Electromechanical and solid-state Zelio® Relays

Catalog
2010

Schneider Electric

Reduce the size of your enclosures and, at the same time, increase machine reliability...

with these new Zelio® Relays

> Electromechanical relays RSL

Only 6 mm wide, thus saving considerable space in your enclosures

6 mm wide

> Solid-state relays SSR

Enhanced service life provided by electronic technology

Enhanced service life

Contents

Make the most of your energy SM

Save space with Zelio® Relay RSL

Only 6 mm wide

reduces the size of your enclosure

> A solution for any application

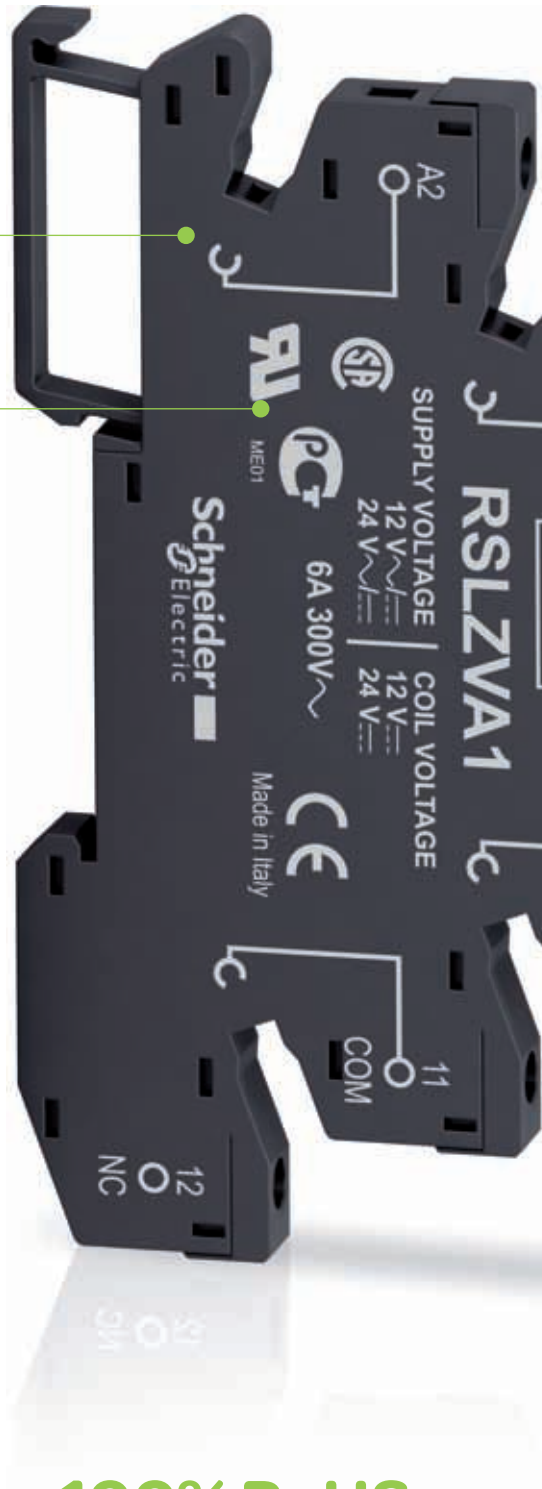
A versatile offer

> An offer with maximum flexibility, comprising:
• complete products: a single reference for a relay mounted on a socket,

> Wide choice of sockets available covering a range of voltages from 12 to 230 V.
• select the relay and associated socket according to your application.

An offer that meets the most demanding standards

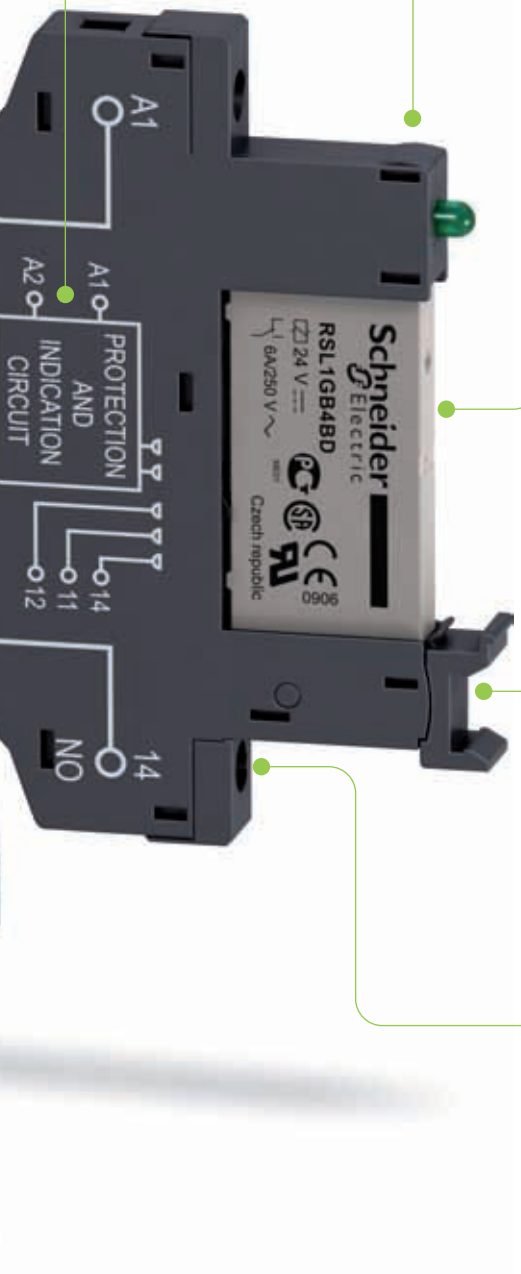
• Conformity with the European RoHS (Restriction of Hazardous Substances) directive.
• Conformity to international standards IEC/EN 61810-1, UL508, CSA C22.2 N°14, GOST.



100% RoHS

Schneider Electric commits itself to reducing the environmental impact of its products

> Increased reliability in operation



Added protection in the socket

Built-in protection from transients and reverse polarity voltages.

LED indicator

Power on and relay status indication.

Standard 1 C/O relays

For general purpose load requirements.

Up to 6A switching

> Simple installation and maintenance

Simple maintenance of relay in socket

Using locking/unlocking lever.

Simple wiring

Bus jumpers available as accessories.

Simple mounting on DIN rail

2 connection choices

Suitable for the majority of your applications.

Screw connector

Spring terminal

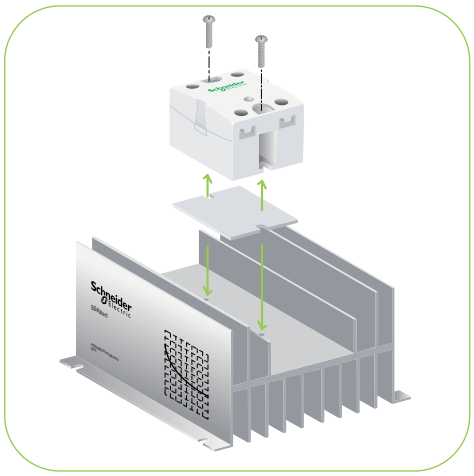
Choose long life and silent operation with Zelio® SSR Relays

> Optimized heat exchange

The new solid-state relays SSR with SCR (Semiconductor Controlled Rectifier) **outputs offer you two alternatives:**

SSRD range
Integrated heat sink to provide factory tested heat exchange, that easily mounts by clipping directly onto DIN rail. Can also be panel mounted.

SSRP range
Panel mounted, either by itself or combined with a heat sink for applications requiring considerable heat exchange.



SSRP relay mounted on heat sink with thermal transfer pad

> Distinctive indication

A green LED on the front face of the products provides instant indication of the presence of input voltage.

> High performance

High breaking capacities
- From 10 to 125 A for relays SSRP
- From 10 to 45 A for relays SSRD

Wide supply voltage range
- From 3 to 32 VDC and 90 to 280 VAC

Outputs suited to applications
- From 24 to 280 VAC and 48 to 530/660 VAC

Space Saving SSRD series
- Only 22.5 mm and up to 45.5 mm wide

Enhanced service life
- Reduced preventive maintenance. SSR relays have little to no maintenance required once applied correctly.

Silence of electronic technology
- Complete silence when switching

Vibration resistant
- Even in the event of excessive vibration, the relay will not change state

Enhanced service life

due to electronic relay technology

Complete silence when switching

providing suitability for building and hospital applications

High switching frequency

particularly on packaging and textile machines

> Conformity to international standards

100% RoHS

Schneider Electric commits itself to reducing the environmental impact of its products

Panorama Zelio® Relays

Electromechanical relays

Contact configuration	1 C/O	1 or 2 C/O	1 or 2 C/O	2, 3 or 4 C/O
Current	6 A	8-12-16 A	5-12 A	6-10-12 A
Mounting	DIN rail		DIN rail	DIN rail or panel
Catalog numbers	**RSL**	**RSB**	**ABR**	**RXM**
Pages	12 to 17	20 to 23	54 to 73	24 to 31

Electromechanical relay advantages

- Wide number of contacts (up to 4)
- Easy installation and maintenance
- Socket compatible plug in relays
- Flag indicator to show contact status
- Lockable test button for checking circuit during build
- Magnetically isolated
- Coil voltage LED indicator

Electromechanical relays

Solid-state relays

2, 3 or 4 C/O	1, 2, 3 or 4 C/O	2 C/O or 2 N/O	1 N/O	1 N/O	1 N/O
10 A	15 A	30 A	3 A	10 ...45 A	10 ...125 A
DIN rail or panel			DIN rail	DIN rail or panel	Panel
RUM	**RPM**	**RPF**	**ABS**	**SSRD**	**SSRP**
32 to 41	42 to 49	50 to 53	54 to 73	74 to 81	74 to 81

Solid-state relay (SSR) advantages

- Enhanced service life
- Wide supply voltage range and high breaking current (up to 125 A), suited to packaging and textile machines
- Input power indicator
- Completely silent switching, suitable for building and hospital applications
- Vibration resistant

Zelio® Plug-In Relays

Relays

Contact types

Circuit symbol	Contact configuration	EU nomenclature	USA nomenclature
	Make contact (Normally Open)	N/O	SPST-NO DPST-NO nPST-NO *(1)*
	Break contact (Normally Closed)	N/C	SPST-NC DPST-NC nPST-NC *(1)*
	Changeover Contact	C/O	SPDT DPDT nPDT *(1)*

Utilization categories

Category	Type of current	Applications
AC-1	∿ single-phase ∿ 3-phase	Resistive or slightly inductive loads.
AC-3	∿ 3-phase	Starting and braking of squirrel cage motors; reversing direction of rotation only after stopping of motor.
AC-4	∿ 3-phase	Starting of squirrel cage motors, inching. Plugging, reversing direction of rotation.
DC-1	⎓	Resistive or slightly inductive loads *(2)*.
AC-14	∿ single-phase	Control of electromagnetic loads (< 72 VA), auxiliary control relays, power contactors, electromagnetic solenoid valves and electromagnets.
AC-15	∿ single-phase	Control of electromagnetic loads (> 72 VA), auxiliary control relays, power contactors, electromagnetic solenoid valves and electromagnets.
DC-13	⎓	Control of electromagnetic loads, auxiliary control relays, power contactors, magnetic solenoid valves and electromagnets.

Protection categories

Category	Explanation	Condition
RT 0	Unenclosed relay	Relay not provided with a protective case.
RT I	Dust protected relay	Relay provided with a case which protects its mechanism from dust.
RT II	Flux-proof relay	Relay capable of being automatically soldered without allowing the migration of solder fluxes beyond the intended areas.
RT III	Wash-tight relay	Relay capable of being automatically soldered and then washed to remove flux residues without risk of ingress of flux or washing solvents.
RT IV	Sealed relay	Relay provided with a case which has no venting to the outside atmosphere.
RT V	Hermetically sealed relay	Sealed relay having an enhanced level of sealing.

(1) n = number of contacts.
(2) The switchable voltage can be doubled, for an equal current, by connecting two contacts in series.

Protection modules

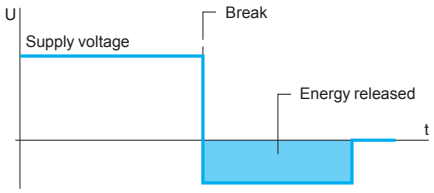
Whenever an inductive load is de-energized (coil of a relay or of a contactor), an overvoltage appears at its terminals. This voltage peak can reach several thousand volts and a frequency of several MHz.
It is likely to disturb the operation of automation systems which contain electronic devices.
Protection modules are used to reduce the voltage peak on de-energization and they therefore limit the energy of interference signals to a level that will not disturb surrounding coils and electronic devices.

These modules are used to avoid:
- electromagnetic compatibility problems
- the deterioration of contact materials
- the destruction of insulation due to overvoltage
- the destruction of electronic components

Diode protection module (with or without LED)

■ Advantages
- accumulation of energy allowing current flow in the same direction
- absence of any voltage peaks at the coil terminals
- low cost

■ Considerations
- increase in relay drop-out time (up to 3 to 4 times the usual time)
- no polarity protection
- de-energization of the relay

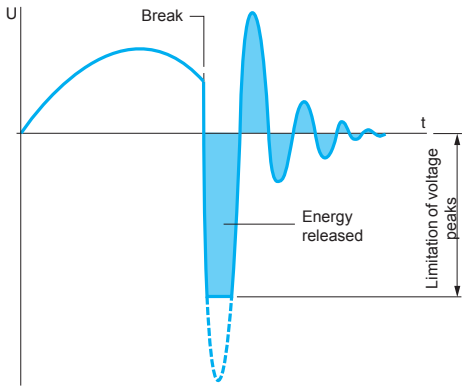


Coil voltage with diode protection module (⎓ only)

Protection module with varistor

■ Advantages
- can be used with ∿ and ⎓ supply
- voltage peak limited to about 2 Un
- little effect on relay drop-out time

■ Considerations
- no modification of coil's own oscillating frequency
- limitation of switching frequency

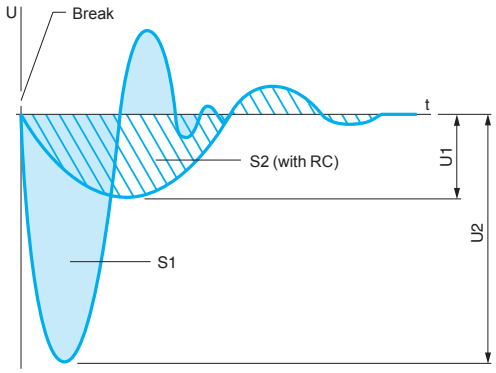


Coil voltage with varistor protection module (∿ and ⎓)

Protection module with RC circuit

■ Advantages
- coil oscillating frequency reduced to about 150 Hz
- voltage peak limited to 3 Un
- little effect on relay drop-out time

■ Considerations
- no protection for low voltages



Coil voltage with RC circuit protection module (∿ only)

S1 = S2 = Energy released

Zelio® Plug-In Relays
RSL slim interface relays

Introduction

RSL slim interface relays offers compact size in a modular design: their slim width (6 mm) saves valuable space when mounting on a DIN rail at the back of an enclosure.

RSL relays are available in two versions:
■ **Pre-assembled range**: a single catalog number for a standard relay mounted on a socket.
□ The socket includes a built-in protection circuit (against transients and reverse polarity voltages) and an LED indicator as standard.
□ Wire connection options: screw connectors and spring terminals.
□ This pre-assembled solution covers a wide range of operating voltages from 12 to 230 V.
■ **Individual relays and sockets:**
□ The relay and the socket can be provided separately according to the requirements of the application.
□ Simple maintenance: an **RSL** slim relay can be replaced without any need to disconnect the socket wiring.

Description

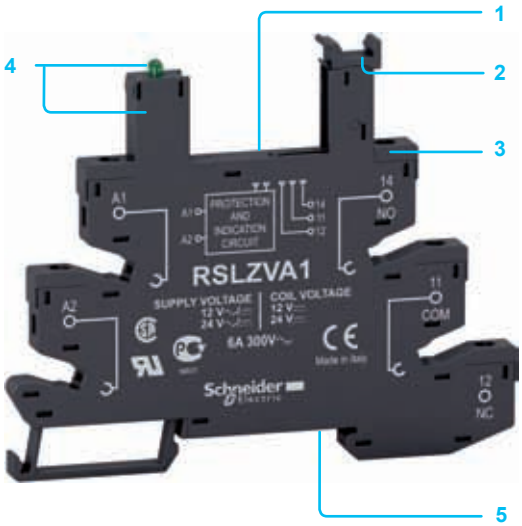
RSL slim interface relays, pre-assembled

1 6 A standard relay with 1 C/O contact.
2 Retention lever for easy removal of the relay from its socket.
3 Sockets: wire connection by screw connector or spring terminals.
4 All sockets have a built-in protection circuit and an LED indicator.

RSL slim interface relay

1 Five flat, reinforced PCB pins.

Sockets for RSL slim interface relays



1 Five female contacts for the relay pins.
2 Retention lever which accepts optional ID tags.
3 Wire connection by screw connector or spring terminals.
4 Built-in protection circuit and LED indicator.
5 Locating slot for mounting on DIN rail.

Introduction: page 12
Characteristics: page 13
Product selector: page 16
Dimensions, Wiring diagrams: page 17

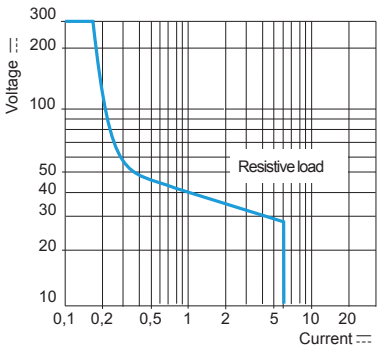
Zelio® Plug-In Relays
RSL slim interface relays

General characteristics			
Conforming to standards			IEC 61810-1, UL 508, CSA C22-2 No. 14
Product certifications			UL E173076, UL E172326, CSA 240278, CSA 247510, GOST
Ambient air temperature around the device	Storage	**°C**	- 40… + 85
	Operation	**°C**	- 40… + 55
Vibration resistance conforming to IEC/EN 60068-2-6	In operation		10 gn
	Not operating		5 gn
Degree of protection	Conforming to IEC/EN 60529		IP 40 (Relays) IP 20 (Sockets)
Shock resistance conforming to IEC/EN 60068-2-27	Opening		10 gn
	Closing		5 gn
Protection category			RT III
Mounting position			Any
Insulation characteristics			
Rated insulation voltage (Ui)		**V**	250 (IEC)
Rated impulse withstand voltage (Uimp)		**kV**	6
Dielectric strength (rms voltage)	Between coil and contact	∼ **V**	4000
	Between contacts	∼ **V**	1000

Contact characteristics

Relay type				RSL1AB●●●
Number and type of contacts				1 C/O standard
Contact materials				AgSnO2
Conventional thermal current (Ith)	For ambient temperature ≤ 55 °C		**A**	6
Rated operational current in utilization categories AC-1 and DC-1	Conforming to IEC	N/C	**A**	6
		N/O	**A**	6
	Conforming to UL		**A**	6
Switching current	Minimum		**mA**	100
Switching voltage	Rated		**~ V**	250
	Maximum		**V**	~ 400, ⎓ 300
	Minimum		**V**	12
Nominal load (resistive)			**A / ~ V**	6 / 250 V (at 50mW)
Switching capacity	Maximum	~	**VA**	1500
		⎓	**W**	18…150 (depending on the voltage)
	Minimum		**mW**	120
Maximum operating rate In operating cycles / hour	No-load			72 000
	Under load			360
Mechanical durability	In millions of operating cycles			≥ 10
Electrical durability In millions of operating cycles	Resistive load			See curves below
	Inductive load			0.05 (N/O contact: ~250 V, 3 A, AC-15)

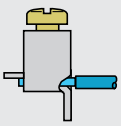
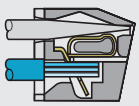
Maximum switching capacity on ⎓ load



Coil characteristics

Average consumption		⎓	**W**	0.17			
Drop-out voltage threshold		⎓		≥ 0.05 Uc			
Operating time (response time)	Between coil energization and making of the NO contact	⎓	**ms**	12 max			
	Between coil de-energization and making of the NC contact	⎓	**ms**	5 max			
Control circuit voltage Uc			**V**	**12**	**24**	**48**	**60**
Relay control voltage codes				**JD**	**BD**	**ED**	**ND**
DC supply	Average resistance at 23 °C ± 10%		**Ω**	848	3390	10 600	20 500
	Operating voltage limits	Min.	**V**	8.4	16.8	33.6	42
		Max.	**V**	16.8	33.6	67.2	84

Socket characteristics

Socket type			**RSLZV●●**	**RSLZR●●**
Relay types used			**RSL1●●●●**	**RSL1●●●●**
Conforming to standards			IEC 61984, UL 508, CSA C22-2 No. 14	
Product certifications			UL, CSA, GOST	
Contact terminal arrangement			Separate	Separate
Wire connection method			Screw connector	Spring terminals
Width		**mm**	6.2	6.2
Electrical characteristics				
Conventional thermal current (Ith)		**A**	6	
Maximum operating voltage		**~ V**	300	
Insulation characteristics				
Between adjacent output contacts		**Vrms**	2500	
Between input and output contacts		**Vrms**	2500	
Between contacts and DIN rail		**Vrms**	2500	
General characteristics				
Ambient air temperature around the device	Operation	**°C**	- 40…+ 70 (-40 to +55 for U > 80 V)	
	Storage	**°C**	- 40…+ 85	
Degree of protection	Conforming to IEC/EN 60529		IP 20	
Connection	Solid wire without cable end 1 conductor	**mm²**	0.2…2.5	0.2…1.5
		AWG	24…14	24…16
	Flexible wire with cable end 1 conductor	**mm²**	0.2…2.5	0.2…1.5
		AWG	24… 14	24…16
Screw size		**mm**	M 2.5	
Maximum tightening torque		**Nm**	0.5	10 N…40 N (0.2 …1.5 mm²)
Mounting			On 35 mm DIN rail	
Mounting on DIN rail			By plastic compression spring	
Terminal reference			IEC	
LED indicator			Yes (built-in)	
Added protection in circuit			Yes (built-in)	
Wire connection method			Screw connector	Spring terminal
				

Sockets operating voltage

		Operating voltage	Tolerance	Control circuit voltage (relay)
		V		**V**
Socket type	**RSLZVA1, RSLZRA1**	⎓/~ 12	+ 20% / - 5%	⎓ 12
		⎓/~ 24	+ 20% / - 10%	⎓ 24
	RSLZVA2, RSLZRA2	⎓/~ 48	+ 20% / - 10%	⎓ 48
		⎓/~ 60	+ 20% / - 10%	⎓ 60
	RSLZVA3, RSLZRA3	⎓/~ 110	+ 15% / - 20%	⎓ 60
	RSLZVA4, RSLZRA4	⎓/~ 230	+ 15% / - 20%	⎓ 60

Zelio® Plug-In Relays
RSL slim interface relays


RSL 1PV●● RSL 1PR●●

Slim interface relays, pre-assembled

Standard relays mounted on socket equipped with LED and protection circuit
Sold in lots of 10

1 C/O contact - Thermal current (Ith) 6A

Operating voltage (input voltage)	Socket type				Replacement Relay
	Screw connector		Spring terminal		
	Catalog Number	Weight	Catalog Number	Weight	Catalog Number
V		kg		kg	
⎓/∿ 12	RSL1PVJU	0.031	RSL1PRJU	0.029	RSL1AB4JD
⎓/∿ 24	RSL1PVBU	0.031	RSL1PRBU	0.029	RSL1AB4BD
⎓/∿ 48	RSL1PVEU	0.031	RSL1PREU	0.029	RSL1AB4ED
⎓/∿ 110	RSL1PVFU	0.031	RSL1PRFU	0.029	RSL1AB4ND
⎓/∿ 230	RSL1PVPU	0.031	RSL1PRPU	0.029	RSL1AB4ND

RSL 1●●●●

Slim interface relays for customer assembly: relay + socket

Relays with flat, reinforced pins (PCB type)
Sold in lots of 10

1 C/O contact - Thermal current (Ith) 6A

Control circuit voltage (relay coil voltage)	Standard	
	Catalog Number	Weight
V		kg
⎓ 12	RSL1AB4JD	0.006
⎓ 24	RSL1AB4BD	0.006
⎓ 48	RSL1AB4ED	0.006
⎓ 60	RSL1AB4ND	0.006


RSL ZVA● RSL ZRA●

Sockets equipped with LED and protection circuit
Sold in lots of 10

Operating voltage (input voltage)	For use with relays	Socket type			
		Screw connector		Spring terminal	
		Catalog Number	Weight	Catalog Number	Weight
V			kg		kg
⎓/∿ 12 and ⎓/∿ 24	RSL1AB4JD RSL1AB4BD	RSLZVA1	0.025	RSLZRA1	0.023
⎓/∿ 48 and ⎓/∿ 60	RSL1AB4ED RSL1AB4ND	RSLZVA2	0.025	RSLZRA2	0.023
⎓/∿ 110	RSL1AB4ND	RSLZVA3	0.025	RSLZRA3	0.023
⎓/∿ 230	RSL1AB4ND	RSLZVA4	0.025	RSLZRA4	0.023

