 8 A
DC-13: 24 V / 6 A

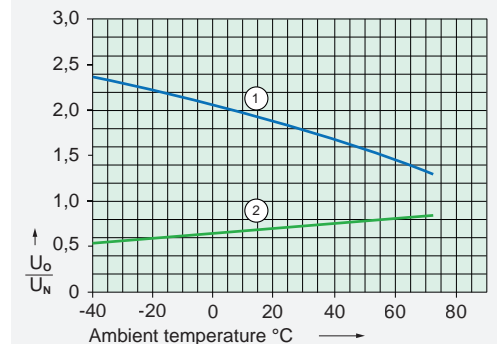
Maximum continuous current per contact at load of:
1 contact 8 A
2 contacts 8 A

Contact load limit curve (DC)



- 1) Inductive load L/R 40 ms
- 2) Resistive load

Coil excitation voltage range



- 1) Max. excitation voltage with contact current ≤ 4 A
 - 2) Min. excitation voltage without previous operation
- test conditions:
- Free-standing relay on PCB
 - Duty cycle 100%

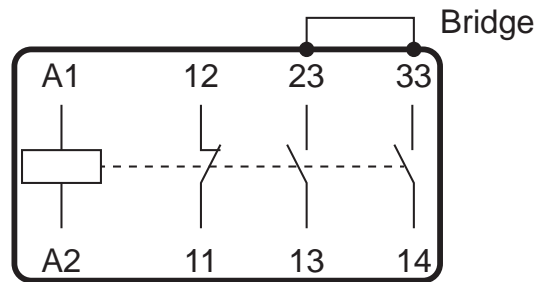
Coil data at 20 °C

Nominal voltage (VDC)	Pick-up voltage (VDC)	Drop-out voltage (VDC)	Nominal current (mA)	Resistance (Ohm)
6	≤4,2	≥0,6	117	51 ± 10%
12	≤8,4	≥1,2	59	205 ± 10%
18	≤12,6	≥1,8	39	462 ± 10%
24	≤16,8	≥2,4	29	822 ± 10%
48	≤33,6	≥4,8	15	3290 ± 10%
60	≤42,0	≥6,0	12	5140 ± 13%
110	≤77,0	≥11,0	6	17280 ± 15%

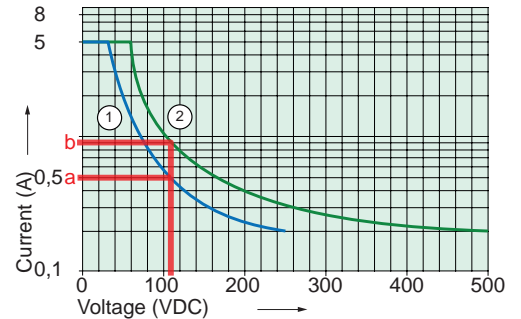
other voltage values on request

Series of contacts

By connecting two contacts in series, the contact life under aggressive switching loads with strong arcing can be increased by up to 50%. In addition, the air clearance is doubled for open contacts as opposed to a single contact. This significantly increases the possible maximum breaking capacity and is therefore particularly interesting for higher DC loads. For example, the maximum permissible current can be increased from 0.5 A (a) to 0.9 A (b) for a 110 VDC application.

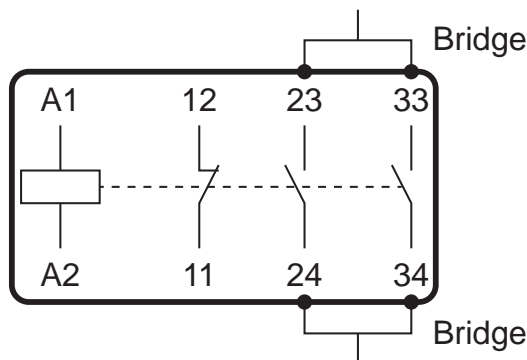


Comparison of load limit curves for contacts
(① one contact, ② two contacts in series)