RSL Z2

RSL Z3

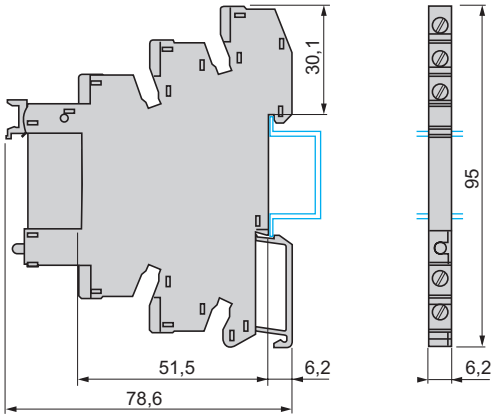
Accessories for sockets

Description	Compatibility	Catalog Number	Weight kg
Clip-in ID tags (2 sheets of 64 ID tags)	With all sockets	RSLZ5	0.001
Bus jumper (10 x 20-pole jumper)	With all sockets	RSLZ2	0.003
Butterfly isolator (10 isolators)	With all sockets	RSLZ3	0.001

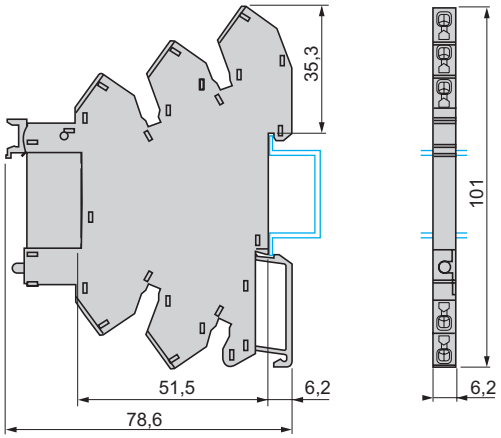
Introduction: page 12 | Characteristics: page 13 | Product selector: page 16 | Dimensions, Wiring diagrams: page 17

Slim interface relays, pre-assembled

RSL1PV●● (screw connector)

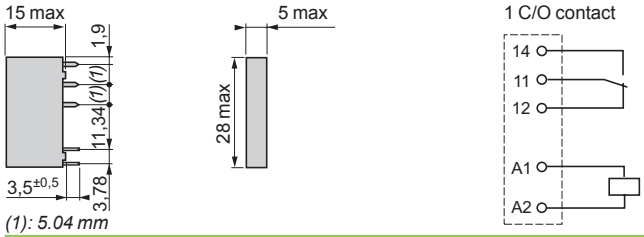


RSL1PR●● (spring terminals)



Relays

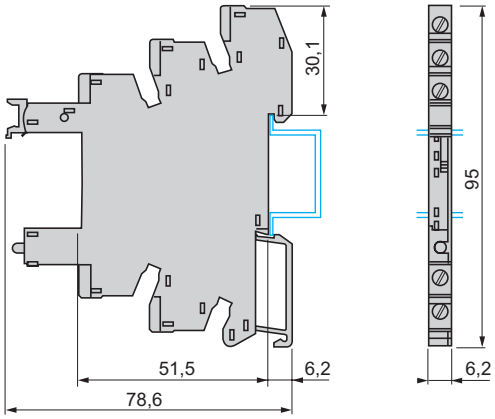
RSL1●●●● with flat, reinforced PCB pins



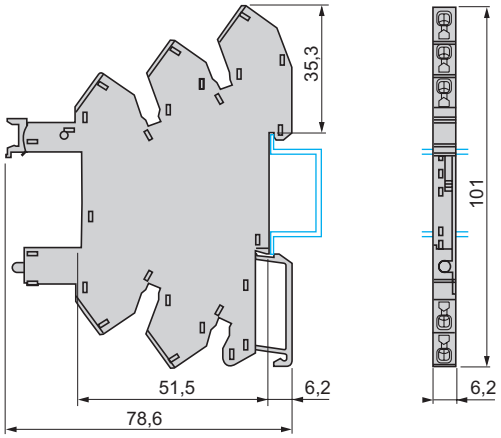
(1): 5.04 mm

Sockets

RSLZV●● (screw connector)

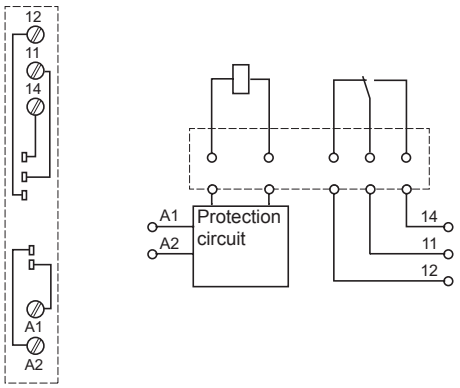


RSLZR●● (spring terminals)

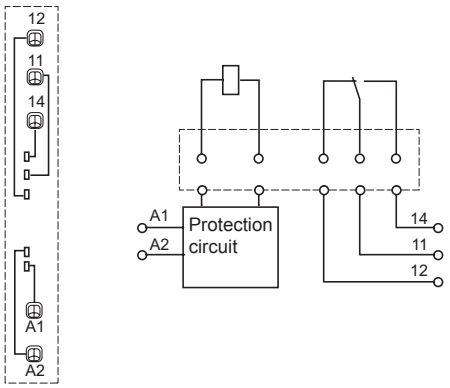


Socket connections

RSLZV●● (screw connector)

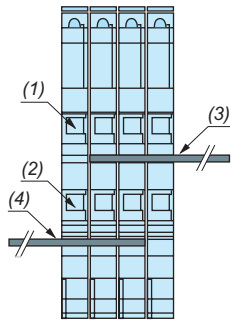


RSLZR●● (spring terminals)



Example of RSL Z2 bus jumper mounting on sockets

Side view



(1) A1
(2) A2
(3) Bus jumper polarity A1
(4) Bus jumper polarity A2

Zelio® Plug-In Relays

Application		**Plug-in relays**		
		Interface relays	**Miniature relays**	
				
Number and type of contacts / conventional thermal current (Ith on N/O contact)		1 C/O / 16 A 1 C/O / 12 A 2 C/O / 8 A	2 C/O / 12 A 3 C/O / 10 A 4 C/O / 6 A 4 C/O / 3 A (low level)	
Control circuit voltage	∿	24…240 V	24…240 V	
	⎓	6…110 V	12…220 V	
Type of pins		Flat, PCB type	Quick-connect	
Operational voltage		Up to ∿ 400 V / ⎓ 300 V	Up to 250 V	
Durability (operating cycles)	Electrical, resistive load	100 000	100 000	
	Mechanical, no-load	30 000 000	10 000 000	
Functions	LED	Yes (with protection modules)	Yes (depending on version)	
	Mechanical indicator	–	Yes	
	Lockable test button	–	Yes	
	Low level contacts	–	Yes (depending on version)	
Type reference		**RSB**	**RXM**	
Pages		20	24	
				
Conventional thermal current (Ith)		12 A *(1)*	10 A	12 A *(2)*
Contact terminal arrangements		Separate	Mixed	Separate
Connection		Box lug connectors	Screw clamp terminals or box lug connectors	Box lug connectors
Accessories	Protection modules	Yes	Yes	
	Timer module	–	–	
	Retention clip	Yes	Yes	
	Socket ID tag	Yes	Yes (except RXZ E2M114)	
	Mounting adapters for ⊔ rail	–	Yes	
	Mounting adapters with fixing lugs	–	Yes	
	Bus jumper, 2-pole (Ith = 5 A)	–	–	Yes
Associated socket types		**RSZE1S●●M**	**RXZE2M●●●**	**RXZE2S●●●**
Pages		20	24	24

(1) When using relay RSB 1A160●● with socket RSZ E1S48M, terminals must be linked.
(2) Except for sockets RXZ E2S11●M: 10 A.

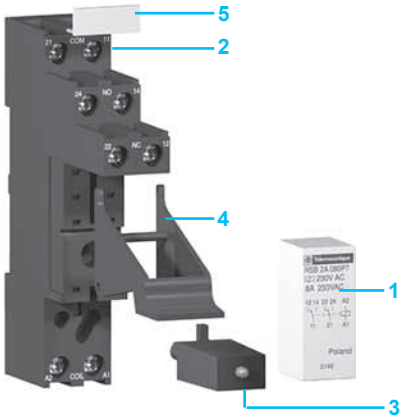
Universal relays		Power relays
		
2 C/O / 10 A 3 C/O / 10 A 3 C/O / 3 A (low level)	2 C/O / 10 A 3 C/O / 10 A	1 C/O / 15 A 2 C/O / 15 A 3 C/O / 15 A 4 C/O / 15 A
24…230 V		24…230 V
12…220 V	12…110 V	12…110 V
Cylindrical	Quick-connect	Quick-connect
Up to 250 V		Up to 250 V
100 000		100 000 *(3)*
5 000 000		10 000 000
Yes (depending on version)		Yes (depending on version)
Yes		Yes
Yes		Yes
Yes (depending on version)	–	–

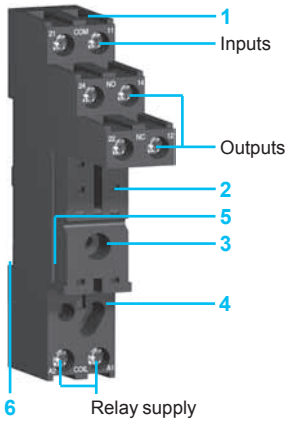
RUM			RPM
32			42
			
12 A			16 A
Mixed	Separate		Mixed
Box lug connectors			Screw clamp terminals
Yes			Yes
Yes			Yes (for 3 and 4-pole)
Yes			Yes (on socket RPZ F1)
Yes			Yes
–			Yes
–			Yes
–	Yes		–

RUZC●M	RUZSC●M	RUZSF3M	RPZF●
32		32	42

(3) 100 000 for RPM1 and RPM2; 60 000 for RPM3 and RPM4.

Zelio® Plug-In Relays
RSB interface relays





Introduction of the product range

The RSB interface relay range includes:

1 12 A relays with 1 C/O contact , 16 A relays with 1 C/O contact and 8 A relays with 2 C/O contacts.
2 Sockets with separate contact terminals.
3 Protection modules (diode, diode + LED, RC circuit or varistor + LED).
4 Plastic hold-down ejector clip for all sockets.
5 Clip-in ID tags for all sockets.

Socket description

Sockets with separate contact terminals *(1)*

1 Box lug connectors.
2 Five or eight female contacts for the relay pins.
3 Mounting hole for panel mounting.
4 Location for protection modules.
5 Locking components for plastic hold-down ejector clip.
6 Locating slot for mounting on DIN rail.

(1) The inputs and outputs are separated from the relay supply.

General characteristics

Conforming to standards			IEC/EN 61810-1, UL 508, CSA C22-2 n° 14
Product certifications			cURus File E173076 CNN NRNT2,; CSA File 215736 Class 321107; CE; RoHS compliant
Ambient air temperature around the device	Storage	**°C (F)**	- 40…+ 85 (-40 ... +185)
	Operation	**°C (F)**	⎓ - 40…+ 85 (-40 ... +185), ∿ - 40...+ 70 (-40 ... +158)
Vibration resistance	Conforming to IEC/EN 60068-2-6		> 10 gn (10..150 Hz)
Degree of protection	Conforming to IEC/EN 60529		IP 40
Shock resistance conforming to IEC/EN 60068-2-27	Opening		5 gn
	Closing		10 gn
Protection category			RT I
Mounting position			Any

Insulation characteristics

Rated insulation voltage (Ui)	Conforming to IEC/EN 60947	**V**	400
Rated impulse withstand voltage (Uimp)		**kV**	3.6 (1.2/50 µs)
Dielectric strength (rms voltage)	Between coil and contact	**∿ V**	5000
	Between poles	**∿ V**	2500
	Between contacts	**∿ V**	1000

Contact characteristics

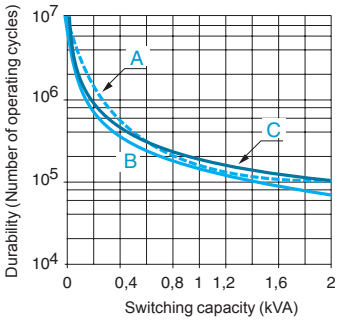
Relay type				**RSB1A120●●**	**RSB1A160●●**	**RSB2A080●●**
Number and type of contacts				1 C/O	1 C/O	2 C/O
Contact materials				AgNi		
Conventional thermal current (Ith)	For ambient temperature ≤ 40°C		**A**	12	16	8
Rated operational current in utilization categories AC-1 and DC-1	Conforming to IEC	N.O.	**A**	12	16	8
		N.C.	**A**	6	8	4
Switching current	Minimum		**mA**	5		
Switching voltage	Maximum		**V**	∿ 400, ⎓ 300		
	Minimum		**V**	5		
Nominal load (resistive)			**A**	12 / 250 ∿ V	16 / 250 ∿ V	8 / 250 ∿ V
			A	12 / 28 ⎓ V	16 / 28 ⎓ V	8 / 28 ⎓ V
Switching capacity	Maximum	∿	**VA**	3000	4000	2000
		⎓	**W**	336	448	224
	Minimum		**mW**	300		
Maximum operating rate In operating cycles/hour	No-load			72 000		
	Under load			600		

Introduction: page 20 | Characteristics: page 20 | Product selector: page 22 | Dimensions, Wiring diagrams: page 23

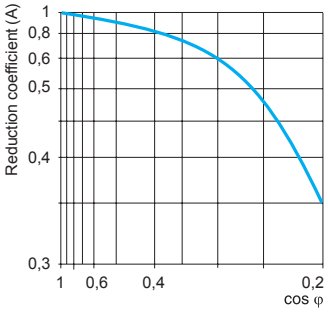
Contact characteristics (continued)

Relay type			RSB 1A120●●	RSB 1A160●●	RSB 2A080●●
Mechanical durability	In millions of operating cycles		≥ 30		
Electrical durability	Resistive load (p.f.)		12 A, 250 V~ (≥ 0.1)	16 A, 250 V~ (≥ 0.07)	8 A, 250 V~ (≥ 0.1)
In millions of op. cycles	Inductive load		See curves below		

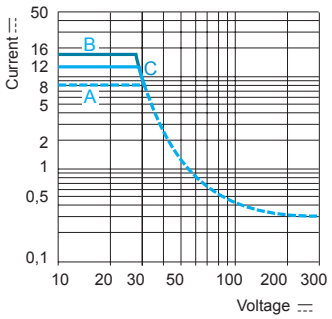
Electrical durability of contacts
Resistive load ~



Reduction coefficient for inductive load ~
(depending on power factor cos φ)



Maximum switching capacity on resistive load
⎓



A RSB 2A080●● **B RSB 1A160●●** **C RSB 1A120●●**. Inductive load durability = resistive load durability x reduction coefficient.

Coil characteristics

Average consumption				⎓ 0.45 W, ~ 0.75 VA								
Drop-out voltage threshold				≥ ⎓ 0.1 Uc (10% of rated voltage), ≥ ~ 0.15 Uc (15% of rated voltage)								
Operating time (response time)	Between coil energization and making of the NO contact	~	ms	12								
		⎓	ms	9								
	Between coil de-energization and making of the NC contact	~	ms	10								
		⎓	ms	4								
Control circuit voltage Uc			**V**	**6**	**12**	**24**	**48**	**60**	**110**	**120**	**220**	**230**	**240**
Relay control voltage codes				**RD**	**JD**	**BD**	**ED**	**ND**	**FD**	**–**	**–**	**–**	**–**
d.c. supply	Average resistance at 20 °C ± 10%		Ω	90	360	1440	5700	7500	25 200	–	–	–	–
	Operating voltage limits	Min.	**V**	4.8	9.6	19.2	38.4	48	88	–	–	–	–
		Max.	**V**	6.6	13.2	26.4	52.8	66	121	–	–	–	–
Relay control voltage codes				**–**	**–**	**B7**	**E7**	**–**	**–**	**F7**	**M7**	**P7**	**U7**
a.c. supply 60 Hz	Average resistance at 20 °C ± 15%		Ω	–	–	400	1550	–	–	10 200	35 500	38 500	42 500
	Operating voltage limits	Min. 50 Hz	**V**	–	–	19.2	38.4	–	–	96	176	184	192
		Min. 60 Hz		–	–	20.4	40.8	–	–	102	187	195.5	204
		Max. 50/60 Hz	**V**	–	–	26.4	57.6	–	–	144	264	276	288

Socket characteristics

Socket type			**RSZE1S35M**	**RSZE1S48M**
Relay types used			**RSB1A120●●**	**RSB2A080●●, RSB1A160●●** *(1)*
Contact terminal arrangement			Separate	
Wire connection method			Connector	
Product certifications			CE	
Product certifications			cURus File E172326 CCN SWIV2; CSA File 212916 Class 3211 07; CE; RoHS compliant	

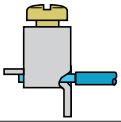
Electrical characteristics

Conventional thermal current (Ith)	**A**	12
Maximum operating voltage	**V** ~	300

Insulation characteristics

Between adjacent output contacts	**Vrms**	2500
Between input and output contacts	**Vrms**	2500
Between contacts and DIN rail	**Vrms**	2500

General characteristics

Ambient air temperature around the device	**Operation**		**°C (F)**	- 25…+ 85 (-13... +185)
	Storage		**°C (F)**	- 40…+ 85 (-40... + 185)
Degree of protection	Conforming to IEC/EN 60529			IP 20
Connection box lug connector	Solid wire without cable end	1 conductor		0.5…2.5 mm² - AWG 20…AWG 14
		2 conductors		0.5…1.5 mm² - AWG 20…AWG 16
	Flexible wire with cable end	1 conductor		0.25…2.5 mm² - AWG 22…AWG 14
		2 conductors		0.25…1 mm² - AWG 22…AWG 17
Maximum tightening torque / Screw size			**Nm**	0.8 / M3 screw
Mounting				35 mm DIN rail / panel mount
Mounting on DIN rail				By plastic compression spring
Terminal referencing				IEC
Compatibility with the metal hold-down clip				Yes, plastic
Timer module				No
Protection module				All RZM ●●●
Clip-in ID tags				Available
Wire connection method	Box lug connector			

(1) When using the relay with socket RSZE1S48M, terminals must be linked. See wiring diagrams on page 23.

Zelio® Plug-In Relays
RSB interface relays

RSB 1A120JD + RZM 031FPD + RSZ E1S35M

Relays for standard applications

Control circuit voltage	Sold in lots of	Number and type of contacts - Thermal current (Ith) 1 C/O - 12 A Catalog number *(1)*	1 C/O - 16 A Catalog number *(1)*	2 C/O - 8 A Catalog number *(1)*	Weight
V					kg
⎓ 6	10	**RSB1A120RD**	**RSB1A160RD**	**RSB2A080RD**	0.014
⎓ 12	10	**RSB1A120JD**	**RSB1A160JD**	**RSB2A080JD**	0.014
⎓ 24	10	**RSB1A120BD**	**RSB1A160BD**	**RSB2A080BD**	0.014
⎓ 48	10	**RSB1A120ED**	**RSB1A160ED**	**RSB2A080ED**	0.014
⎓ 60	10	**RSB1A120ND**	**RSB1A160ND**	**RSB2A080ND**	0.014
⎓ 110	10	**RSB1A120FD**	**RSB1A160FD**	**RSB2A080FD**	0.014

RSB 1A160BD + RSZ E1S48M

∿ 24	10	**RSB1A120B7**	**RSB1A160B7**	**RSB2A080B7**	0.014
∿ 48	10	**RSB1A120E7**	**RSB1A160E7**	**RSB2A080E7**	0.014
∿ 120	10	**RSB1A120F7**	**RSB1A160F7**	**RSB2A080F7**	0.014
∿ 220	10	**RSB1A120M7**	**RSB1A160M7**	**RSB2A080M7**	0.014
∿ 230	10	**RSB1A120P7**	**RSB1A160P7**	**RSB2A080P7**	0.014
∿ 240	10	**RSB1A120U7**	**RSB1A160U7**	**RSB2A080U7**	0.014

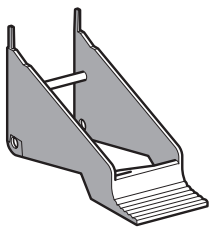
Sockets 12 A, ∿ 300 V

Contact terminal arrangement	Connection	Relay type	Sold in lots of	Catalog number	Weight kg
Separate	Box lug connectors	RSB1A120●●	10	**RSZE1S35M**	0.060
		RSB1A160●● *(2)* RSB2A080●●	10	**RSZE1S48M**	0.050

RSB 2A080BD + RSZ E1S48M

Protection modules

Description	For use with	Voltage	Sold in lots of	Catalog number	Weight
		V			kg
Diode	All sockets	⎓ 6…230	10	**RZM040W**	0.003
RC circuit	All sockets	∿ 24…60	10	**RZM041BN7**	0.010
		∿ 110…240	10	**RZM041FU7**	0.010
Diode + green LED	All sockets	⎓ 6…24	10	**RZM031RB**	0.004
		⎓ 24…60	10	**RZM031BN**	0.004
		⎓ 110…230	10	**RZM031FPD**	0.004
Varistor + green LED	All sockets	⎓ or ∿ 6…24	10	**RZM021RB**	0.005
		⎓ or ∿ 24…60	10	**RZM021BN**	0.005
		⎓ or ∿ 110…230	10	**RZM021FP**	0.005



RSZ R215

Accessories

Description	For use with	Sold in lots of	Catalog number	Weight kg
Plastic hold-down ejector clip	All sockets	10	**RSZR215**	0.002
ID tag	All sockets	10	**RSZL300**	0.001

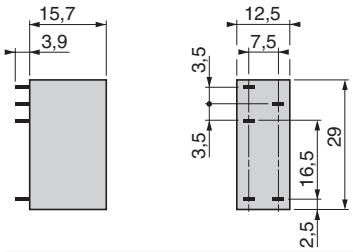
*(1) To order a relay complete with socket **(sold in lots of 20)**: add suffix **S** to one of the following voltage codes **JD**, **BD**, **B7**, **P7** or **F7**. Example: **RSB2A080BD + RSZE1S48M** becomes **RSB2A080RBS**.*

(2) When using the relay with socket RSZE1S48M, terminals must be linked. See wiring diagrams on page 23.

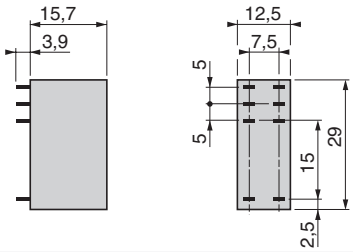
Dimensions (mm):

Interface relays

RSB1A120●●

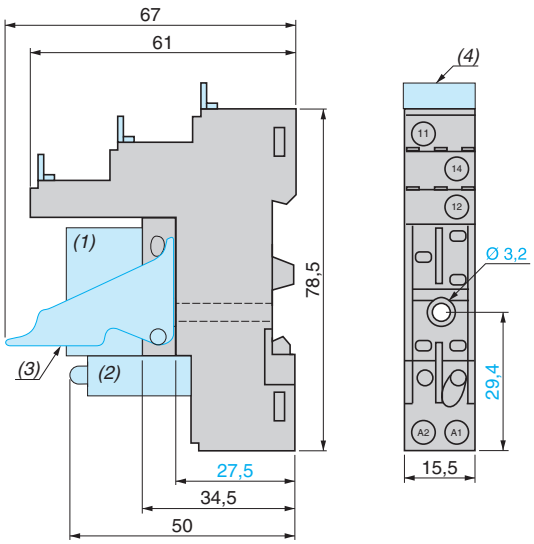


RSB2A080●●, RSB1A160●●

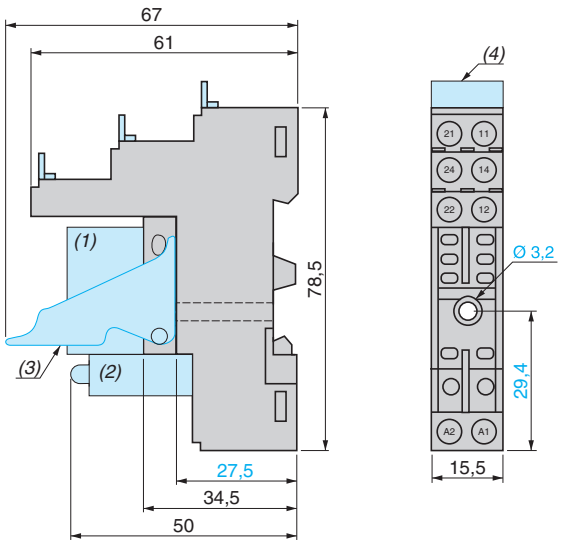


Sockets

RSZE1S35M



RSZE1S48M

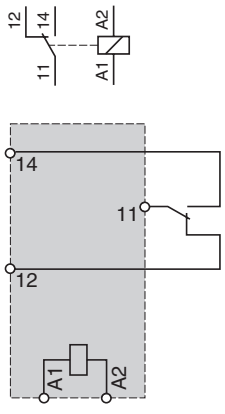


(1) Relays
(2) Protection module
(3) Retention clip
(4) ID tag

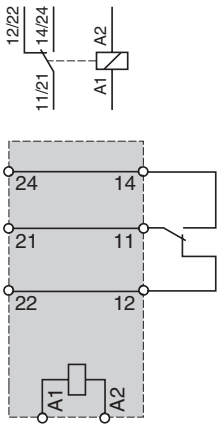
Wiring diagrams

Interface relays

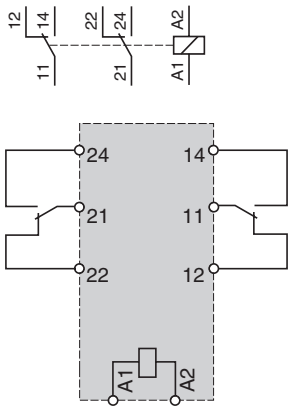
RSB1A120●●



RSB1A160●●



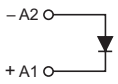
RSB2A080●●



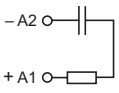
When using relay RSB 1A160●● with socket RSZ E1S48M terminals 11 and 21, 14 and 24, 12 and 22 must be linked

Protection modules

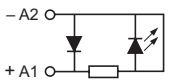
RZM040W



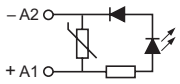
RZM041●●●



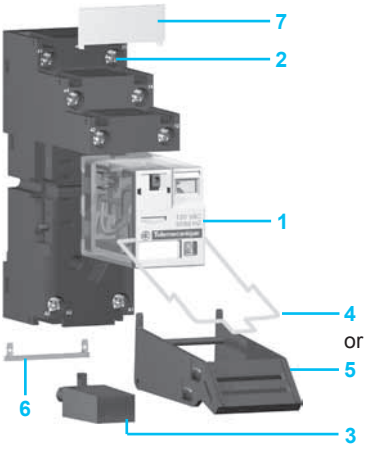
RZM031●●●



RZM021●●●



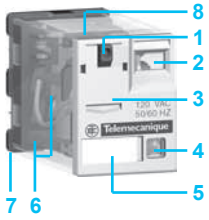
Zelio® Plug-In Relays
RXM miniature relays



Introduction of the product range

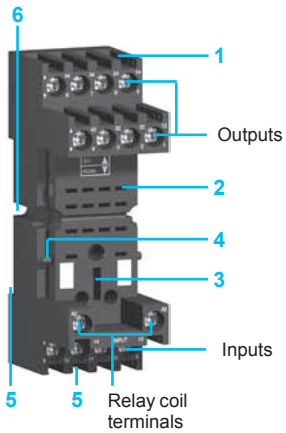
The RXM miniature relay range includes:

1 12 A relays with 2 C/O contacts, 10 A relays with 3 C/O contacts, 6 A relays with 4 C/O contacts and 3 A “low level” relays with 4 C/O contacts. All these relays have the same dimensions.
2 Sockets with mixed or separate contact terminals.
3 Protection modules (diode, RC circuit or varistor).
4 Metal hold-down clip for all sockets.
5 Plastic hold-down ejector clip for all sockets.
6 2-pole bus jumper that can be used on sockets with separate contact terminals in order to simplify wiring when creating creating a jumper between the coil terminals.
7 Clip-in ID tags for all the sockets except RXZE2M114.



Relay description

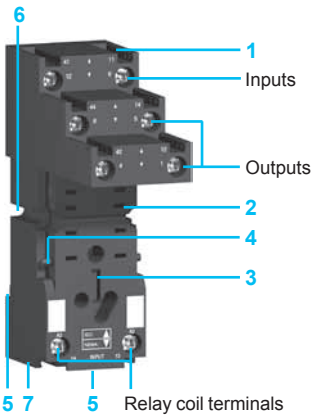
1 Spring return push-to-test button for checking contact operation (green: ⎓, red: ∿).
2 Mechanical “relay status” indicator.
3 Optional removable lock-down door enables continuous engagement of the contacts for test or maintenance purposes. During operation, this lock-down door must always be in the closed position.
4 Bipolar LED (depending on version) indicating the relay status.
5 Removable ID tag for relay identification.
6 Four notches for DIN rail mounting adapter or panel mounting adapter with fixing lugs.
7 Eight, eleven or fourteen quick-connect pins.
8 Area by which the product can be easily gripped.
9 Mounting adapter enabling direct mounting of the relay on a panel.
10 Mounting adapter enabling direct mounting of the relay on a DIN rail.



Socket description

Sockets with mixed contact terminals *(1)*

1 Connection by screw clamp terminals or box lug connector.
2 Fourteen female contacts for the relay pins.
3 Location for protection modules.
4 Locking components for plastic and metal hold-down clips.
5 Locating slot for mounting on DIN rail.
6 Two or four mounting holes for panel mounting.



Sockets with separate contact terminals *(2)*

1 Connection by screw connector.
2 Eight, eleven or fourteen female contacts for the relay pins.
3 Location for protection modules.
4 Locking components for plastic and metal hold-down clips.
5 Locating slot for mounting on DIN rail.
6 Two mounting holes for panel mounting.
7 Location for bus jumpers (see mounting on sockets on page 30).

(1) The inputs are mixed with the relay coil terminals, with the outputs being located on the opposite side of the socket.
(2) The inputs and outputs are separated from the relay coil terminals.

Zelio® Plug-In Relays
RXM miniature relays

General characteristics

Conforming to standards			IEC/EN 61810-1 (iss. 2), UL 508, CSA C22-2 n° 14
Product certifications			cULus File E164862 CCN NLDX, NLDX7; cURus File E164862 CCN NLDX2, NLDX8; CSA; CE; RoHS compliant
Ambient air temperature around the device	Storage	**°C (F)**	- 40… + 85 (-40... +185)
	Operation	**°C (F)**	- 40… + 55 (-40... +131)
Vibration resistance conforming to IEC/EN 60068-2-6	In operation		3 gn (10...150 Hz/± 1 mm / 5g/5 cycles)
	Not operating		5 gn (10...150 Hz/± 1 mm / 5g/5 cycles)
Degree of protection	Conforming to IEC/EN 60529		IP 40
Shock resistance conforming to IEC/EN 60068-2-27	Opening		15 gn
	Closing		15 gn
Protection category			RT I
Mounting position			Any

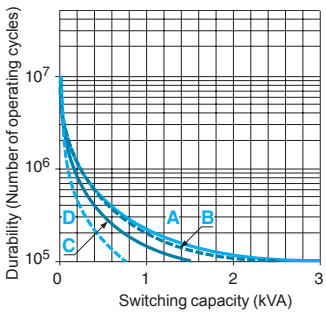
Insulation characteristics

Rated insulation voltage (Ui)		**V**	250 (IEC), 300 (UL, CSA)
Rated impulse withstand voltage (Uimp)		**kV**	4 (1.2/50 µs)
Dielectric strength (rms voltage)	Between coil and contact	**~ V**	1550
	Between poles	**~ V**	1550
	Between contacts	**~ V**	1500

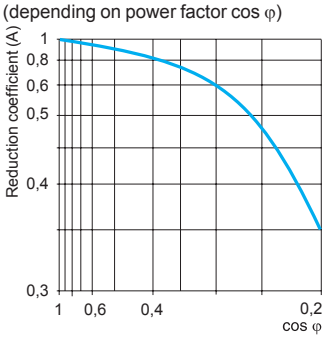
Contact characteristics

Relay type				**RXM2AB●●●**	**RXM3AB●●●**	**RXM4AB●●●**	**RXM4GB●●●**
Number and type of contacts				2 C/O	3 C/O	4 C/O	4 C/O low level
Contact materials				AgNi			AgAu - bifurcated
Conventional thermal current (Ith)	For ambient temperature ≤ 55 °C		**A**	12	10	6	3
Rated operational current in utilization categories AC-1 and DC-1	Conforming to IEC	NO		12	10	6	2
		NC		6	5	3	1
	Conforming to UL			12	10	6	3
Switching current	Minimum		**mA**	10			3
Switching voltage	Maximum		**V**	~/⎓ 250 (IEC)			
	Minimum		**V**	17			5
Nominal load (resistive)			**A**	12 / 250 ~ V	10 / 250 ~ V	6 / 250 ~ V	3 / 250 ~ V
			A	12 / 28 ⎓ V	10 / 28 ⎓ V	6 / 28 ⎓ V	3 / 28 ⎓ V
Switching capacity	Maximum	~	**VA**	3000	2500	1500	750
		⎓	**W**	336	280	168	84
	Minimum		**mW**	170			15
Maximum operating rate In operating cycles	No-load			18 000			
	Under load			1200			
Utilization coefficient				20 %			
Mechanical durability	In millions of operating cycles			10			
Electrical durability In millions of operating cycles	Resistive load			0.1			
	Inductive load			See curves below			

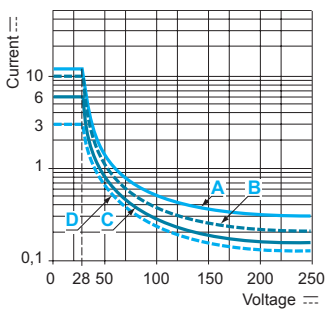
Electrical durability of contacts
Resistive load ~



Reduction coefficient for inductive load ~ (depending on power factor cos φ)



Maximum switching capacity on resistive load ⎓



A RXM2AB●●● **B RXM3AB●●●** **C RXM4AB●●●** **D RXM4GB●●●**

Inductive load durability = resistive load durability x reduction coefficient.

Coil characteristics

Average consumption		~	**VA**	1.2							
		⎓	**W**	0.9							
Drop-out voltage threshold		~		≥ 0.15 Uc							
		⎓		≥ 0.1 Uc							
Operating time (response time)	Between coil energization and making of the NO contact	~	**ms**	20							
		⎓	**ms**	20							
	Between coil de-energization and making of the NC contact	~	**ms**	20							
		⎓	**ms**	20							
Control circuit voltage Uc			**V**	**12**	**24**	**48**	**110**	**120**	**125**	**220**	**230**	**240**
Relay coil voltage codes				**JD**	**BD**	**ED**	**FD**	–	**GD**	**MD**	**–**	**–**
d.c. supply	Average resistance at 20 °C ± 10%		Ω	160	650	2600	11 000	–	11 000	14 000	–	–
	Operating voltage limits	Min.	**V**	9.6	19.2	38.4	88	–	100	176	–	–
		Max.	**V**	13.2	26.4	52.8	121	–	138	242	–	–
Relay coil voltage codes				**–**	**B7**	**E7**		**F7**	**–**	**–**	**P7**	**U7**
a.c. supply	Average resistance at 20 °C ± 15%		Ω	–	180	770	–	4430	–	–	15 000	15 500
	Operating voltage limits	Min.	**V**	–	19.2	38.4	–	96	–	–	184	192
		Max.	**V**	–	26.4	52.8	–	132	–	–	253	264

Socket characteristics

Socket type			**RXZE2S108M**	**RXZE2S111M**	**RXZE2S114M**	**RXZE2M114M**	**RXZE2M114**	
Relay types used			**RXM2●●●●●**	**RXM3●●●●●**	**RXM4●●●●●**	**RXM2●●●●● *(1)*** **RXM4●●●●●**	**RXM2●●●●● *(1)*** **RXM4●●●●●**	
Contact terminal arrangement			Separate			Mixed		
Wire connection method			Box lug connectors				Screw clamp terminals	
Product certifications			cURus File E172326 CCN SWIV2, SWIV8; CSA; CE; RoHS compliant					
Conforming to standards			IEC 61984, CE					

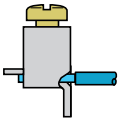
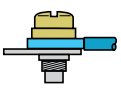
Electrical characteristics

Conventional thermal current (Ith)		**A**	12	10	
Maximum operating voltage		**V**	250 (IEC)		

Insulation characteristics

Between adjacent output contacts	**Vrms**	2500
Between input and output contacts	**Vrms**	2500
Between contacts and DIN rail	**Vrms**	2500

General characteristics

Ambient air temperature around the device	Operation		**°C (F)**	- 40…+ 55 (-40... +131)		
	Storage		**°C (F)**	- 40…+ 85 (-40... +185)		
Degree of protection	Conforming to IEC/EN 60529			IP 20		
Connection	Solid wire without cable end	1 conductor		0.5…2.5 mm^2 - AWG 20…AWG 14		0.5… 1.5 mm^2 AWG 20…AWG 16
		2 conductors		0.5…1.5 mm^2 - AWG 20…AWG 16		
	Flexible wire with cable end	1 conductor		0.25…2.5 mm^2 - AWG 22…AWG 14		0.25…1 mm^2 AWG 22…AWG 17
		2 conductors		0.25…1 mm^2 - AWG 22…AWG 17		
Maximum tightening torque / Screw size			**Nm**	1 / M3 screw		
Mounting				35 mm DIN rail / panel mount		
Mounting on DIN rail				By red plastic clip	By metal compression spring	By red plastic clip
Terminal referencing				IEC, NEMA		
Bus jumper (Ith: 5 A)				Yes	No	
Compatibility with the plastic hold-down ejector clip				Yes		
Compatibility with the metal hold-down clip				Yes		
Protection module				All RXM040W, RXM041●●, RXM021●●		
Clip-in ID tags				Yes		No
Wire connection method				Box lug connector 		Screw clamp terminals 

(1) When mounting relay RXM2●●●●● on socket RXZE2M●●●●, the thermal current must not exceed 10 A.

Zelio® Plug-In Relays
RXM miniature relays

RXM●AB1F7

Miniature relays without LED (sold in lots of 10)

Control circuit voltage	Number and type of contacts - Thermal current (Ith)					
	2 C/O - 12 A		3 C/O - 10 A		4 C/O - 6 A	
	Catalog number	Weight	Catalog number	Weight	Catalog number	Weight
V		kg		kg		kg
⎓ 12	**RXM2AB1JD**	0.037	**RXM3AB1JD**	0.037	**RXM4AB1JD**	0.037
⎓ 24	**RXM2AB1BD**	0.037	**RXM3AB1BD**	0.037	**RXM4AB1BD**	0.037
⎓ 48	**RXM2AB1ED**	0.037	**RXM3AB1ED**	0.037	**RXM4AB1ED**	0.037
⎓ 110	**RXM2AB1FD**	0.037	**RXM3AB1FD**	0.037	**RXM4AB1FD**	0.037
⎓ 220	–	–	–	–	**RXM4AB1MD**	0.037
∿ 24	**RXM2AB1B7**	0.037	**RXM3AB1B7**	0.037	**RXM4AB1B7**	0.037
∿ 48	**RXM2AB1E7**	0.037	**RXM3AB1E7**	0.037	**RXM4AB1E7**	0.037
∿ 120	**RXM2AB1F7**	0.037	**RXM3AB1F7**	0.037	**RXM4AB1F7**	0.037
∿ 230	**RXM2AB1P7**	0.037	**RXM3AB1P7**	0.037	**RXM4AB1P7**	0.037
∿ 240	–	–	–	–	**RXM4AB1U7**	0.037

RXM●AB2F7

Miniature relays with LED (sold in lots of 10)

⎓ 12	**RXM2AB2JD**	0.037	**RXM3AB2JD**	0.037	**RXM4AB2JD**	0.037
⎓ 24	**RXM2AB2BD**	0.037	**RXM3AB2BD**	0.037	**RXM4AB2BD**	0.037
⎓ 48	**RXM2AB2ED**	0.037	**RXM3AB2ED**	0.037	**RXM4AB2ED**	0.037
⎓ 110	**RXM2AB2FD**	0.037	**RXM3AB2FD**	0.037	**RXM4AB2FD**	0.037
⎓ 125	–	–	–	–	**RXM4AB2GD**	0.037
∿ 24	**RXM2AB2B7**	0.037	**RXM3AB2B7**	0.037	**RXM4AB2B7**	0.037
∿ 48	**RXM2AB2E7**	0.037	**RXM3AB2E7**	0.037	**RXM4AB2E7**	0.037
∿ 120	**RXM2AB2F7**	0.037	**RXM3AB2F7**	0.037	**RXM4AB2F7**	0.037
∿ 230	**RXM2AB2P7**	0.037	**RXM3AB2P7**	0.037	**RXM4AB2P7**	0.037

RXM4GB1F7

Miniature relays with low level contacts, without LED (sold in lots of 10)

Control circuit voltage	Number and type of contacts Thermal current (Ith) 4 C/O - 3 A	
	Catalog number	Weight
V		kg
⎓ 12	**RXM4GB1JD**	0.037
⎓ 24	**RXM4GB1BD**	0.037
⎓ 48	**RXM4GB1ED**	0.037
⎓ 110	**RXM4GB1FD**	0.037
∿ 24	**RXM4GB1B7**	0.037
∿ 48	**RXM4GB1E7**	0.037
∿ 120	**RXM4GB1F7**	0.037
∿ 230	**RXM4GB1P7**	0.037

RXM4GB2F7

Miniature relays with low level contacts, with LED (sold in lots of 10)

⎓ 12	**RXM4GB2JD**	0.037
⎓ 24	**RXM4GB2BD**	0.037
⎓ 48	**RXM4GB2ED**	0.037
⎓ 110	**RXM4GB2FD**	0.037
∿ 24	**RXM4GB2B7**	0.037
∿ 48	**RXM4GB2E7**	0.037
∿ 120	**RXM4GB2F7**	0.037
∿ 230	**RXM4GB2P7**	0.037
∿ 240	**RXM4GB2U7**	0.037

Zelio® Plug-In Relays
RXM miniature relays

RXZE2M114M
+
Relais RXM4AB2F7

Miniature relays without LED (sold in lots of 100)

Control circuit voltage	Number and type of contacts - Thermal current (Ith) 2 C/O - 12 A		4 C/O - 6 A	
	Catalog number	Weight	Catalog number	Weight
V		kg		kg
⎓ 12	–	–	**RXM4AB1JDTQ**	0.036
⎓ 24	**RXM2AB1BDTQ**	0.037	**RXM4AB1BDTQ**	0.036
⎓ 48	–	–	**RXM4AB1EDTQ**	0.036
⎓ 110	–	–	**RXM4AB1FDTQ**	0.036
⎓ 220	–	–	**RXM4AB1MDTQ**	0.036
∿ 24	**RXM2AB1B7TQ**	0.037	**RXM4AB1B7TQ**	0.036
∿ 48	–	–	**RXM4AB1E7TQ**	0.036
∿ 120	**RXM2AB1F7TQ**	0.037	**RXM4AB1F7TQ**	0.036
∿ 230	**RXM2AB1P7TQ**	0.037	**RXM4AB1P7TQ**	0.036

Miniature relays with LED (sold in lots of 100)

⎓ 24	–	–	**RXM4AB2BDTQ**	0.036
∿ 24	**RXM2AB2B7TQ**	0.037	**RXM4AB2B7TQ**	0.036
∿ 230	**RXM2AB2P7TQ**	0.037	**RXM4AB2P7TQ**	0.036

RXZE2S114M
+
Relais RXM4AB2F7

Sockets

Contact terminal arrangement	Connection	Relay type	Sold in lots of	Catalog number	Weight kg
Mixed	Screw clamp terminals	RXM2●●●● *(3)* RXM4●●●●	10	**RXZE2M114** *(1)*	0.048
	Box lug connector	RXM2●●●● *(3)* RXM4●●●●	10	**RXZE2M114M** *(1)*	0.056
Separate	Box lug connector	RXM2●●●●	10	**RXZE2S108M** *(2)*	0.058
		RXM3●●●●	10	**RXZE2S111M** *(1)*	0.066
		RXM4●●●●	10	**RXZE2S114M** *(1)*	0.070

Protection modules

Description	Voltage	For use with	Sold in lots of	Catalog number	Weight kg
	V				
Diode	⎓ 6...250	All sockets	20	**RXM040W**	0.003
RC circuit	∿ 24...60	All sockets	20	**RXM041BN7**	0.010
	∿ 110...240	All sockets	20	**RXM041FU7**	0.010
Varistor	∿/⎓ 6...24	All sockets	20	**RXM021RB**	0.030
	∿/⎓ 24...60	All sockets	20	**RXM021BN**	0.030
	∿/⎓ 110...240	All sockets	20	**RXM021FP**	0.030

RXM041●●7

Timing relays

Description	For use with	Catalog number	Weight kg
2 or 4 timed C/O contacts (function A)	Sockets RXZE●●●●●	**REXL2●●** *(4)*	–
		REXL4●● *(4)*	–

REXL4●●

Accessories

Description	For use with	Sold in lots of	Catalog number	Weight kg
Metal hold-down clip	All sockets	10	**RXZ400**	0.001
Plastic hold-down ejector clip	All sockets	10	**RXZR335**	0.005
Bus jumper 2-pole (Ith: 5 A)	All sockets with separate contacts	10	**RXZS2**	0.005
Mounting adapter for DIN rails *(5)*	All relays	10	**RXZE2DA**	0.004
Mounting adapter with fixing lugs for panel	All relays	10	**RXZE2FA**	0.002
Clip-in ID tags	All relays (sheet of 108 ID tags)	10	**RXZL520**	0.080
	All sockets except RXZ E2M114	10	**RXZL420**	0.001

RXZ400

(1) Thermal current Ith: 10 A
(2) Thermal current Ith: 12 A
(3) When mounting relay RXM2●●●●● on socket RXZE2M●●●●, the thermal current must not exceed 10 A.
(4) Please consult the "Zelio Time - timing relays" catalog.
(5) Test button becomes inaccessible.