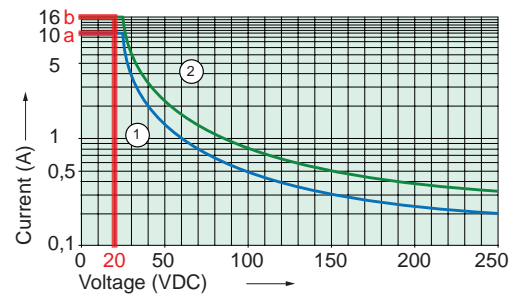


Parallel connection of 2 contacts for load sharing

Load current sharing is possible by connecting two contacts in parallel. This allows the permissible maximum current to be increased by 60%. This means that, for example, with a maximum permissible load current of 10 A at 20 VDC (a) on one contact, the current can be increased by 6 A by connecting 2 contacts in parallel. The possible total load increases to 16 A at 20 VDC (b). Since the load is not always distributed symmetrically between the contacts, the increase of the permissible maximum current is limited to 60%. This prevents contact overload.

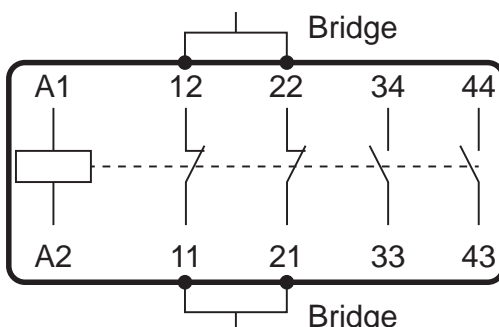


Comparison of load limit curves for contacts
(① one contact, ② two contacts in parallel)



Parallel connection of 2 contacts to increase the contact reliability

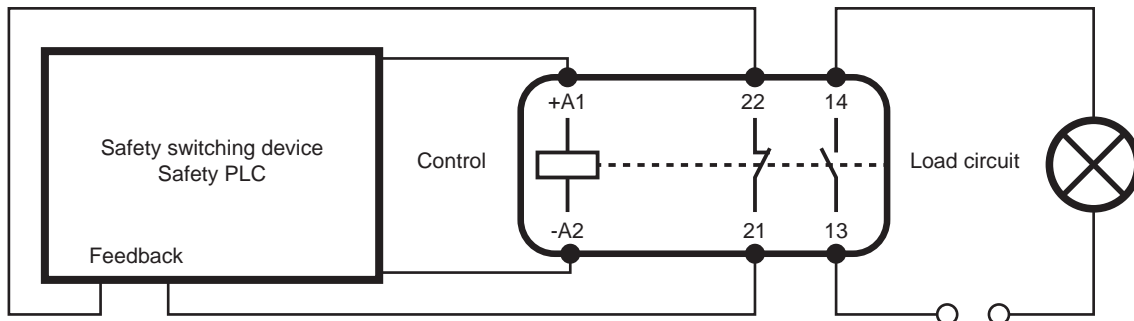
By connecting two relay contacts in parallel, the contact reliability can be increased at very low switching loads or low switching cycles (low demand). Combined with the notched crown contacts, which in themselves achieve an extremely high contact availability, this can be increased even further. Especially for feedback contacts, e.g. NC, this is a proven method.