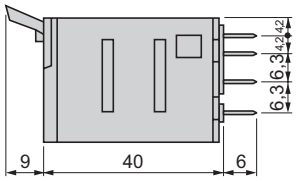
Zelio® Plug-In Relays
RXM miniature relays

Dimensions (mm):

Miniature relays

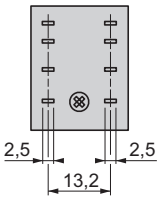
RXM●●●●●●

Common view

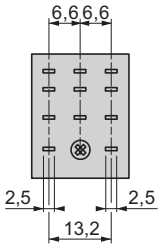


RXM2

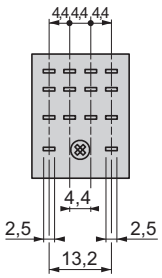
Pin side view



RXM3

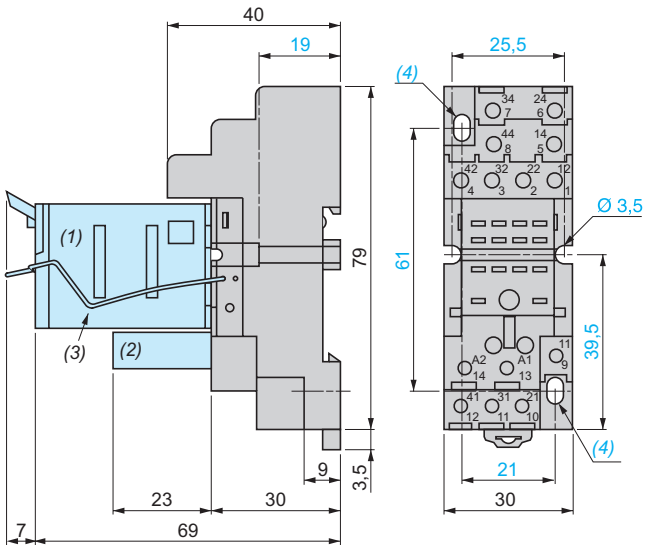


RXM4

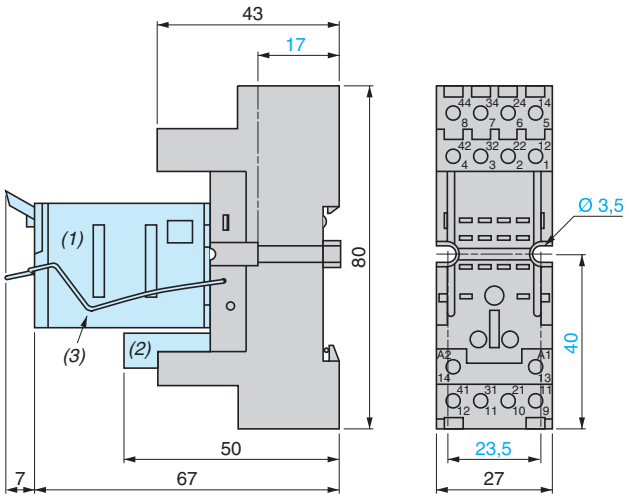


Sockets

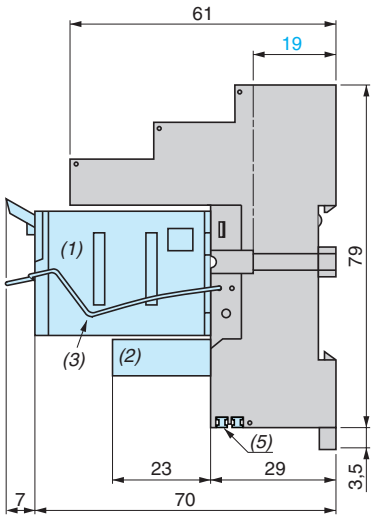
RXZE2M114



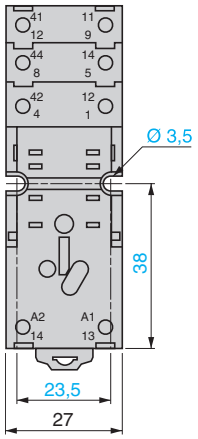
RXZE2M114M



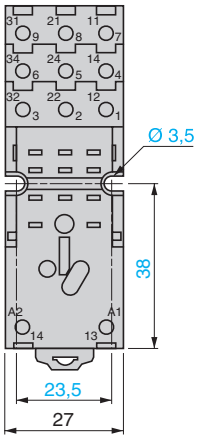
Common side view



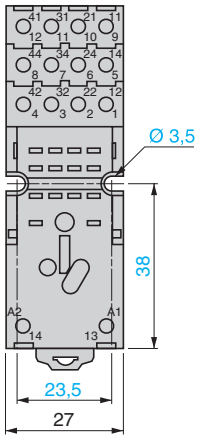
RXZE2S108M



RXZE2S111M



RXZE2S114M

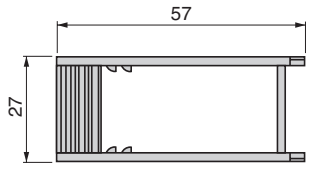


(1) Relay
(2) Protection module
(3) Metal hold-down clip
(4) 2 elongated holes Ø 3.5 x 6.5
(5) 2 bus jumpers

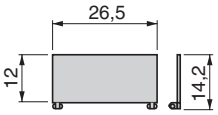
Dimensions (mm):

Plastic hold-down clip and clip-in ID tags

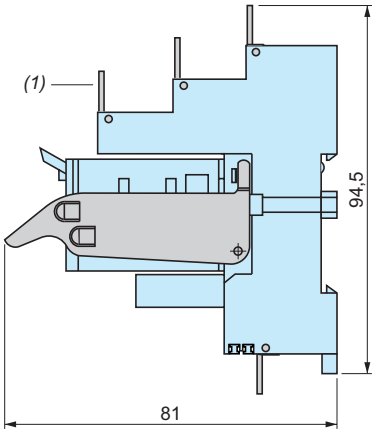
RXZR335



RXZL420



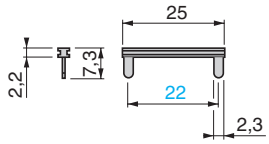
Mounting on all sockets *(1)*



(1) Clip-in ID tags for all sockets except RXZE2M114

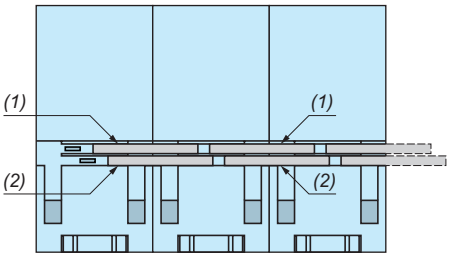
Bus jumper

RXZS2



Mounting on sockets with separate contacts (view from below)

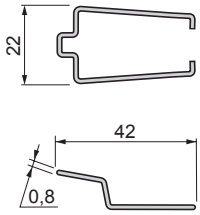
Example of bus jumper mounting on sockets



(1) 2 bus jumpers (polarity A2)
(2) 2 bus jumpers (polarity A1)

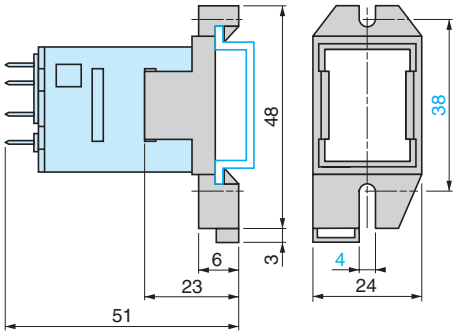
Metal hold-down clip

RXZ400



Mounting adapter for DIN rails *(1)*

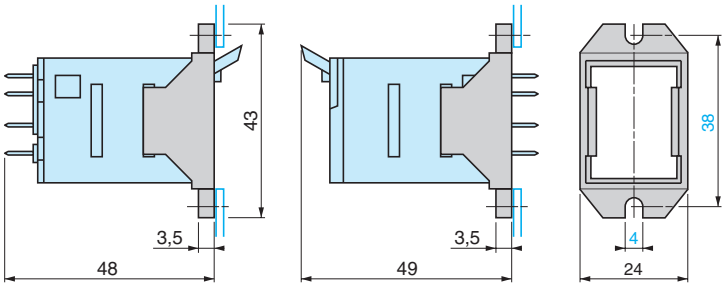
RXZE2DA



(1) Test button becomes inaccessible

Mounting adapter for panel

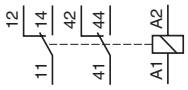
RXZE2FA

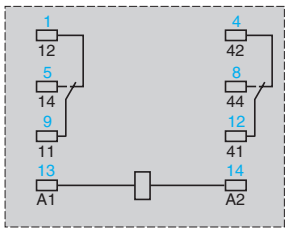


Internal connections

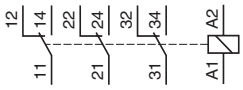
Miniature relays

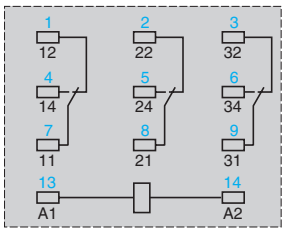
RXM2●●●●●





RXM3●●●●●





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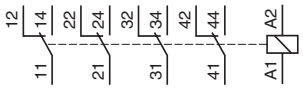
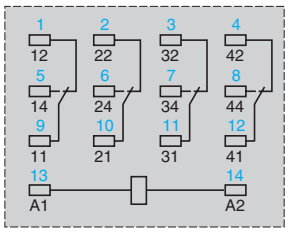
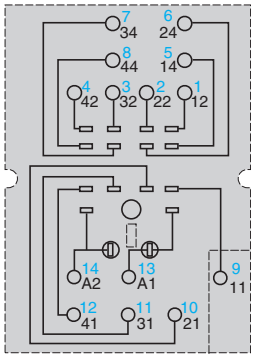




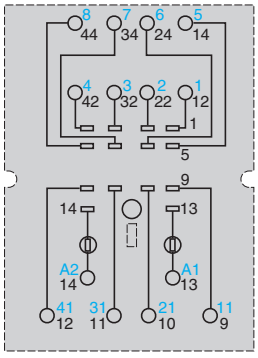
Symbols shown in blue correspond to Nema marking.

Sockets

RXZE2M114

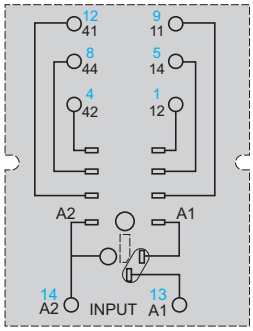


RXZE2M114M

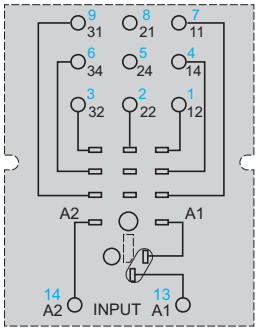


Symbols shown in blue correspond to Nema marking.

RXZE2S108M



RXZE2S111M



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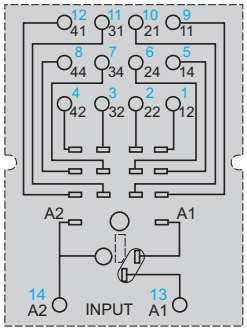
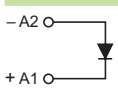


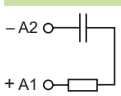
Symbols shown in blue correspond to Nema marking.

Protection modules

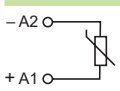
RXM040W



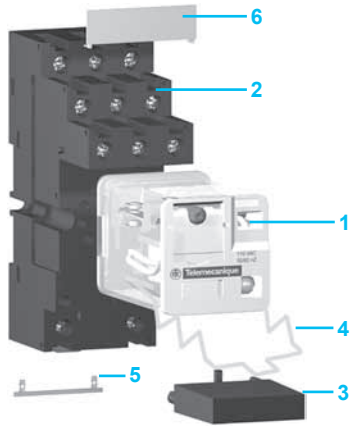
RXM041●●●



RXM021●●●



Zelio® Plug-In Relays
RUM universal relays

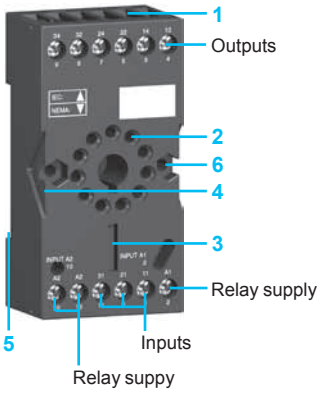


Introduction of the product range

The RUM universal relay range includes:
1 10 A relays with 2 and 3 C/O contacts, with cylindrical or quick-connect terminals, and 3 A low level relays with 3 C/O contacts, with cylindrical pins. All RUM relays have the same dimensions.
2 Sockets with mixed or separate contact terminals.
3 Protection modules (diode, RC circuit or varistor) or 1 timer module.
4 Metal hold-down clip for all sockets.
5 2-pole bus jumper that can be used on sockets with separate contact terminals in order to simplify wiring when creating a jumper between the coil terminals.
6 Clip-in ID tags for the sockets.

Relay description

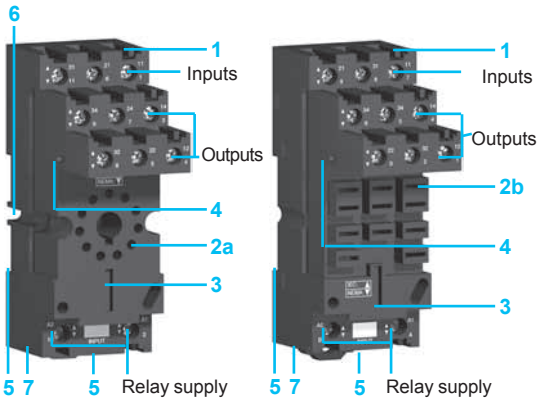
1 Spring return push-to-test button for checking contact operation (green: ⎓, red: ∿).
2 Mechanical “relay status” indicator.
3 Optional removable lock-down door enables continuous engagement of the contacts for test or maintenance purposes. During operation, this lock-down door must always be in the closed position.
4 Bipolar LED (depending on version) indicating the relay status.
5 Removable ID tag for relay identification.
6 Area by which the product can be easily gripped.
7 Eight or eleven cylindrical pins.
8 Eight or eleven quick-connect pins



Socket description

Sockets with mixed contact terminals *(1)*

1 Box lug connectors.
2 Eight or eleven female contacts for the relay cylindrical pins.
3 Location for protection modules or the timer module.
4 Locking component for metal hold-down clip.
5 Locating slot for mounting on DIN rail.
6 Two mounting holes for panel mounting.



Sockets with separate contact terminals *(2)*

1 Box lug connectors.
2 a Eight or eleven female contacts for the relay cylindrical pins.
b Eleven female contacts for the relay flat pins.
3 Location for protection modules or the timer module.
4 Locking component for metal hold-down clip.
5 Locating slot for mounting on DIN rail.
6 Two mounting holes for panel mounting.
7 Location for bus jumpers (see mounting on sockets on page 38).

(1) The inputs are mixed with the relay coil terminals, with the outputs being located on the opposite side of the socket.
(2) The inputs and outputs are separated from the relay coil terminals.

Zelio® Plug-In Relays
RUM universal relays

General characteristics

Conforming to standards			IEC/EN 61810-1 (iss. 2), UL 508, CSA C22-2 n° 14
Product certifications			cULus File E164862 CCN NLDX, NLDX7; cURus File E164862 CCN NLDX2, NLDX8; CSA; CE; RoHS compliant
Ambient air temperature around the device	Storage	°C (F)	- 40… + 85 (-40... +185)
	Operation	°C (F)	- 40… + 55 (-40... +131)
Vibration resistance conforming to IEC/EN 60068-2-6	In operation		3 gn (10...150 Hz/± 1 mm / 5g/5 cycles)
	Not operating		4 gn (10...150 Hz/± 1 mm / 5g/5 cycles)
Degree of protection	Conforming to IEC/EN 60529		IP 40
Shock resistance conforming to IEC/EN 60068-2-27	Opening		10 gn
	Closing		10 gn
Protection category			RT I
Mounting position			Any

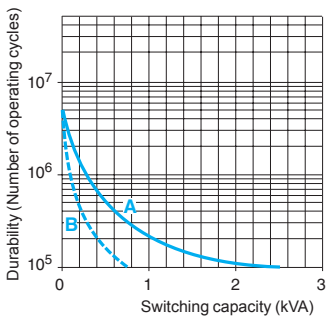
Insulation characteristics

Rated insulation voltage (Ui)	Conforming to IEC/EN 60947	V	250 (IEC), 300 (UL, CSA)
Rated impulse withstand voltage (Uimp)		kV	4 (1.2/50 µs)
Dielectric strength (rms voltage)	Between coil and contact	∼ V	1550
	Between poles	∼ V	1550
	Between contacts	∼ V	1500

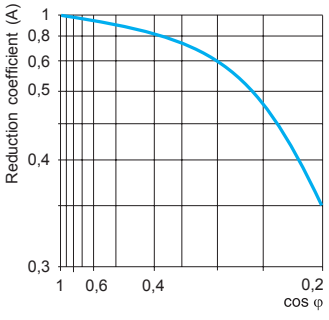
Contact characteristics

Relay type				RUMF2●●●	RUMF3●●●	RUMC2●●●	RUMC3A●●	RUMC3G●●
Number and type of contacts				2 C/O	3 C/O	2 C/O	3 C/O	3 C/O low level
Contact materials			.	AgNi				AgAu
Conventional thermal current (Ith)	For ambient temperature ⩽ 55°C		A	10				3
Rated operational current in utilization categories AC-1 and DC-1	Conforming to IEC	NO	A	10				2
		NC	A	5				1
	Conforming to UL		A	16 / ∼ 277 V 12 / ⎓ 28 V				3
Switching current	Minimum		mA	10				3
Switching voltage	Maximum		V	∼/⎓ 250 (IEC)				
	Minimum		V	17				5
Nominal load (resistive)			A	10 / 250 ∼ V				3 / 250 ∼ V
			A	10 / 28 ⎓ V				3 / 28 ⎓ V
Switching capacity	Maximum	∼	VA	2500				750
		⎓	W	280				84
	Minimum		mW	170				15
Maximum operating rate In operating cycles/hour	No-load			18 000				
	Under load			1200				
Utilization coefficient				20 %				
Mechanical durability	In millions of operating cycles			5				
Electrical durability In millions of operating cycles	Resistive load			0.1				
	Inductive load			See curves below				

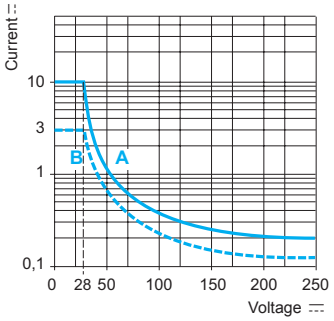
Electrical durability of contacts
Resistive load ∼



Reduction coefficient for inductive load ∼ (depending on power factor cos φ)



Maximum switching capacity on resistive load ⎓



A RUMF●●●●●, RUMC2●●●, RUMC3A●●● **B RUMC3G●●●**

Inductive load durability = resistive load durability x reduction coefficient.

Coil characteristics

Average consumption		~	**VA**	2...3							
		⎓	**W**	1.4							
Drop-out voltage threshold		~		≥ 0.15 Uc							
		⎓		≥ 0.1 Uc							
Operating time (response time)	Between coil energization and making of the NO contact	~	**ms**	20							
		⎓	**ms**	20							
	Between coil de-energization and making of the NC contact	~	**ms**	20							
		⎓	**ms**	20							
Control circuit voltage Uc			**V**	**12**	**24**	**48**	**60**	**110**	**120**	**125**	**220**	**230**
Relay coil voltage codes				**JD**	**BD**	**ED**	**ND**	**FD**	**–**	**GD**	**MD**	**–**
d.c. supply	Average resistance at 20 °C ± 10%		Ω	120	470	1800	2790	10 000	–	10 000	3700	–
	Operating voltage limits	Min.	**V**	9.6	19.2	38.4	48	88	–	100	176	–
		Max.	**V**	13.2	26.4	52.8	66	121	–	137.5	242	–
Relay control voltage codes				**–**	**B7**	**E7**	**–**	**–**	**F7**	**–**	**–**	**P7**
a.c. supply	Average resistance at 20 °C ± 15%		Ω	–	72	290	–	–	1700	–	–	7200
	Operating voltage limits	Min.	**V**	–	19.2	38.4	–	–	96	–	–	184
		Max.	**V**	–	26.4	52.8	–	–	132	–	–	253

Socket characteristics

Socket type		**RUZC2M**	**RUZC3M**	**RUZSC2M**	**RUZSC3M**	**RUZSF3M**
Relay types used		**RUMC2●●●●●**	**RUMC3●●●●●**	**RUMC2●●●●●**	**RUMC3●●●●●**	**RUMF●●●●●**
Contact terminal arrangement		Mixed		Separate		
Wire connection method		Connector				
Product certifications		cURus File E172326 CCN SWIV2, SWIV8; CSA; CE; RoHS compliant				
Conforming to standards		IEC 61984, CE				

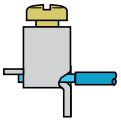
Electrical characteristics

Conventional thermal current (Ith)		**A**	10	12
Maximum operating voltage		**V**	250 (IEC)	

Insulation characteristics

Between adjacent output contacts	**Vrms**	2500
Between input and output contacts	**Vrms**	2500
Between contacts and DIN rail	**Vrms**	2500

General characteristics

Ambient air temperature around the device	Operation		**°C (F)**	- 40…+ 55 (-40... +131)
	Storage		**°C (F)**	- 40…+ 85 (-40.... +185)
Degree of protection	Conforming to IEC/EN 60529			IP 20
Connection	Solid wire without cable end	1 conductor		0.5…2.5 mm² - AWG 20…AWG 14
		2 conductors		0.5…1.5 mm² - AWG 20…AWG 16
	Flexible wire with cable end	1 conductor		0.25…2.5 mm² - AWG 22…AWG 14
		2 conductors		0.25…1 mm² - AWG 22…AWG 17
Maximum tightening torque / Screw size			**Nm**	1 / M3.3 screw
Mounting				35 mm DIN rail / panel
Mounting on DIN rail				By red plastic clip
Terminal referencing				IEC, NEMA
Bus jumper (Ith: 5 A)				No / Yes
Compatibility with the metal hold-down clip				Yes
Timer module				Yes
Protection module				All RUW24●●●
Clip-in ID tags				No / Yes
Wire connection method	Box lug connector			

Zelio® Plug-In Relays
RUM universal relays

RUM●●AB1F7

Product selection

Relays for standard applications, without LED (sold in lots of 10)

Pins	Control circuit voltage	Number and type of contacts - Thermal current (Ith) 2 C/O - 10 A		3 C/O - 10 A	
		Catalog number	Weight	Catalog number	Weight
	V		kg		kg
Cylindrical	⎓ 12	**RUMC2AB1JD**	0.085	**RUMC3AB1JD**	0.088
	⎓ 24	**RUMC2AB1BD**	0.085	**RUMC3AB1BD**	0.088
	⎓ 48	**RUMC2AB1ED**	0.085	**RUMC3AB1ED**	0.088
	⎓ 60	–	–	**RUMC3AB1ND**	0.088
	⎓ 110	**RUMC2AB1FD**	0.085	**RUMC3AB1FD**	0.088
	⎓ 125	–	–	**RUMC3AB1GD**	0.088
	⎓ 220	–	–	**RUMC3AB1MD**	0.088
	∿ 24	**RUMC2AB1B7**	0.085	**RUMC3AB1B7**	0.088
	∿ 48	**RUMC2AB1E7**	0.085	**RUMC3AB1E7**	0.088
	∿ 120	**RUMC2AB1F7**	0.085	**RUMC3AB1F7**	0.088
	∿ 230	**RUMC2AB1P7**	0.085	**RUMC3AB1P7**	0.088
Flat (quick-connect)	⎓ 12	**RUMF2AB1JD**	0.080	**RUMF3AB1JD**	0.082
	⎓ 24	**RUMF2AB1BD**	0.080	**RUMF3AB1BD**	0.082
	⎓ 48	**RUMF2AB1ED**	0.080	**RUMF3AB1ED**	0.082
	⎓ 110	**RUMF2AB1FD**	0.080	**RUMF3AB1FD**	0.082
	∿ 24	**RUMF2AB1B7**	0.080	**RUMF3AB1B7**	0.082
	∿ 48	**RUMF2AB1E7**	0.080	**RUMF3AB1E7**	0.082
	∿ 120	**RUMF2AB1F7**	0.080	**RUMF3AB1F7**	0.082
	∿ 230	**RUMF2AB1P7**	0.080	**RUMF3AB1P7**	0.082

RUM●●AB2F7

Relays for standard applications, with LED (sold in lots of 10)

Cylindrical	⎓ 12	**RUMC2AB2JD**	0.085	**RUMC3AB2JD**	0.088
	⎓ 24	**RUMC2AB2BD**	0.085	**RUMC3AB2BD**	0.088
	⎓ 48	**RUMC2AB2ED**	0.085	**RUMC3AB2ED**	0.088
	⎓ 60	–	–	**RUMC3AB2ND**	0.088
	⎓ 110	**RUMC2AB2FD**	0.085	**RUMC3AB2FD**	0.088
	⎓ 125	–	–	**RUMC3AB2GD**	0.088
	∿ 24	**RUMC2AB2B7**	0.085	**RUMC3AB2B7**	0.088
	∿ 48	**RUMC2AB2E7**	0.085	**RUMC3AB2E7**	0.088
	∿ 120	**RUMC2AB2F7**	0.085	**RUMC3AB2F7**	0.088
	∿ 230	**RUMC2AB2P7**	0.085	**RUMC3AB2P7**	0.088
Flat (quick-connect)	⎓ 12	**RUMF2AB2JD**	0.084	**RUMF3AB2JD**	0.082
	⎓ 24	**RUMF2AB2BD**	0.084	**RUMF3AB2BD**	0.082
	⎓ 48	**RUMF2AB2ED**	0.084	**RUMF3AB2ED**	0.082
	⎓ 110	**RUMF2AB2FD**	0.084	**RUMF3AB2FD**	0.082
	∿ 24	**RUMF2AB2B7**	0.084	**RUMF3AB2B7**	0.082
	∿ 48	**RUMF2AB2E7**	0.084	**RUMF3AB2E7**	0.082
	∿ 120	**RUMF2AB2F7**	0.084	**RUMF3AB2F7**	0.082
	∿ 230	**RUMF2AB2P7**	0.084	**RUMF3AB2P7**	0.082

Relays with low level contacts, with LED (sold in lots of 10)

Pins	Control circuit voltage	Number and type of contacts Thermal current (Ith) 3 C/O - 3 A	
		Catalog number	Weight
	V		kg
Cylindrical	⎓ 24	**RUMC3GB2BD**	0.086
	⎓ 48	**RUMC3GB2ED**	0.086
	∿ 24	**RUMC3GB2B7**	0.086
	∿ 48	**RUMC3GB2E7**	0.086
	∿ 120	**RUMC3GB2F7**	0.086
	∿ 230	**RUMC3GB2P7**	0.086

Zelio® Plug-In Relays
RUM universal relays

RUZC3M + relais RUMC3●●●●●

RUW241P7

RUW101MW

RUZC200

RUZS2

Product selection (continued)

Sockets

Contact terminal arrangement	Connection	Relay type	Sold in lots of	Catalog number	Weight kg
Mixed	Box lug connector	RUMC2●●●●●	10	**RUZC2M**	0.054
		RUMC3●●●●●	10	**RUZC3M**	0.054
Separate	Box lug connector	RUMC2●●●●●	10	**RUZSC2M**	0.095
		RUMC3●●●●●	10	**RUZSC3M**	0.100
		RUMF2●●●●	10	**RUZSF3M**	0.095
		RUMF3●●●●			

Protection modules

Description	For use with	Voltage	Sold in lots of	Catalog number	Weight
		V			kg
Diode	All sockets	⎓ 6…250	10	**RUW240BD**	0.004
RC circuit	All sockets	∿ 110…240	10	**RUW241P7**	0.004
Varistor	All sockets	∿/⎓ 24	10	**RUW242B7**	0.004
		∿/⎓ 240	10	**RUW242P7**	0.004

Timer module

Description	For use with	Voltage	Catalog number	Weight
		V		kg
Multifunction	All sockets	∿/⎓ 24… 240	**RUW101MW**	0.020

Timing relays

Description	For use with	Catalog number	Weight kg
2 timed C/O contacts (single-function or multifunction)	On sockets RUZ C●M	**RE48A ●●** *(1)*	–

Accessories

Description	For use with	Sold in lots of	Catalog number	Weight kg
Metal hold-down clip	All sockets	10	**RUZC200**	0.001
Bus jumper 2-pole (Ith : 5 A)	All sockets with separate contacts	10	**RUZS2**	0.005
Clip-in ID tags	All relays (sheet of 108 ID tags)	10	**RXZL520**	0.080
	All sockets with separate contacts	10	**RUZL420**	0.001

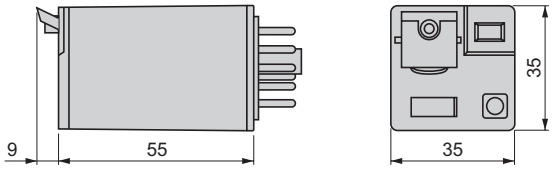
(1) Please consult the "Zelio Time timing relays" catalog.

Zelio® Plug-In Relays
RUM universal relays

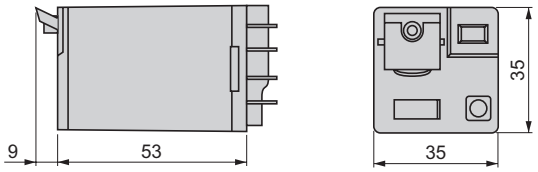
Dimensions (mm):

Universal relays

RUMC●●

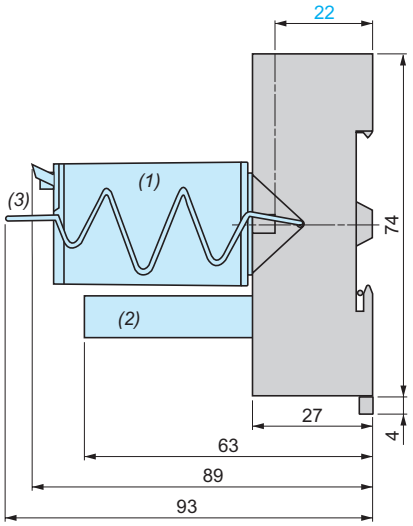


RUMF●●

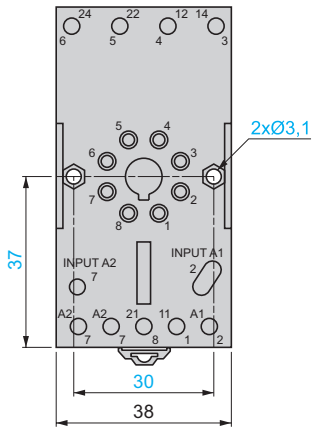


Sockets

Common side view



RUZC2M



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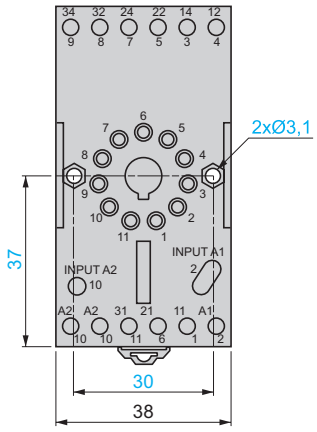

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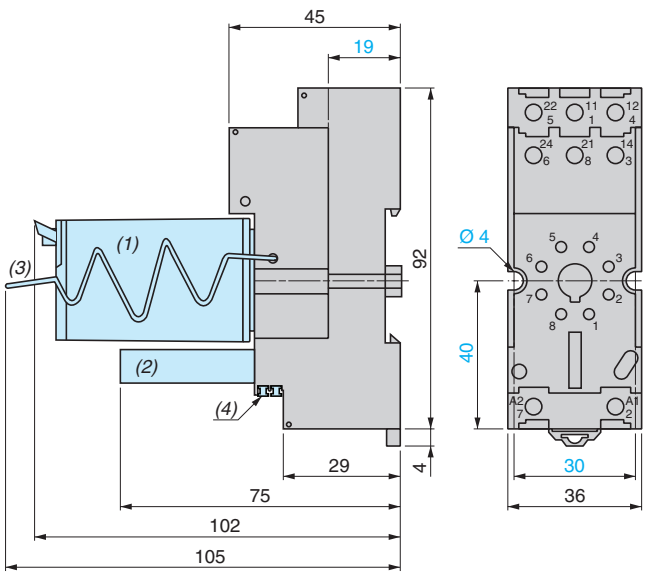

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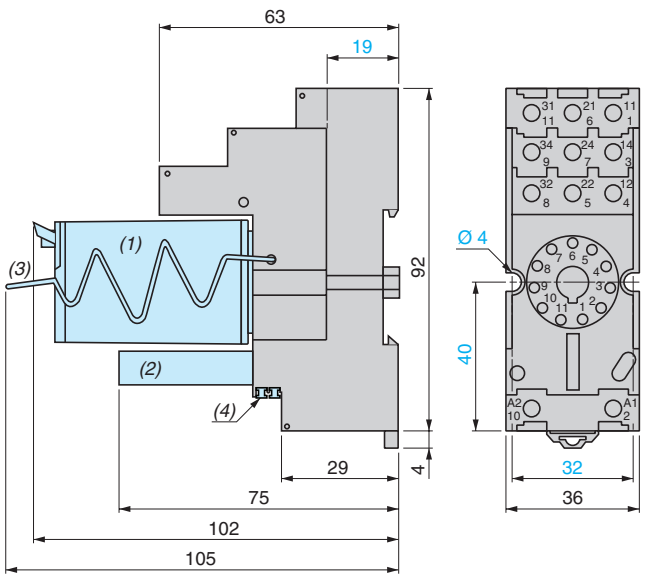
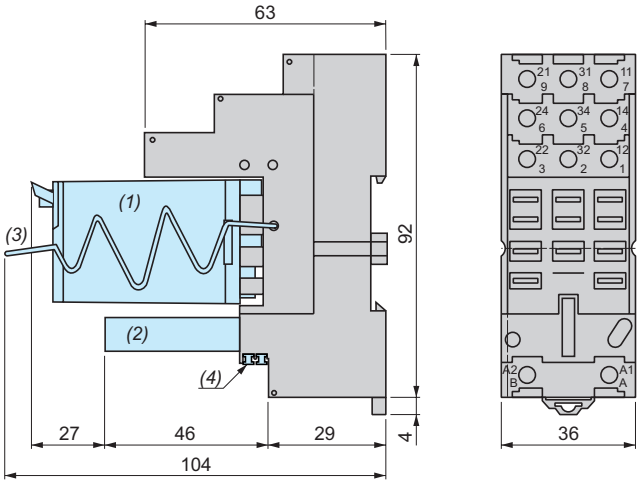


(1) Relays
(2) Protection module
(3) Retention clip
(4) 2 bus jumpers

Dimensions (mm):

Sockets (continued)

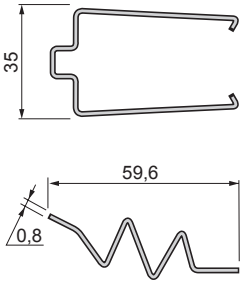
RUZSF3M



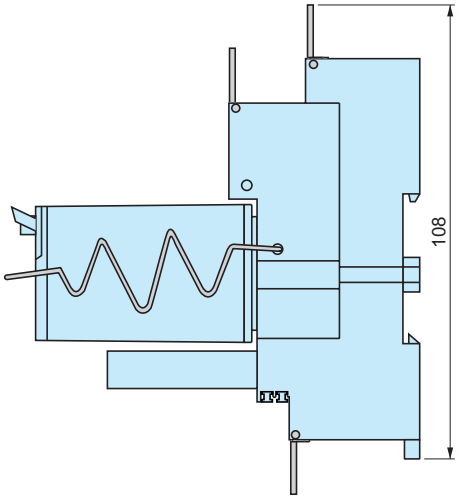
(1) Relays
(2) Protection module
(3) Retention clip
(4) 2 bus jumpers

Metal hold-down clip and plastic ID tags

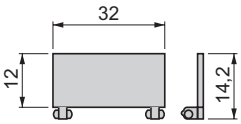
RUZC200



Mounting

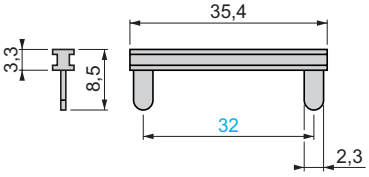


RUZL420



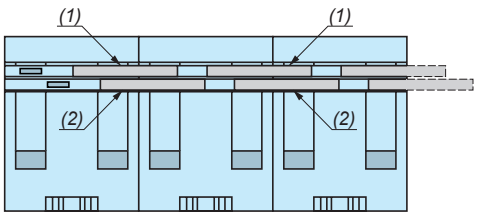
Bus jumper

RUZS2



Mounting on sockets with separate contacts (view from below)

Example of bus jumper mounting on sockets

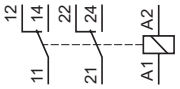


(1) 2 bus jumpers (polarity A2)
(2) 2 bus jumpers (polarity A1)

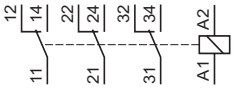
Wiring diagrams

Universal relays

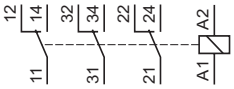
RUM•2AB•••



RUMC3•••••



RUMF3AB•••



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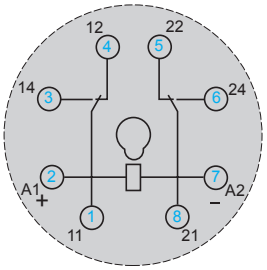

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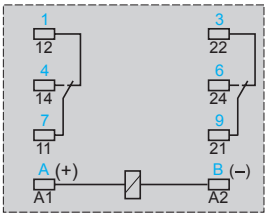

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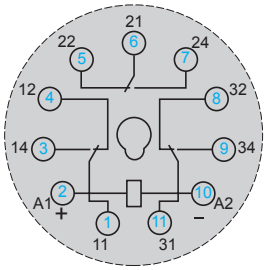

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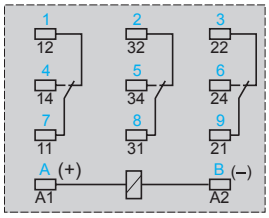
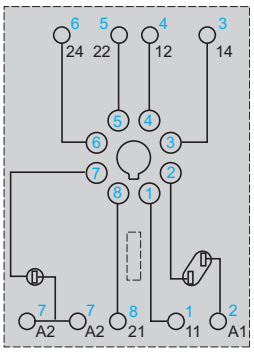


Symbols shown in blue correspond to Nema marking.

Sockets

RUZC2M



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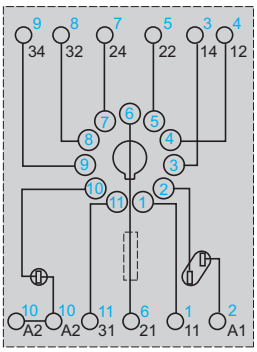

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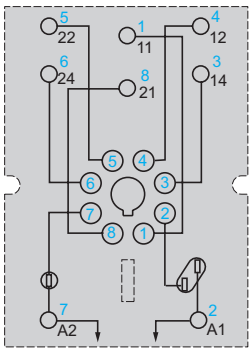

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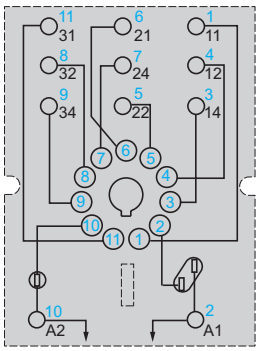

Symbols shown in blue correspond to Nema marking.

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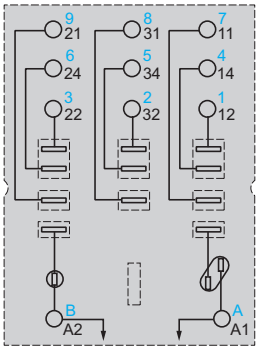
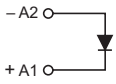


Symbols shown in blue correspond to Nema marking.

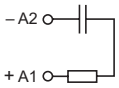
Wiring diagrams (continued)

Protection modules

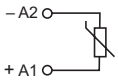
RUW240BD



RUW241P7



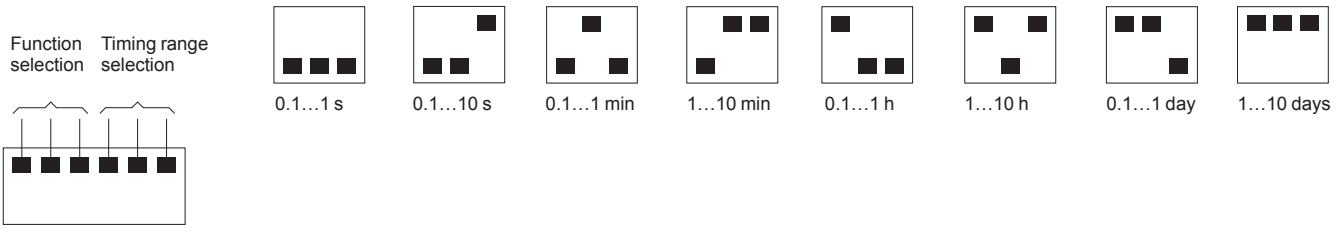
RUW242●●



Zelio® Plug-In Relays
RUM universal relays

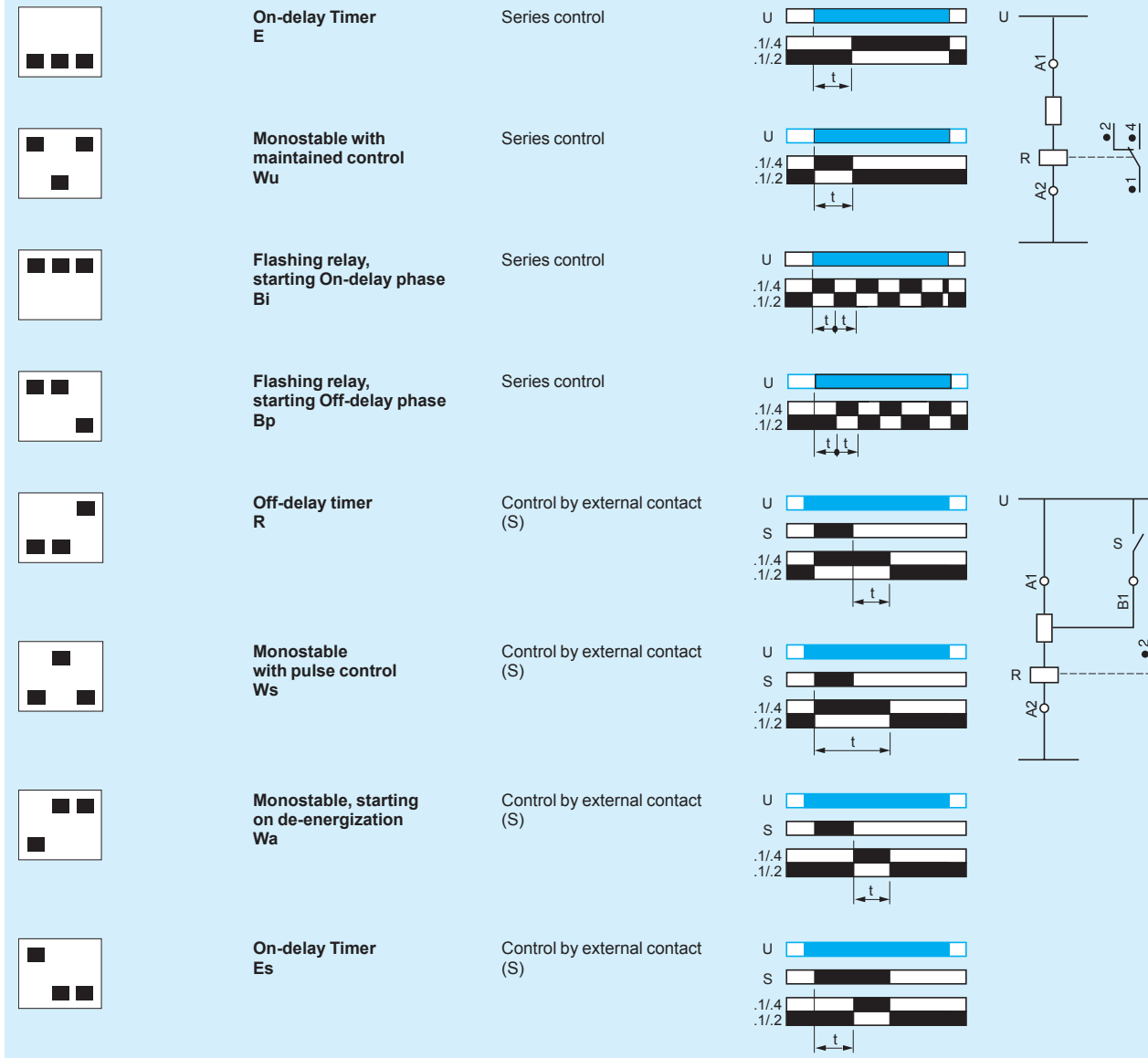
Multifunction timer module RUW101MW

Programming — **Timing range selection**



Function selection

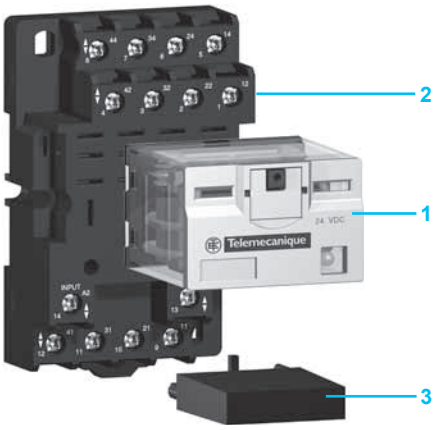
Selection	Function	Control	Function diagram	Control scheme
	On-delay Timer E	Series control		
	Monostable with maintained control Wu	Series control		
	Flashing relay, starting On-delay phase Bi	Series control		
	Flashing relay, starting Off-delay phase Bp	Series control		
	Off-delay timer R	Control by external contact (S)		
	Monostable with pulse control Ws	Control by external contact (S)		
	Monostable, starting on de-energization Wa	Control by external contact (S)		
	On-delay Timer Es	Control by external contact (S)		



Power off — Contact open — U : voltage — S : external control

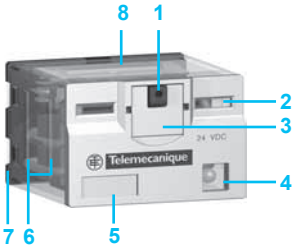
Power on — Contact closed — R : relay RUM ●●● — t : adjustable time delay

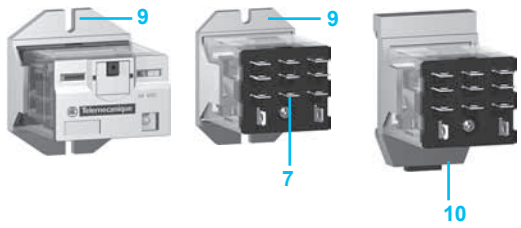
Zelio® Plug-In Relays
RPM power relays



Introduction of the product range

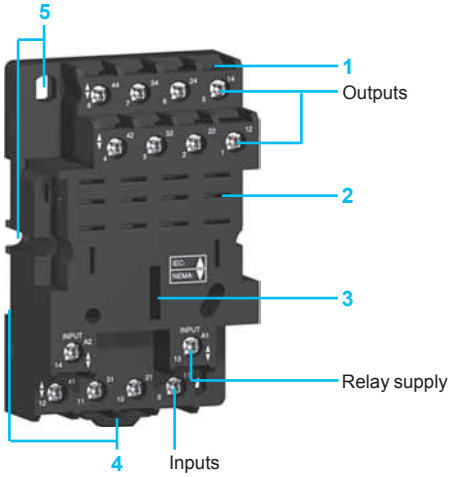
The RPM power relay range includes:
1 15 A relays with 1, 2, 3 and 4 C/O (SPDT, DPDT, 3PDT and 4PDT) contacts.
2 Sockets with mixed contact terminals.
3 Protection modules (diode, RC circuit or varistor) or 1 timer module. Please note that the timer module can only be used with 3-pole or 4-pole sockets.
4 Metal hold-down clip for single-contact relays (not shown).





Relay description

1 Spring return push-to-test button for checking contact operation (green: ⎓, red: ∿).
2 Mechanical “relay status” indicator.
3 Removable lock-down door enables continuous engagement of the contacts for testing or maintenance purposes. During operation, this lock-down door must always be in the closed position.
4 Bipolar LED (depending on version) indicating the relay status.
5 Removable ID tag for relay identification.
6 Four notches for DIN rail mounting adapter or panel mounting adapter with fixing lugs.
7 Five, eight, eleven or fourteen quick-connect pins.
8 Area by which the product can be easily gripped.
9 Mounting adapter enabling direct mounting of the relay on a panel.
10 Mounting adapter enabling direct mounting of the relay on a DIN rail.



Socket description

Sockets with mixed contact terminals *(1)*

1 Connection by screw clamp terminals.
2 Five, eight, eleven or fourteen female contacts for the relay pins.
3 Location for protection modules or the timer module.
4 Locating slot for mounting on DIN rail with mounting clip.
5 Two or four mounting holes for panel mounting.

(1) The inputs are mixed with the relay coil terminals,, with the outputs being located on the opposite side of the socket.

Zelio® Plug-In Relays
RPM power relays

General characteristics

Conforming to standards			IEC/EN 61810-1 (iss. 2), UL 508, CSA C22-2 n° 14
Product certifications			cULus File E164862 CCN NLDX, NLDX7; cURus File E164862 CCN NLDX2, NLDX8; CSA; CE; RoHS compliant
Ambient air temperature around the device	Storage	**°C (F)**	- 40… + 85 (-40... +185)
	Operation	**°C (F)**	- 40… + 55 (-40... +131)
Vibration resistance conforming to IEC/EN 60068-2-6	In operation		3 gn (10...150 Hz/± 1 mm / 5g/5 cycles)
	Not operating		5 gn (10...150 Hz/± 1 mm / 5g/5 cycles)
Degree of protection	Conforming to IEC/EN 60529		IP 40
Shock resistance conforming to IEC/EN 60068-2-27	Opening		15 gn
	Closing		15 gn
Protection category			RT I
Mounting position			Any

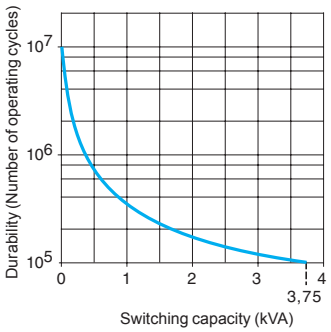
Insulation characteristics

Rated insulation voltage (Ui)	Conforming to IEC/EN 60947	**V**	250 (IEC), 300 (UL, CSA)
Rated impulse withstand voltage (Uimp)		**kV**	4 (1.2/50 µs)
Dielectric strength (rms voltage)	Between coil and contact	**~ V**	1550
	Between poles	**~ V**	1550
	Between contacts	**~ V**	1500

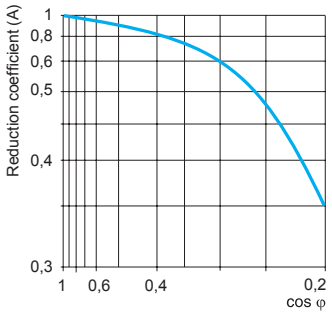
Contact characteristics

Relay type				**RPM1●●●**	**RPM2●●●**	**RPM3●●●**	**RPM4●●●**
Number and type of contacts				1 C/O	2 C/O	3 C/O	4 C/O
Contact materials				AgNi			
Conventional thermal current (Ith)	For ambient temperature ≤ 55 °C		**A**	15			
Rated operational current in utilization categories AC-1 and DC-1	Conforming to IEC	NO	**A**	15			
		NC	**A**	7.5			
	Conforming to UL		**A**	15			
Switching current	Minimum		**mA**	10			
Switching voltage	Maximum		**V**	~/⎓ 250 (IEC)			
	Minimum		**V**	17			
Nominal load (resistive)			**A**	15 / 250 ~ V			
			A	15 / 28 ⎓ V			
Switching capacity	Maximum	~	**VA**	3750			
		⎓	**W**	420			
	Minimum		**mW**	170			
Maximum operating rate In operating cycles/hour	No-load			18 000			
	Under load			1200			
Utilization coefficient				20 %			
Mechanical durability	In millions of operating cycles			10			
Electrical durability In millions of operating cycles	Resistive load			0.1		0.06	
	Inductive load			See curves below			

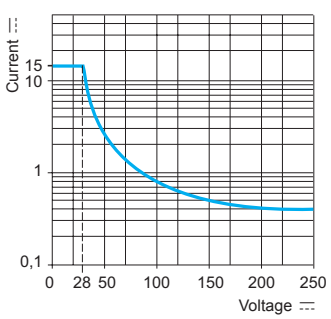
Electrical durability of contacts
Resistive load ~



Reduction coefficient for inductive load ~ (depending on power factor cos φ)



Maximum switching capacity on resistive load ⎓



Inductive load durability = resistive load durability x reduction coefficient.