Notched crown contact

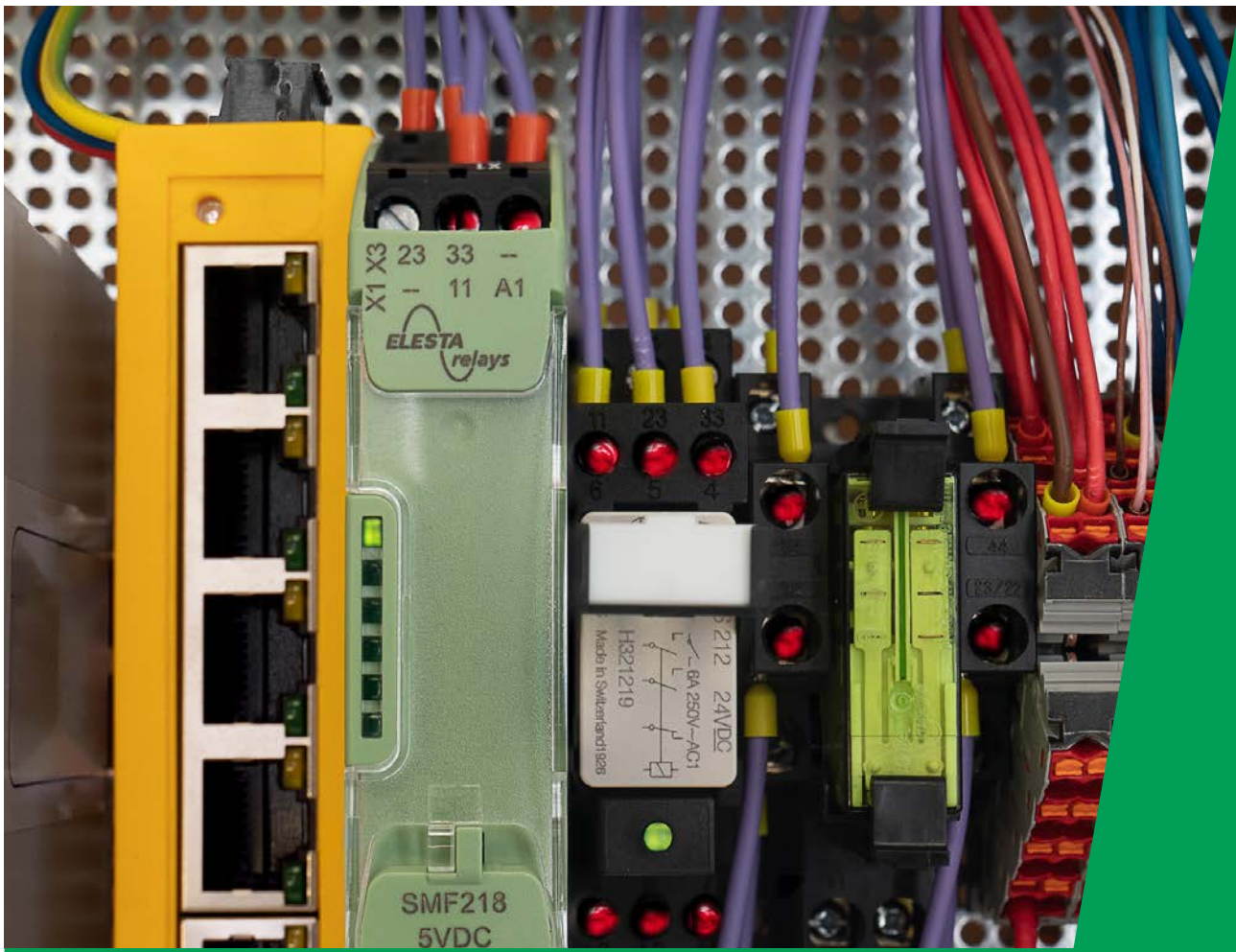
Contact extension with connection to safety PLC or safety switching device

By integrating the feedback contacts of the forcibly guided relay into the enable path of a PLC or a safety switching device, a process can be prevented from being restarted after an incorrect switch-off. By connecting the contacts of two relays in series, a safe switch-off can be guaranteed even if one relay welds. The integration of the feedback contacts, which are also connected in series, reliably prevents a new process start or a restart of a plant.



Manipulation security through lacquer and wiring

Screw and plug-in points can be fixed with screw locking lacquer which is applied after assembly. Any subsequent unauthorized opening of the screwed or plugged connections can thus be traced. When wiring, make sure that the cables are routed correctly. In conjunction with a clear assignment of the relay contacts and their connection points, it is possible to prevent the connection cables from being mixed up or, if possible connection errors cannot be excluded, to design them in such a way that they do not lead to a safety-critical error. In general, relays in housings (relay modules SMF) are better protected against manipulation as well as against environmental influences.







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