Coil characteristics

Relay type				RPM1●●●	RPM2●●●	RPM3●●●	RPM4●●●
Average consumption		~	**VA**	0.9	1.2	1.5	1.5
		⎓	**W**	0.7	0.9	1.7	2
Drop-out voltage threshold		~		⩾ 0.15 Uc			
		⎓		⩾ 0.1 Uc			
Operating time (response time)	Between coil energization and making of the NO contact	~	**ms**	20	25	25	20
		⎓	**ms**	20	25	25	20
	Between coil de-energization and making of the NC contact	~	**ms**	20			
		⎓	**ms**	20			

Control circuit voltage Uc				**V**	**12**	**24**	**48**	**110**	**120**	**230**
Relay control voltage codes					**JD**	**BD**	**ED**	**FD**	**–**	**–**
d.c. supply	Average resistance at 20 °C ± 10%	**RPM1●●●**		Ω	180	750	2600	13 100	–	–
		RPM2●●●		Ω	160	650	2600	11 000	–	–
		RPM3●●●		Ω	100	400	2600	8600	–	–
		RPM4●●●		Ω	96	388	1550	7340	–	–
	Operating voltage limits		Min.	**V**	9.6	19.2	38.4	88	–	–
			Max.	**V**	13.2	26.4	52.8	121	–	–
Relay control voltage codes					**–**	**B7**	**E7**	**–**	**F7**	**P7**
a.c. supply	Average resistance at 20 °C ± 15%	**RPM1●●●**		Ω	–	160	720	–	4430	15 720
		RPM2●●●		Ω	–	180	770	–	4430	15 000
		RPM3●●●		Ω	–	103	770	–	2770	12 000
		RPM4●●●		Ω	–	84.3	338	–	2220	9120
	Operating voltage limits		Min.	**V**	–	19.2	38.4	–	96	184
			Max.	**V**	–	26.4	52.8	–	132	253

Socket characteristics

Socket type				RPZF1	RPZF2	RPZF3	RPZF4
Relay types used				**RPM1●●●**	**RPM2●●●**	**RPM3●●●**	**RPM4●●●**
Protection module types used				**RXM02●●●** **RXM04●●●**	**RXM02●●●** **RXM04●●●**	**RUW24●●●**	**RUW24●●●**
Contact terminal arrangement					Mixed		
Wire connection method					Screw clamp terminals		
Product certifications					cURus File E172326 CCN SWIV2, SWIV8; CSA; CE; RoHS compliant		
Conforming to standards					IEC 61984, CE		

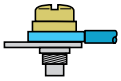
Electrical characteristics

Conventional thermal current (Ith)	**A**	16
Maximum operating voltage	**V**	250 (IEC)

Insulation characteristics

Between adjacent output contacts	**Vrms**	2500
Between input and output contacts	**Vrms**	2500
Between contacts and DIN rail	**Vrms**	2500

General characteristics

Ambient air temperature around the device	Operation		**°C**	- 40…+ 55	
	Storage		**°C**	- 40…+ 85	
Degree of protection	Conforming to IEC/EN 60529			IP 20	
Connection	Solid wire without cable end	1 conductor		0.5…1.5 mm² - AWG 20…AWG 16	0.5…2.5 mm² - AWG 20…AWG 14
		2 conductors		0.5…1.5 mm² - AWG 20…AWG 16	0.5…2.5 mm² - AWG 20…AWG 14
	Flexible wire with cable end	1 conductor		0.25…1 mm² - AWG 22…AWG 17	0.25…1.5 mm² - AWG 22…AWG 16
		2 conductors		0.25…1 mm² - AWG 22…AWG 17	0.25…1.5 mm² - AWG 22…AWG 16
Maximum tightening torque / Screw size			**Nm**	1 / M3 screw	1 / M3.5 screw
Mounting				35 mm DIN rail / panel mount	
Mounting on DIN rail				By red plastic clip	
Terminal referencing				IEC, NEMA	
Compatibility with the metal hold-down clip				Yes	No
Timer module compatibility				No	Yes
Protection module				RXM040W, RXM041●●, RXM021●●	RUW24●●
Clip-in ID tags				No	
Wire connection method	Screw clamp terminals				

Introduction: pages 42 | Characteristics: pages 43 and 44 | Product selector: pages 45 and 46 | Dimensions: pages 47 and 48 | Wiring diagrams: page 49

Zelio® Plug-In Relays
RPM power relays

RPM41BD

RPM42BD

Power relays without LED (sold in lots of 10)

Control circuit voltge	Number and type of contacts - Thermal current (Ith)							
	1 C/O - 15 A		2 C/O - 15 A		3 C/O - 15 A		4 C/O - 15 A	
	Catalog number	Weight	Catalog number	Weight	Catalog number	Weight	Catalog number	Weight
V		kg		kg		kg		kg
⎓ 12	**RPM11JD**	0.026	**RPM21JD**	0.036	**RPM31JD**	0.054	**RPM41JD**	0.071
⎓ 24	**RPM11BD**	0.026	**RPM21BD**	0.036	**RPM31BD**	0.054	**RPM41BD**	0.071
⎓ 48	**RPM11ED**	0.026	**RPM21ED**	0.036	**RPM31ED**	0.054	**RPM41ED**	0.071
⎓ 110	**RPM11FD**	0.026	**RPM21FD**	0.036	**RPM31FD**	0.054	**RPM41FD**	0.071
∿ 24	**RPM11B7**	0.026	**RPM21B7**	0.036	**RPM31B7**	0.054	**RPM41B7**	0.071
∿ 48	**RPM11E7**	0.026	**RPM21E7**	0.036	**RPM31E7**	0.054	**RPM41E7**	0.071
∿ 120	**RPM11F7**	0.026	**RPM21F7**	0.036	**RPM31F7**	0.054	**RPM41F7**	0.071
∿ 230	**RPM11P7**	0.026	**RPM21P7**	0.036	**RPM31P7**	0.054	**RPM41P7**	0.071

Power relays with LED (sold in lots of 10)

⎓ 12	**RPM12JD**	0.026	**RPM22JD**	0.036	**RPM32JD**	0.054	**RPM42JD**	0.071
⎓ 24	**RPM12BD**	0.026	**RPM22BD**	0.036	**RPM32BD**	0.054	**RPM42BD**	0.071
⎓ 48	**RPM12ED**	0.026	**RPM22ED**	0.036	**RPM32ED**	0.054	**RPM42ED**	0.071
⎓ 110	**RPM12FD**	0.026	**RPM22FD**	0.036	**RPM32FD**	0.054	**RPM42FD**	0.071
∿ 24	**RPM12B7**	0.026	**RPM22B7**	0.036	**RPM32B7**	0.054	**RPM42B7**	0.071
∿ 48	**RPM12E7**	0.026	**RPM22E7**	0.036	**RPM32E7**	0.054	**RPM42E7**	0.071
∿ 120	**RPM12F7**	0.026	**RPM22F7**	0.036	**RPM32F7**	0.054	**RPM42F7**	0.071
∿ 230	**RPM12P7**	0.026	**RPM22P7**	0.036	**RPM32P7**	0.054	**RPM42P7**	0.071

Zelio® Plug-In Relays
RPM power relays

RPZF2 + relay RPM22F7

RUW24●●●

RPZ1DA

RPZ3FA

Sockets

Contact terminal arrangement	Connection	Relay type	Sold in lots of	Catalog number	Weight kg
Mixed	Screw clamp terminals	RPM1●●●	10	**RPZF1**	0.042
		RPM2●●●	10	**RPZF2**	0.054
		RPM3●●●	10	**RPZF3**	0.072
		RPM4●●●	10	**RPZF4**	0.094

Protection modules

Description	Voltage	Socket type	Sold in lots of	Catalog number	Weight
	V				kg
Diode	⎓ 6...250	RPZF1RPZ F2	20	**RXM040W**	0.003
		RPZF3 RPZF4	10	**RUW240BD**	0.004
RC circuit	∿ 24...60	RPZF1RPZ F2	20	**RXM041BN7**	0.010
	∿ 110...240	RPZF1RPZ F2	20	**RXM041FU7**	0.010
		RPZF3 RPZF4	10	**RUW241P7**	0.004
Varistor	∿/⎓ 6...24	RPZF1RPZ F2	20	**RXM021RB**	0.030
	∿/⎓ 24...60	RPZF1RPZ F2	20	**RXM021BN**	0.030
	∿/⎓ 110...240	RPZF1RPZ F2	20	**RXM021FP**	0.030
	∿/⎓ 24	RPZF3 RPZF4	10	**RUW242B7**	0.004
	∿/⎓ 240	RPZF3 RPZF4	10	**RUW242P7**	0.004

Timer module *(1)*

Description	Voltage	Socket type	Catalog number	Weight
	V			kg
Multifunction	∿/⎓ 24… 240	RPZF3 RPZF4	**RUW101MW**	0.020

Accessories

Description	For use with	Sold in lots of	Catalog number	Weight kg
Metal hold-down clip (for single-pole relays)	RPZF1	20	**RPZR235**	0.001
Mounting adapters for DIN rail *(2)*	RPM1●●●	20	**RPZ1DA**	0.004
	RPM2●●●	20	**RXZE2DA**	0.004
	RPM3●●●	20	**RPZ3DA**	0.004
	RPM4●●●	20	**RPZ4DA**	0.006
Mounting adapters with fixing lugs for panel	RPM1●●●	20	**RPZ1FA**	0.002
	RPM2●●●	20	**RXZE2FA**	0.002
	RPM3●●●	20	**RPZ3FA**	0.003
	RPM4●●●	20	**RPZ4FA**	0.004
Clip-in ID tags (sheet of 108 ID tags)	All relays	10	**RXZL520**	0.080

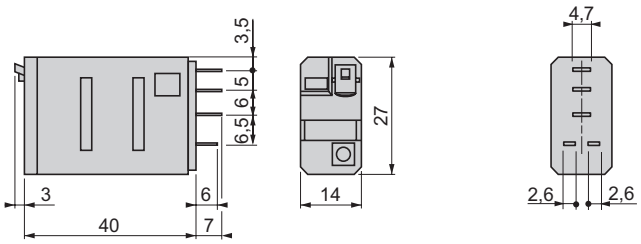
(1) See timer module description (selection of functions and time delays) on page 41
(2) Test button becomes inaccessible.

Zelio® Plug-In Relays
RPM power relays

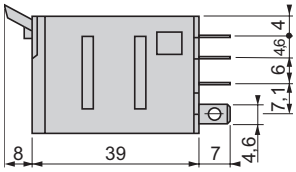
Dimensions (mm):

Power relays

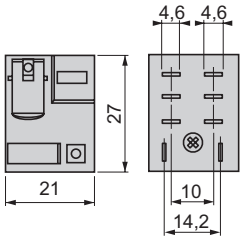
RPM 1



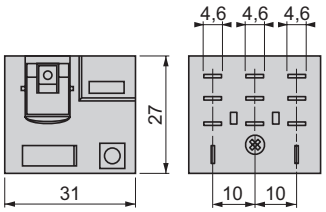
Common side view



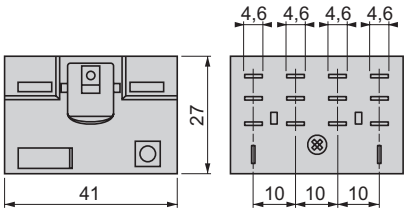
RPM2



RPM 3

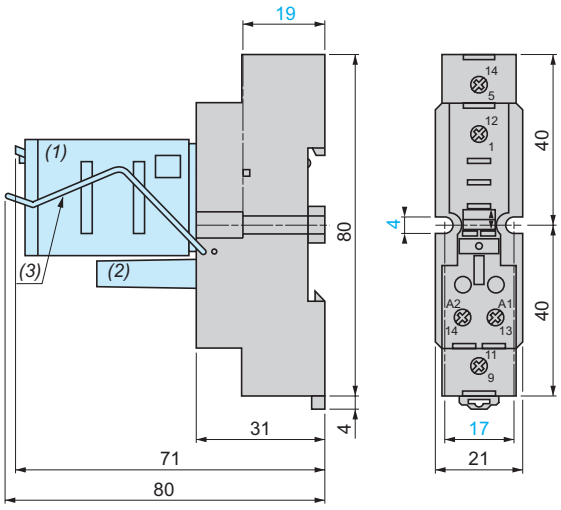


RPM 4

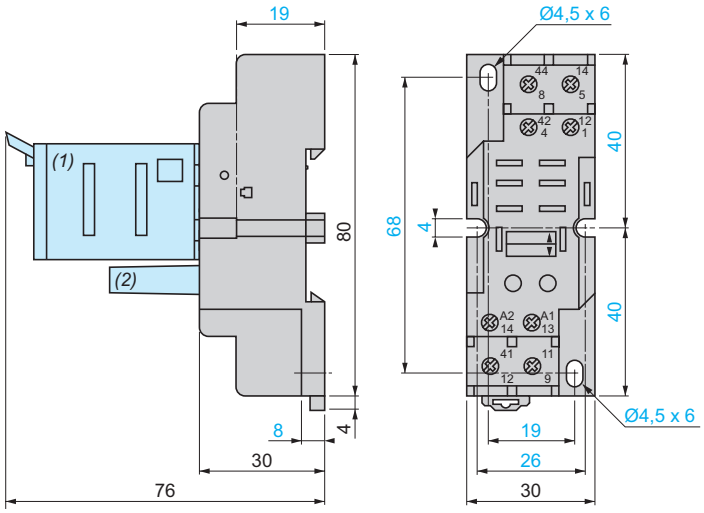


Sockets

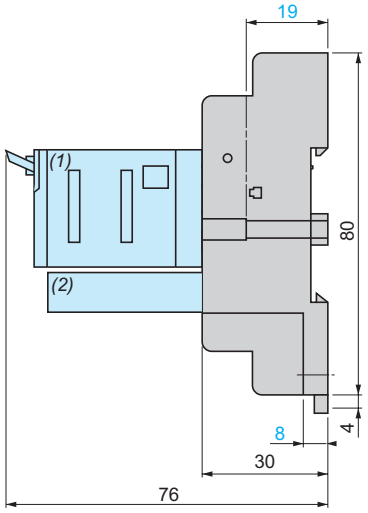
RPZF1



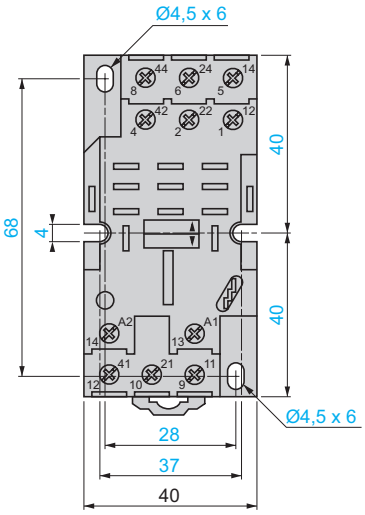
RPZF2



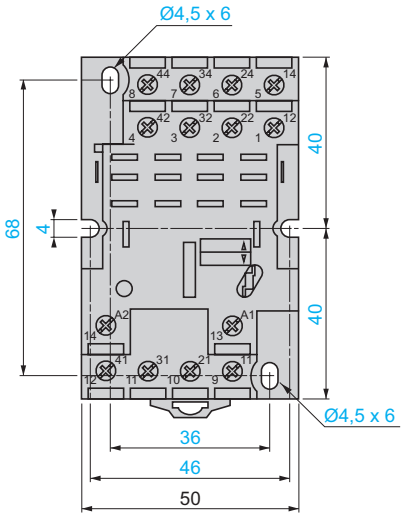
Common side view



RPZF3



RPZF4

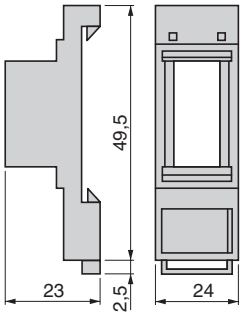


(1) Relays
(2) Protection module
(3) Retention clip

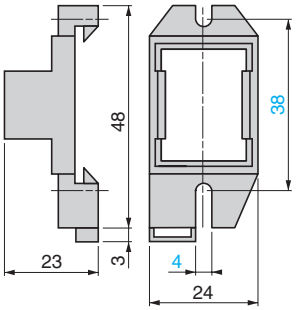
Dimensions (mm):

Mounting adapters for DIN rail

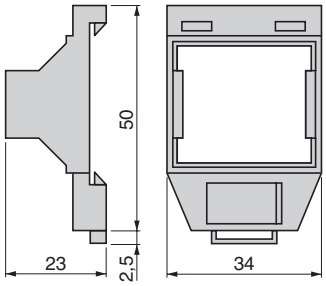
RPZ1DA



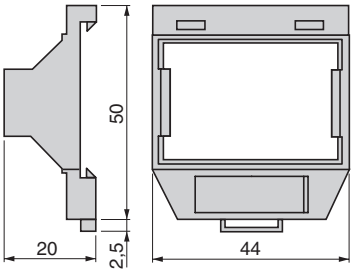
RXZE2DA



RPZ3DA

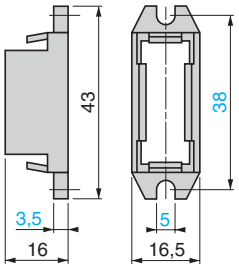


RPZ4DA

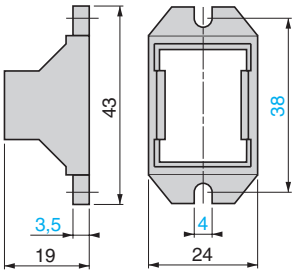


Mounting adapters with fixing lugs for panel

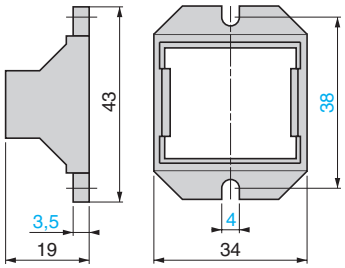
RPZ1FA



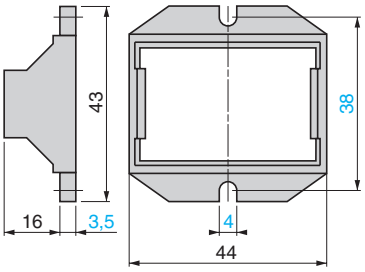
RXZE2FA



RPZ3FA

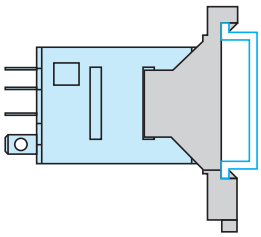


RPZ4FA

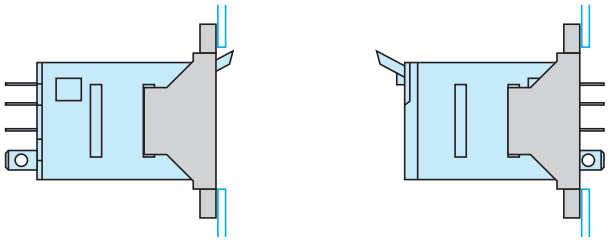


Mounting

Mounting adapters for DIN rail *(1)*



Mounting adapters with fixing lugs for panel

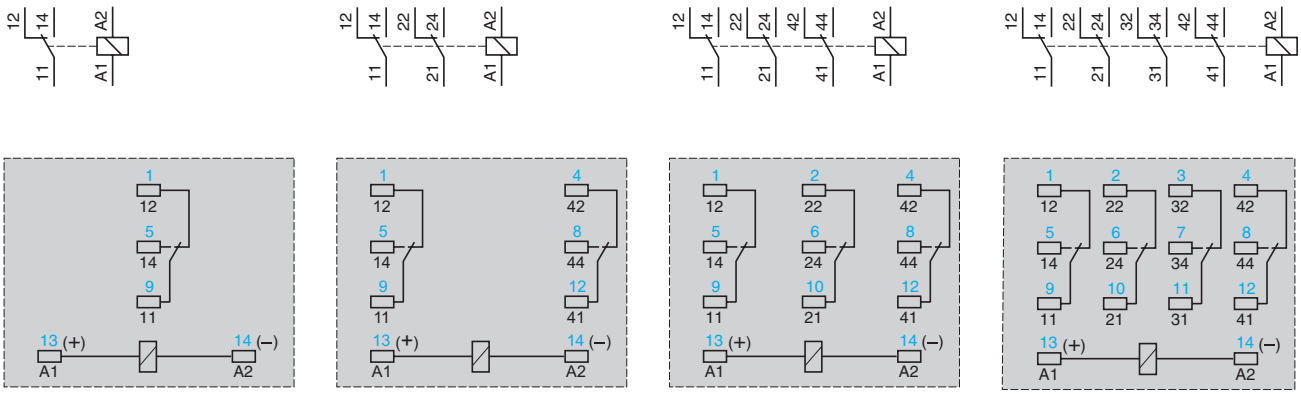


(1) Test button becomes inaccessible

Wiring diagrams

Power relays

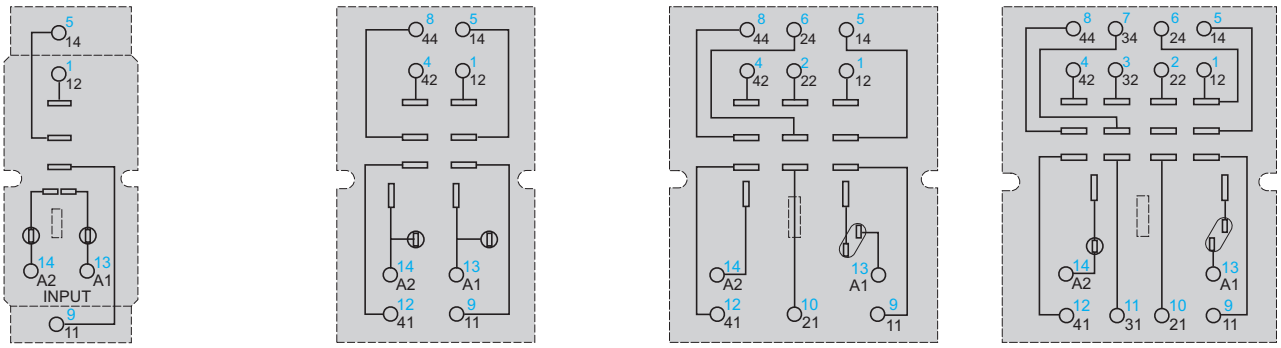
RPM1●●●	RPM2●●●	RPM3●●●	RPM4●●●



Symbols shown in blue correspond to Nema marking.

Sockets

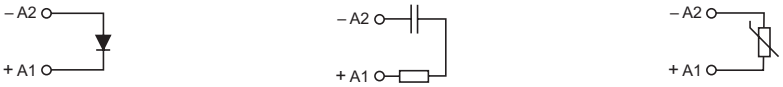
RPZF1	RPZF2	RPZF3	RPZF4



Symbols shown in blue correspond to Nema marking.

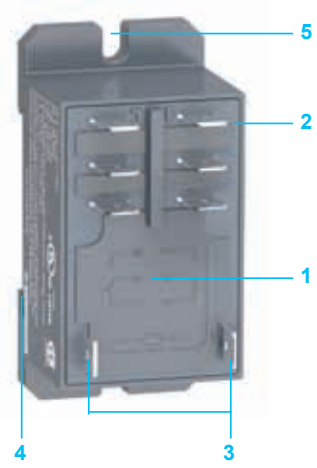
Protection modules

RXM040W, RUW240BD	RXM041●●●, RUW241P7	RXM021●●●, RUW242●●



Zelio™ Plug-In Relays
RPF power relays

Introduction of the product range



1 30 A relays with 2 C/O or 2 N/O contacts
2 Four or six quick-connect terminals
3 Two relay coil terminals
4 A locating slot for DIN rail mounting
5 Two holes for optional panel mounting

General specifications

Conformity to standards			IEC/EN 61810-1, UL 508, CSA C22-2 n°14
Product certifications and standards			UL listed, CSA, CE, GOST, RoHS
Ambient air temperature around the device	Storage	**°C (°F)**	- 40 to + 85 (-40 to +185)
	Operation	**°C (°F)**	- 40 to + 55 (-40 to + 131)
Vibration resistance conforming to EC/EN 60068-2-6	In operation		3 gn (+/- 1 mm, 10 to 150 Hz) 5 cycles
	Not in operation		10 gn (+/- 1 mm, 10 to 150 Hz) 5 cycles
Degree of protection	Conforming to IEC/EN 60529		IP 40
Shock resistance conforming to IEC/EN 60068-2-27	In operation		10 gn
	Not in operation		30 gn
Protection category			RT II
Polution degree			3
Mounting position			Any

Insulation specifications

Rated insulation voltage (Ui)		**V** **V**	250 (conforming to IEC) 300 (conforming to UL)
Rated impulse withstand voltage (Uimp)		**kV**	4 (1.2 µs / 50 µs)
Dielectric strength (rms voltage)	Between coil and contact	**Vac**	4000 (reinforced insulation)
	Between poles	**Vac**	2000 (basic insulation)
	Between contacts	**Vac**	1500 (micro-disconnection)

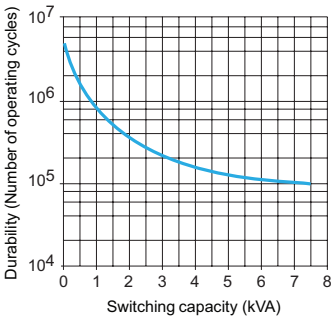
Specifications: page 50
Product selector: page 52
Dimensions, wiring diagrams: page 53

Contact specifications

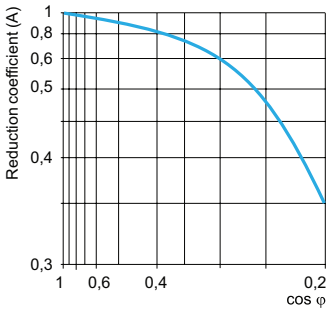
Relay type			RPF 2A●●	RPF 2B●●
Number and type of contacts			2 N/O	2 C/O
Contact materials			$AgSnO_2$	
Conventional thermal current (Ith)	For ambient temperature ≤ 40°C		30 A at 28 Vdc / 250 Vac (when mounted with 13 mm gap between two relays) 25 A at 28 Vdc / 250 Vac (when mounted side by side without a gap)	
Rated operational current	Conforming to IEC	N.O.	30 A at 250 Vac; 30 A at 28 Vdc	
		N.C.	3 A at 250 Vac; 3 A at 28 Vdc	
	Conforming to UL	N.O.	General Use: 30 A at 277 Vac Resistive: 20 A at 28 Vdc Motor: 1.0 hp at 120 Vac; 3.0 hp at 240 Vac LRA/FLA : 96 A / 22 A @ 240 Vac (AC coil), 30,000 cycles 10 A / 25.3 A @ 240 Vac (DC coil), 30,000 cycles Pilot Duty: 720 VA / A 300, 6000 cycles Short Circuit: 5000 A rms @ 3 hp, 240 Vac Tungsten: 10 A at 120 Vac 50/60 Hz, 25,000 cycles 6 A at 250 Vac 50/60 Hz, 25000 cycles	
		N.C.	Resistive: 3 A at 277 Vac (6000 cycles); 3 A at 28 Vdc	
Minimum switching current			10 mA	
Minimum switching voltage			17 V	
Maximum switching voltage			250 Vac / Vdc (conforming to IEC)	
Switching capacity	Maximum		7500 VA / 840 W (when mounted with 13 mm gap between two relays)	
			6250 VA / 700 W (when mounted side by side without a gap)	
	Minimum		170 mW	
Maximum operating rate	No load		18,000 cycles per hour	
	Under load		1200 cycles per hour	
Utilization coefficient			10 %	
Mechanical durability			50,000,000 cycles	
Electrical durability	Resistive load		100,000 cycles, unless otherwise specified under rated operational current	
	Inductive load		See curves below	

Electrical durability of contacts

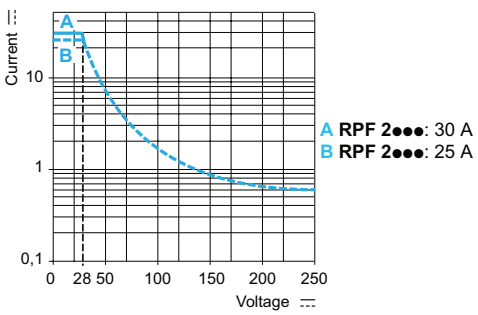
Resistive load



AC reduction coefficient for inductive load (depending on power factor cos φ)
Durability (inductive load) = durability (resistive load) x reduction coefficient.



Maximum switching capacity on DC resistive load



Note: These curves are for reference only and are typical values only. Actual performance is dependant upon the actual load, environment, duty cycle, and other conditions specific to the application.

Coil specifications

Average consumption			**VA**	4				
			W	1.7				
Drop-out voltage threshold			**Vac**	≥ 0.15 Uc				
			Vdc	≥ 0.1 Uc				
Operating time (response time)	Between coil energization and making of the On-delay contact		**ms**	25 (max.)				
	Between coil de-energization and making of the Off-delay contact		**ms**	25 (max.)				
Control circuit voltage Uc			**V**	**12**	**24**	**110**	**120**	**230**
Relay control voltage codes				**JD**	**BD**	**FD**	**—**	**—**
DC supply	Average resistance at 20 °C ± 10%		Ω	86	350	7255	—	—
	Operating voltage limits	Min.	**Vdc**	9.6	19.2	88	—	—
		Max.	**Vdc**	13.2	26.4	121	—	—
Relay control voltage codes				**—**	**B7**	**—**	**F7**	**P7**
AC supply	Average resistance at 20 °C ± 15%		Ω	—	170	—	4250	15,600
	Operating voltage limits	Min.	**Vac**	—	19.2	—	96	184
		Max.	**Vac**	—	26.4	—	132	253
Contractual warranty period				18 months				

Zelio™ Plug-In Relays
RPF power relays

Power relays (sold in lots of 10)

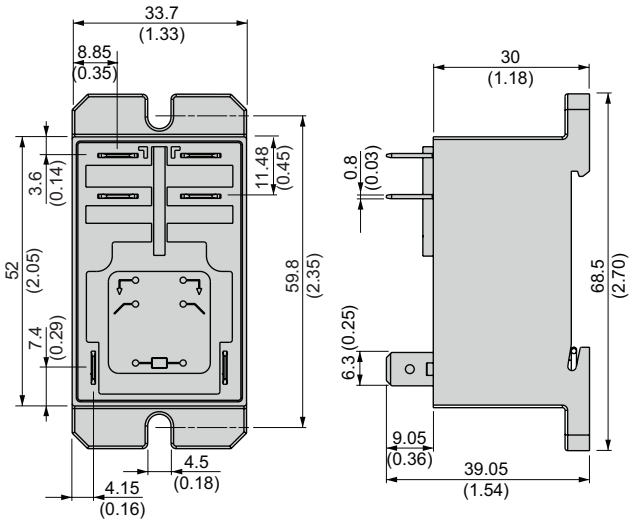
Control circuit voltage (V)	Number and type of contacts – Thermal current (Ith)		
	2 N/O - 30 A *(1)*	2 C/O - 30 A *(1)*	
	Catalog number	Catalog number	Weight kg (lbs)
12 Vdc	**RPF2AJD**	**RPF2BJD**	0.082 (0.181)
24 Vdc	**RPF2ABD**	**RPF2BBD**	0.082 (0.181)
110 Vdc	**RPF2AFD**	**RPF2BFD**	0.082 (0.181)
24 Vac	**RPF2AB7**	**RPF2BB7**	0.082 (0.181)
120 Vac	**RPF2AF7**	**RPF2BF7**	0.082 (0.181)
230 Vac	**RPF2AP7**	**RPF2BP7**	0.082 (0.181)

(1) 30 A when mounted with 13 mm gap between two relays and 25 A when mounted side by side without a gap.

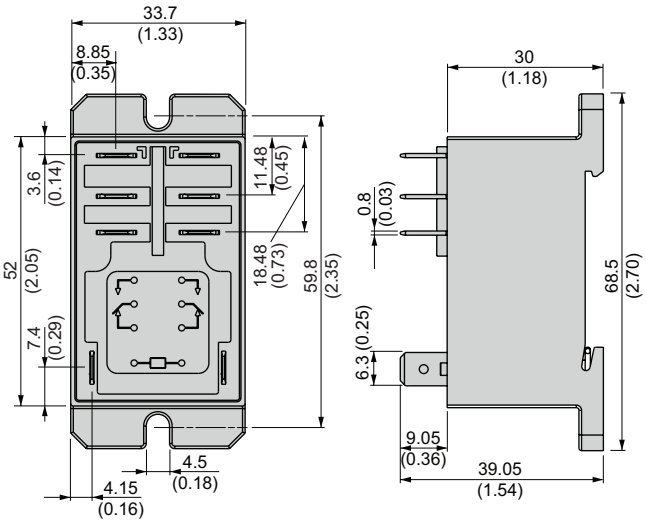
Dimensions: mm (inches)

Power relays

RPF 2A●●



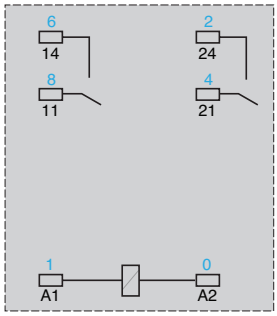
RPF 2B●●



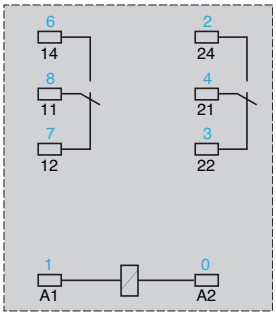
Wiring diagrams

Power relays

RPF 2A●●



RPF 2B●●



Symbols shown in blue correspond to NEMA marking; symbols shown in black correspond to IEC marking.

Interfaces
Interfaces for discrete signals

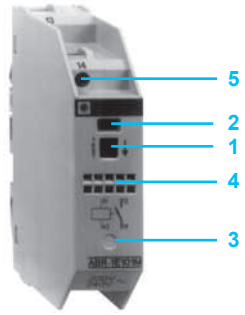
Applications	Electromechanical interface modules	
		
Functions	Input	
Width (mm)	17.5	9.5
Contact arrangement	1 N/O 2 N/O 1 C/O	1 N/O
Thermal current	–	
Control voltages	⎓ 110…127 V ≂ 24 V, 48 V ∿ 115…127 V ∿ 230/240 V	⎓ 24 V, 48 V ∿ 115…127/50 Hz ∿ 115…127/60 Hz ∿ 230…240/50-60 Hz
Indication	Mechanical for contacts and/or LED for control	LED for control
Product numbers	**ABR1E**	**ABR2E**
Pages	56	62

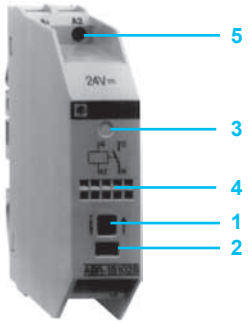



Output		Input and output Very low level switching	Input	Output
17.5	12	17.5	9.5	9.5/17.5
1 N/O 2 N/O 1 C/O 1 N/C + 1 N/O	1 N/O	1 C/O	–	
12 A	5 A	–		5 A
⎓ 24 V ≂ 24 V, 48 V ∿ 115…127 V ∿ 110 V	⎓ 24 V		⎓ 5, 24, 48 V ∿ 115…127/50 Hz ∿ 120…127/60 Hz ∿ 230…240/50 Hz ∿ 230…240/60 Hz	⎓ 24 V
Mechanical for contacts and/or LED for control	LED for control			
ABR1S	**ABR2S**	**ABR2●B312B**	**ABS2E**	**ABS2S**
56	62	62	68	

Interfaces
For discrete signals
Electromechanical interface modules

ABR-1 electromechanical interface modules are supplied in the form of compact modules, 17.5 mm wide.
They are designed for interfacing discrete digital control signals exchanged within an automated system between the processing unit (PLC, numerical controller, etc) and the other components (contactors, solenoid valves, indicator lamps, proximity sensors, etc).
These products are based on advanced contactor technology and are easily adapted to industrial environments. They conform to the most recent IEC 947-5-1 standards.





Composition

The ABR-1 range includes 2 families:

Input interfaces
Input interfaces are designed for switching input signals to the processor and are characterized by their advanced contact reliability: less than 1 interruption per 100 million operating cycles at ⎓ 17 V, 5 mA.
The switching level is sufficiently high to help ensure that the interfaces can directly control most contactors and indicator lamps.

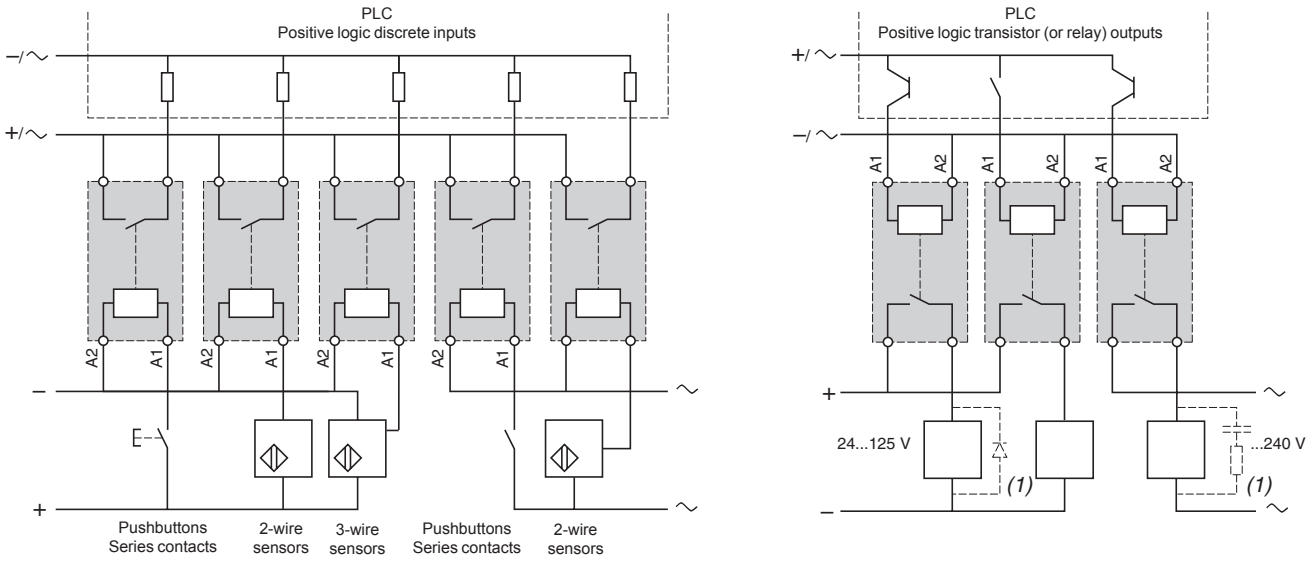
Output interfaces
Output interfaces are designed for the control of preactuators (contactors, solenoid valves, etc) for signalling devices (indicators lamps, audible warnings, etc). They are characterized by a high switching capacity and an average durability 5 times greater than that of traditional interface modules, which incorporate standard relays.

1 Override contacts by pressing button (not holding it down) for a simple and quick test during installation or maintenance operations on the installation
2 Green indicator showing the mechanical position of the contacts
3 LED indicating the control signal state
4 Channel identification : 5 individual characters for AB1-R/G or one AB1-SA2 marker tag
5 Connection by screw clamp terminal enabling easy attachment of 2 wires per terminal. The layout of the connection terminals for both families (input and output) is designed for rational wiring and a clear separation between the incoming (processing) and outgoing (power and process control) circuits.

Introduction: page 56 | Characteristics: pages 57 and 58 | Curves: page 59 | Product selector: page 60 | Dimensions, Wiring diagrams: page 61

Interfaces
For discrete signals
Electromechanical interface modules

Examples of applications with PLCs



(1) Essential on inductive loads (can be replaced with peak limiter ⊣◿⊢).

Environment

Conforming to standards				IEC 60947-1, UL 508, CSA C22.2 No. 14
Product certifications				UL, CSA, BV, LROS, DNV
Degree of protection	Conforming to IEC 529 (protection against direct contact)			IP 00
Protective treatment				"TC"
Flame resistance	Conforming to IEC 695-2-1	Incandescent wire	**°C**	850
		Conforming to UL 94		V0
Shock resistance	Conforming to IEC 68-2-27	Semi-sinusoidal waves 11 ms		50 gn
Vibration resistance	Conforming to IEC 68-2-6	10…55 Hz		6 gn
Resistance to electrostatic charges	Conforming to IEC 801-2	Level 3	**kV**	8
Resistance to rapid transients	Conforming to IEC 801-4	On power supply	**kV**	2
		On I/O	**kV**	1
Resistance to shock waves	Conforming to IEC 255-4	Waveform 1.2/50 ms ; 0.5 J U ≤ 50 V	**kV**	0.5
		U > 50 V	**kV**	2.5
Cross-sections which may be connected	Flexible wire with no cable end	1 or 2-wire	**mm²**	0.6…2.5
	Flexible wire with cable end	1 or 2-wire	**mm²**	0.34…2.5
	Rigid cable	1-wire	**mm²**	0.27…4
		2-wire	**mm²**	0.27…2.5
Operating position				Any
Ambient air temperature around the device	Unrestricted operation		**°C**	- 5…+ 40
	Permissible at Un		**°C**	- 20…+ 60
	Storage		**°C**	- 40…+ 70
Operating altitude			**m**	≤ 3000
Installation category	Conforming to IEC 947-1			II
Degree of pollution	Conforming to IEC 947-5-1			3
Mounting				Standard DIN rails

Introduction: page 56 | Characteristics: pages 57 and 58 | Curves: page 59 | Product selector: page 60 | Dimensions, Wiring diagrams: page 61

Interfaces
For discrete signals
Electromechanical interface modules

Control circuit characteristics (40°C ambient temperature)

Type of interface			ABR 1S●02B	ABR 1●●●8B	ABR 1●●●8E	ABR 1E●12F	ABR 1●●●1F	ABR 1E●11M	ABR 1E●01M
Rated voltage (Uc)		**V**	⎓ 24	≂ 24	≂ 48	⎓ 110...127	∿ 115...127	∿ 230...240	∿ 230...240
Current frequency		**Hz**	–	50/60	50/60	–	50/60	50/60	50/60
Energization threshold (at ± 5 %)		**V**	15	16.5	34	75	86	170	164
Maximum operating voltage	⎓ / ∿	**V**	30	30	53	140	140	264	264
Maximum drop-out (at ± 5 %) **voltage** (Uo)	⎓ / ∿	**V**	3.2	3.8	8.5	16	34	68	78
Maximum current (Un)	⎓ / ∿	**mA**	62	62/55	36/32	15	8	7	5.5
Minimum holding current	⎓ / ∿	**mA**	6.6	4.9/5.2	4.7/5.4	1.5	2.4	2	1.5
Maximum dissipated power	50 Hz/60 Hz	**W**	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Disappearance of voltage maximum time up to which contact is maintained		**ms**	3	8	10	10	6	5	6
Display of control circuit by LED			No	Yes	Yes	Yes	Yes	Yes	No
Built-in protection reversed polarity			Yes	Yes	Yes	Yes	–	–	–

Contact characteristics

Type of interface				ABR1E●●●●	ABR1S●●●●
Maximum switching voltage			∿ **V**	252	252
			⎓ **V**	125	125
Maximum rated operating voltage Ue	Conforming to IEC 947-5-1		∿ **V**	230	230
			⎓ **V**	125	125
Operating current frequency			**Hz**	50/60	50/60
Thermal current Ith	Conforming to IEC 947-1		**A**	2	12
Rated operating current (Ie) per 1 million operating cycles	Conforming to IEC 947-5-1 Ue : ∿ 230 V	AC12	**A**	2	4
		AC13	**A**	1	1
		AC14	**A**	1	1
		AC15	**A**	1	1
	Conforming to IEC 947-5-1 Ue : ⎓ 24 V	DC12	**A**	2	5
		DC13	**A**	1	1
Minimum switching capacity			**mA**	3	3
Minimum switching voltage			**V**	17	17
Protection against short-circuits	For Ik ≤ 2.5 kA (∿) and ≤ 100 A (⎓) Type and value of recommended fuse		**A**	gG/gF : 16	gG/gF : 16
Low power switching performance of contacts (17 V - 5 mA)	Number of interruptions per "n" million operating cycles			10^{-8}	10^{-8}

Other characteristics

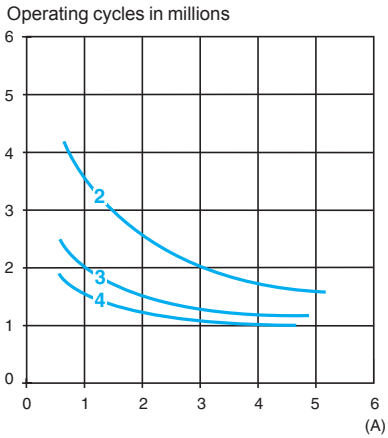
Operating time at Un and at 20 °C	Between energization of coil and closing of N/O contact	**ms**	≤ 12
	Between energization of coil and opening of N/C contact	**ms**	≤ 12
	Between de-energization of coil and opening of N/O contact	**ms**	≤ 12
	Between de-energization of coil and closing of N/C contact	**ms**	≤ 12
Duration of bounce		**ms**	≤ 3
Contact bridging times between contact "N/C" and "N/O"	Maximum make before break or break before make time	**ms**	1
Maximum operating rate	At no-load	**Hz**	6
	At Ie	**Hz**	0.5
Mechanical durability in millions of operating cycles	ABR-1 (1 N/O or 2 N/O)		≥ 20 million
	ABR-1 (1 C/O or 1 N/C + 1 N/O)		≥ 10 million
Rated isolation voltage	Conforming to IEC 947-1	**V**	250
	Conforming to VDE 0110 group C	**V**	250
Insulation test voltage for 1 min.	Between coil circuit and contact circuits	**kV**	4
	Between wired interface and ground	**kV**	2.5
	Between independent contacts	**kV**	1.5

Interfaces
For discrete signals
Electromechanical interface modules

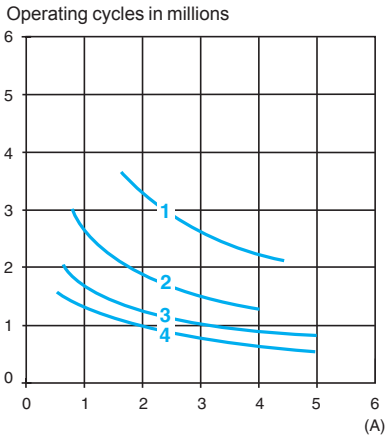
Electrical durability of contacts

Test conditions : in accordance with standard IEC 947-5-1 set up for rated control voltage, operating rate : 1800 cycles/hour. (0.5 Hz).

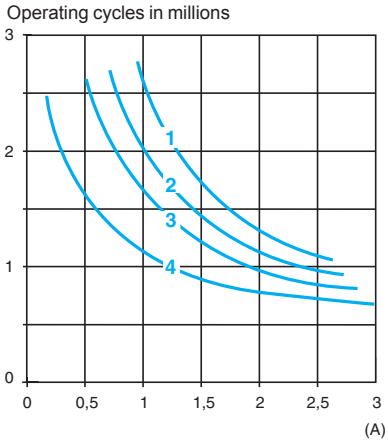
a.c. loads



AC-12 : control of resistive loads and isolated solid state loads via optocoupler
cos φ ≥ 0.9



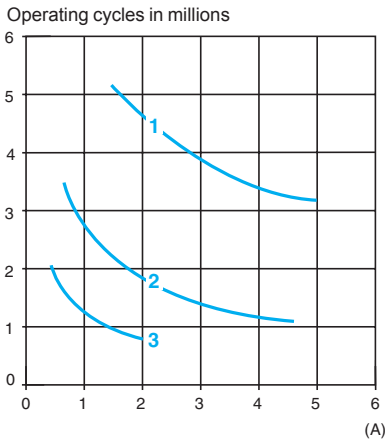
AC-13 : control of isolated solid state loads via transformer
cos φ ≥ 0.65



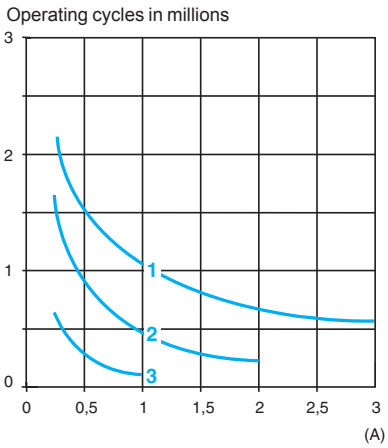
AC-14 : control of weak electromagnetic loads of electromagnets ≤ 72 VA
make: cos φ = 0.3
break: cos φ = 0.3
AC-15 : control of electromagnetic loads of electromagnets > 72 VA
make: cos φ = 0.7
break: cos φ = 0.4

1 24 V
2 48 V
3 127 V
4 230 V

d.c. loads



DC-12 : control of resistive loads and isolated solid state loads via optocoupler
L/R ≤ 1 ms



DC-13 : control of electromagnets
L/R ≤ 2 x (Ue x Ie) in ms.
Ue: rated operating voltage
Ie: rated operating current

1 24 V
2 48 V
3 127 V

Interfaces

For discrete signals

Electromechanical interface modules

Control circuit: a.c. or d.c.

ABR1E101M

ABR1E318B

ABR1S102B

ABFC08R●●●

Input interface modules *(1)* (17.5 mm pitch)

Display	Contact Configuration	Control circuit	Catalog number	Weight
		V		kg
Mechanical *(2)*	1 N/O	∼ 230/240	**ABR1E101M**	0.090
	1 C/O	∼ 230/240	**ABR1E301M**	0.090
Mechanical *(2)* **+ LED** *(3)*	1 N/O	⎓ 24	**ABR1E118B**	0.095
		⎓ 48	**ABR1E118E**	0.095
		⎓ 110...127 *(4)*	**ABR1E112F**	0.095
		∼ 115...127	**ABR1E111F**	0.095
		∼ 230/240	**ABR1E111M**	0.095
	2 N/O	⎓ 24	**ABR1E418B**	0.095
		⎓ 48	**ABR1E418E**	0.095
		⎓ 110...127*(4)*	**ABR1E412F**	0.095
		∼ 115...127	**ABR1E411F**	0.095
		∼ 230/240	**ABR1E411M**	0.095
	1 C/O	⎓ 24	**ABR1E318B**	0.095
		⎓ 48	**ABR1E318E**	0.095
		⎓ 110...127*(4)*	**ABR1E312F**	0.095
		∼ 115...127	**ABR1E311F**	0.095
		∼ 230/240	**ABR1E311M**	0.095

Output terminals-relays *(1)* (17.5 mm pitch)

Display	Contact Configuration	Control circuit	Catalog number	Weight
		V		kg
Mechanical *(2)*	1 N/O	⎓ 24	**ABR1S102B**	0.090
	2 N/O	⎓ 24	**ABR1S402B**	0.090
	1 C/O	⎓ 24	**ABR1S302B**	0.090
	1 N/C + 1 N/O	⎓ 24	**ABR1S602B**	0.090
Mechanical *(2)* **+ LED** *(3)*	1 N/O	⎓ 24	**ABR1S118B**	0.095
		⎓ 48	**ABR1S118E**	0.095
		∼ 115...127	**ABR1S111F**	0.095
	2 N/O	⎓ 24	**ABR1S418B**	0.095
		⎓ 48	**ABR1S418E**	0.095
		∼ 110	**ABR1S411F**	0.095
	1 C/O	⎓ 24	**ABR1S318B**	0.095
		⎓ 48	**ABR1S318E**	0.095
		∼ 110	**ABR1S311F**	0.095
	1 N/C + 1 N/O	⎓ 24	**ABR1S618B**	0.095
		⎓ 48	**ABR1S618E**	0.095
		∼ 110	**ABR1S611F**	0.095

Commoning links

Description	For common	Color	Distance between wire ends	Catalog number	Weight
			cm		kg
Commoning links in modules 8 x 1 mm²	Coil	White	12	**ABFC08R12W**	0.020
			2	**ABFC08R02W**	0.010
	∼	Red	12	**ABFC08R12R**	0.020
			2	**ABFC08R02R**	0.010
	⎓	Blue	12	**ABFC08R12B**	0.020
			2	**ABFC08R02B**	0.010

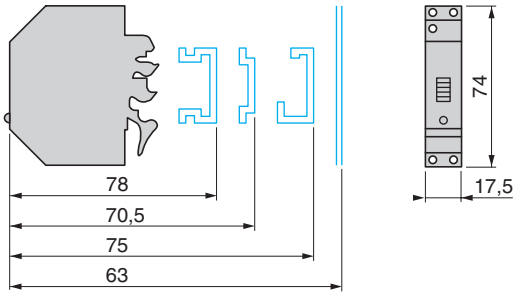
(1) Connection by screw-clamp.
(2) By green mechanical indicator light for contact(s) activated electrically or mechanically by pressing the test button.
(3) By green LED illuminated when control signal is present.
(4) With polarization (+ on A1, - on A2).

Introduction: page 56 | Characteristics: pages 57 and 58 | Curves: page 59 | Product selector: page 60 | Dimensions, Wiring diagrams: page 61

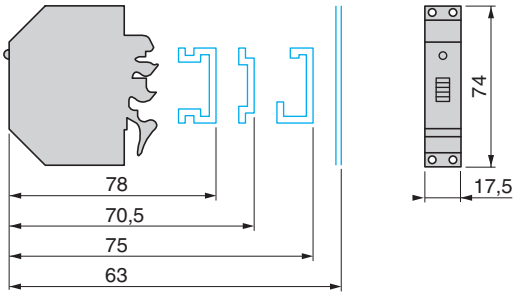
Interfaces
For discrete signals
Electromechanical interface modules

Dimensions (mm):

ABR 1E



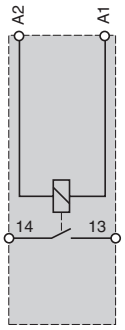
ABR 1S



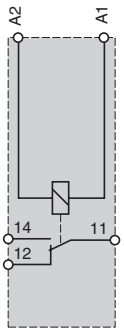
Wiring diagrams

⎓ 24 V or ∿ 230 V interfaces with mechanical indication

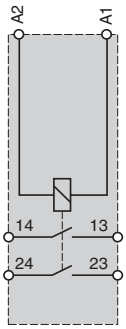
1 N/O



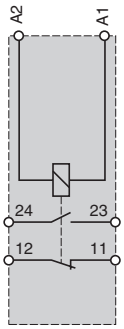
1 C/O



2 N/O

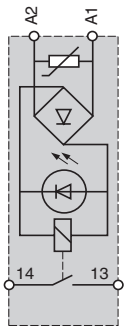


1 N/C + 1 N/O

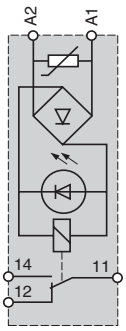


⎓ 24 V or ⎓ 48 V interfaces with mechanical indication + LED

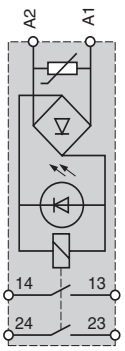
1 N/O



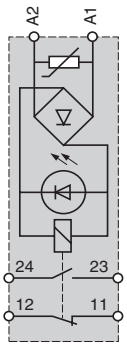
1 C/O



2 N/O

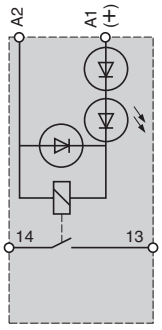


1 N/C + 1 N/O

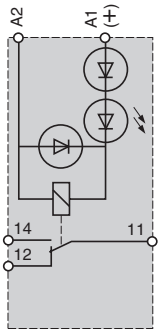


⎓ / ∿ 110 V or ∿ 230 V interfaces with mechanical indication + LED

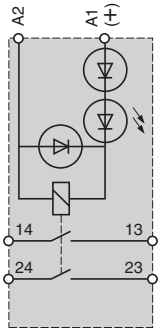
1 N/O



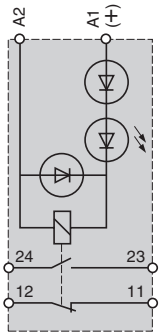
1 C/O



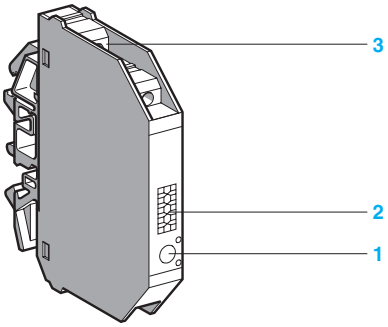
2 N/O

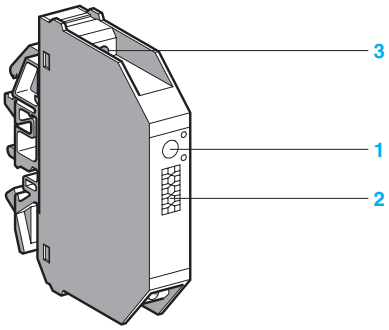


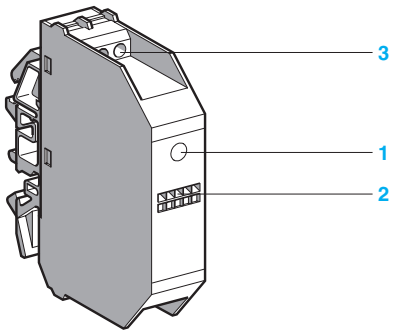
1 N/C + 1 N/O



Interfaces
For discrete signals
Slim electromechanical interface modules







ABR-2 electromechanical interface modules complement the ABR-1 range.
They are characterized by micro relay technology which allows reduced dimensions and very low switching levels (TTL, HCMOS, analog signals).
The ABR-2 family is in the form of slim compact modules, 9.5 mm wide for input interface modules, 12 mm wide for output interface modules and 17.5 mm wide for very low level switching products.

Description

The ABR-2 includes 3 families:

Input interfaces (9.5 mm pitch)
Input interfaces are designed for switching input signals to a processor and are characterized by their advanced contact reliability: less than 1 interruption per 100 million operating cycles at ⎓ 17 V, 5 mA.
They have increased immunity to current leakages ≤ 2 mA, and a wide coil voltage range (0.7 to 1.25 Un).

Output interfaces (12 mm pitch)
Output interfaces are designed for the control of preactuators (contactors, solenoid valves, etc) for signalling devices (indicators lamps, audible warnings etc). They are characterized by a high switching capacity and an advanced immunity to current leakages ≤ 2 mA. A lower cost version without LED signalling is available.

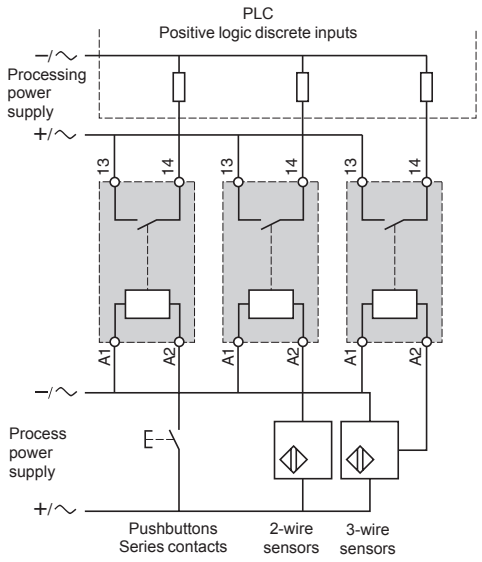
Low level switching input and output interfaces (17.5 mm pitch) **with 1 C/O contact.**
These interfaces are designed for switching logic (TTL or HCMOS) and analog signals.
Warning: never switch inductive loads with this type of interface.

The front panel of the ABR-2 electromechanical interface module includes:
1 LED indicating the control signal state
2 Channel identification : 5 individual characters for AB1-R/G or 1 AB1-SA2 marker tag
3 Connection by screw clamp terminal enabling easy attachment of 2 wires per terminal. The layout of the connection terminals for both families (input and output) is designed for rational wiring and a clear separation between the incoming (processing) and outgoing (power and process control) circuits.

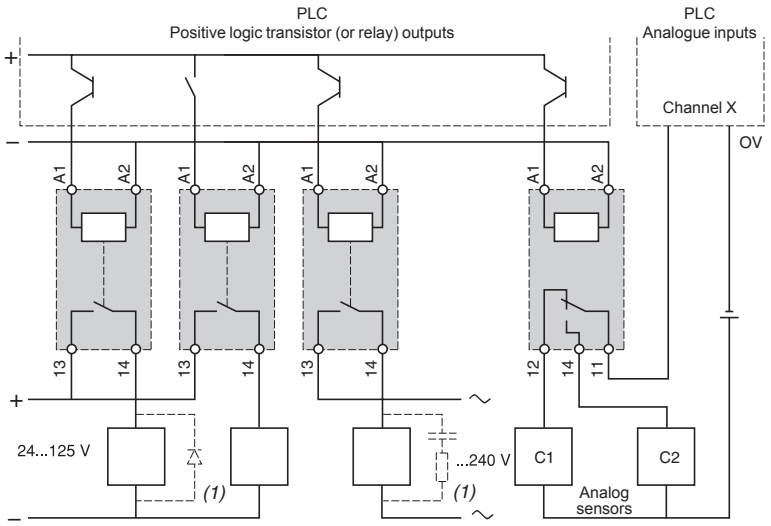
Introduction: page 62 | Characteristics: pages 63 and 64 | Curves: page 65 | Product selector: page 66 | Dimensions, Wiring diagrams: page 67

Interfaces
For discrete signals
Slim electromechanical interface modules

Examples of applications with PLCs



ABR2E●●●●



ABR2S●●●● **ABR2SB12B**

(1) Essential on inductive loads (can be replaced with peak limiter ⊣◿).

Environment

Conforming to standards				IEC 60947-1, UL 508, CSA C22.2 No. 14
Product certifications				UL, CSA, BV, LROS, DNV
Degree of protection	Conforming to IEC 529 (protection against direct contact)			IP 20
Protective treatment				"TC"
Flame resistance	Conforming to IEC 695-2-1	Incandescent wire	**°C**	960
		Conforming to UL 94		V0
Shock resistance	Conforming to IEC 68-2-27	Semi-sinusoidal waves 11 ms		30 gn
Vibration resistance	Conforming to IEC 68-2-6	10…150 Hz		3 gn
Resistance to electrostatic discharges	Conforming to IEC 801-2	Level 3	**kV**	8
Resistance to electromagnetic fields	Conforming to IEC 801-3	Level 3 ; 27…1000 MHz	**V/m**	10
Resistance to rapid transients	Conforming to IEC 801-4 Level 3	On power supply	**kV**	2
		On I/O	**kV**	1
Resistance to shock waves	Conforming to IEC 947-1	Waveform 1.2/50 µs ; 0.5 J U < 50 V	**kV**	0.5
		U < 150 V	**kV**	1.5
		U < 300 V	**kV**	2.5
Cross-sections which may be connected	Flexible wire with no cable end	1 or 2-wire	**mm²**	0.6…2.5
	Flexible wire with cable end	1 or 2-wire	**mm²**	0.34…2.5
	Rigid cable	1-wire	**mm²**	0.27…4
Operating position				Any
Ambient air temperature	Unrestricted operation		**°C**	- 5…+ 40
	Operation from 0.85...1.1 Us (assigned voltage)		**°C**	- 5…+ 55
	Operation restricted to Us (assigned voltage)		**°C**	- 25…+ 70 *(2)*
	Storage		**°C**	- 40…+ 80
Operating altitude			**m**	≤ 3000
Installation category	Conforming to IEC 947-1			II
Degree of pollution	Conforming to IEC 947-1			2
Mounting				Standard DIN rails

(2) Leave space of 8 mm between ABR-2S1●●● for an ambient temperature ≥ 55 °C

Interfaces
For discrete signals
Slim electromechanical interface modules

Control circuit characteristics (40°C ambient temperature)

Type of interface			ABR 2E112B	ABR 2E112E	ABR 2E115F	ABR 2E116F	ABR 2E111M	ABR 2S112B	ABR 2S102B	ABR 2●B312B (1)
Rated voltage (Us)		V	⎓ 24	⎓ 48	≂ 115…127	≂ 120...127	∿ 230...240	⎓ 24	⎓ 24	⎓ 24
Current frequency		Hz	–	–	50	60	50/60	–	–	–
Energization threshold		V	16.9	37.3	93	97	186	16.9	14.5	16.9
Maximum operating voltage		V	28.8	57.6	140	140	264	28.8	28.8	28.8
Maximum drop-out voltage (Uo)		V	3.8	8.5	25.4	25.4	48	3.8	2	3.8
Maximum current (at Us)		mA	19.5	11	14	16	15	28	18	23
Minimum holding current		mA	2	2	2.5	2.5	2.5	2	1.3	2
Maximum dissipated power (at Us)	50 Hz	W	–	–	0.66	–	0.54	–	–	–
	60 Hz	W	0.45	0.52	–	0.73	0.77	0.64	0.43	0.55
Disappearance of voltage maximum time up to which contact is maintained		ms	1	1	10	10	10	1	5	1
Display of control circuit by LED			Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
Built-in protection reversed polarity			Yes	Yes	–	–	–	Yes	Yes	Yes

Contact characteristics (40°C ambient temperature)

Type of interface				ABR2E●●●●	ABR2S112B	ABR2S102B	ABR2●B312B (1)
Contact configuration				1 N/O	1 N/O	1 N/O	1 C/O
Maximum rated operating voltage (Ue max)	Conforming to IEC 947-5-1		∿ V	127	230	230	48
			⎓ V	100	120	120	48
Maximum switching voltage			∿ V	140	250	250	60
			⎓ V	125	150	150	60
Operating current frequency			Hz	50/60	50/60	50/60	50/60
Thermal current Ith	Conforming to IEC 947-1		A	1	5	5	0.05
Rated operating current (Ie) for 1 million operating cycles	Conforming to IEC 947-5-1 Ue max	AC12	A	1	3	3	–
		AC14	A	0.5	1	1	–
		AC15	A	0.5	1	1	–
	Conforming to IEC 947-5-1 Ue : ⎓ 24 V	DC12	A	1	1.7	1.7	–
		DC13	A	1	1.5	1.5	–
Minimum switching current			mA	1	5	5	0.01
Minimum switching voltage			V	5	5	5	0.01
Protection against short-circuits	For Ik ≤ 1 kA (∿) and ≤ 100 A (⎓) Type and value of recommended fuse			Type : quick-blow fuse with high breaking capacity			
			A	2	6.3	6.3	0.4
Low level contact performance (17 V, 5 mA)/ ABR-2●B (30 mV, 10 µA)	Number of interruptions per "n" million operating cycles			1 per 100 million			

Other characteristics

Maximum operating time at Us (bounce included)	Between energization of coil and closing of N/O contact	⎓	ms	10	10	10	6
		∿	ms	30	–	–	–
	Between energization of coil and opening of N/C contact		ms	–	–	–	6
	Between de-energization of coil and opening of N/O contact	⎓	ms	6	12	5	6
		∿	ms	30	–	–	–
	Between de-energization of coil and closing of N/C contact		ms	–	–	–	6
Maximum duration of bounce			ms	5	5	5	2
No make before break guaranteed between "N/C" and "N/O" contacts	Maximum make before break or break before make time	On energization	ms	–	–	–	5
		On de-energization	ms	–	–	–	2
Maximum operating rate	At no-load		Hz	10	10	10	10
	At Ie		Hz	0.5	0.5	0.5	–
Mechanical durability in millions of operating cycles				20	10	10	20
Rated insulation voltage	Conforming to IEC 947-1		V	300	300	300	300
	Conforming to VDE 0110 group C		V	250	250	250	250
Insulation test voltage for 1 min	Coil circuit/contact circuits		kV rms	2	4	4	1.5
	Wired interface/ground		kV rms	2.5	2.5	2.5	2.5
	Between open contacts		kV rms	0.75	1	1	1

(1) Do not switch inductive loads.

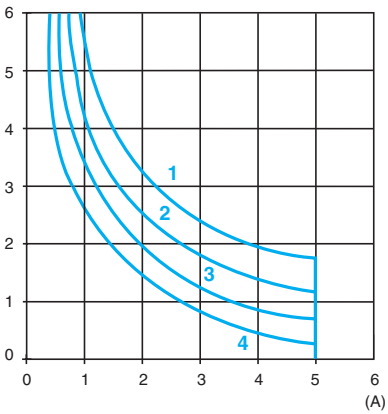
Interfaces
For discrete signals
Slim electromechanical interface modules

Electrical durability of contacts (ABR 2S)

Test conditions : in accordance with standard IEC 947-5-1 set up for rated control voltage.

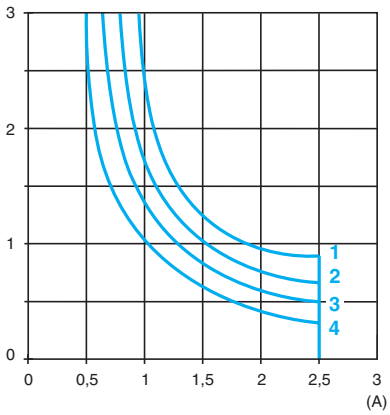
a.c. loads

Operating cycles in millions



AC12 : control of resistive loads and isolated solid state loads via optocoupler
cos φ ≥ 0.9

Operating cycles in millions

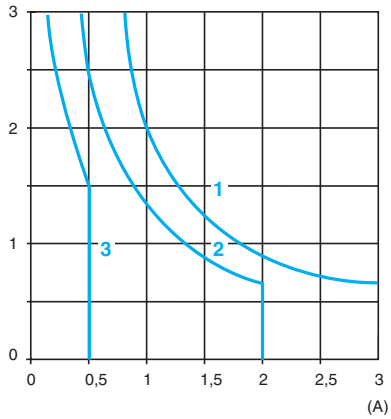


AC14 : control of weak electro-magnetic loads of electro-magnets ≤ 72 VA
make : cos φ = 0.3
break : cos φ = 0.3
AC15 : control of electro-magnetic loads of electro-magnets > 72 VA
make : cos φ = 0.7
break : cos φ = 0.4

1 24 V
2 48 V
3 115 V
4 230 V

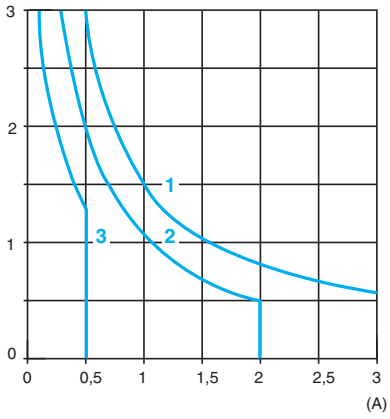
d.c. loads

Operating cycles in millions



DC12 : control of resistive loads and isolated solid state loads via optocoupler
L/R ≤ 1 ms

Operating cycles in millions



DC13 : control of electro-magnets
L/R ≤ 2 x (Ue x Ie) in ms.
Ue : rated operating voltage
Ie : rated operating current
(with a load protection diode)

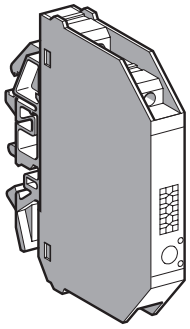
1 24 V
2 48 V
3 115 V

Interfaces

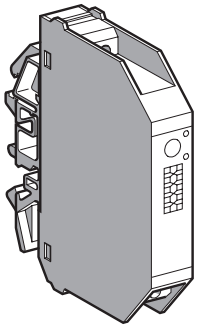
For discrete signals

Slim electromechanical interface modules

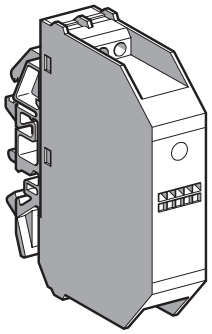
Control circuit: a.c. or d.c.



ABR2E112B



ABR2S112B



ABR2EB112B

ABFC08R●●●

Input modules (9.5 mm pitch)

Indication	Contact Configuration	Control circuit	Sold in lots of	Catalog number	Weight
		V			kg
With LED	1 N/O	⎓ 24	5	**ABR2E112B**	0.032
		⎓ 48	5	**ABR2E112E**	0.032
		∿ 115...127 (50 Hz)	5	**ABR2E115F**	0.035
		∿ 120...127 (60 Hz)	5	**ABR2E116F**	0.035
		∿ 230...240 (50/60 Hz)	5	**ABR2E111M**	0.036

Output modules (12 mm pitch)

Indication	Contact Configuration	Control circuit	Sold in lots of	Catalog number	Weight
		V			kg
Without	1 N/O	⎓ 24	5	**ABR2S102B**	0.040
With LED	1 N/O	⎓ 24	5	**ABR2S112B**	0.041

Modules for very low level switching (17.5 mm pitch)

Indication	Contact Configuration	Control circuit	Catalog number	Weight
		V		kg
Input				
With LED	1 C/O *(1)*	⎓ 24	**ABR2EB312B**	0.048
Output				
With LED	1 C/O *(1)*	⎓ 24	**ABR2SB312B**	0.048

Flexible comb accessories

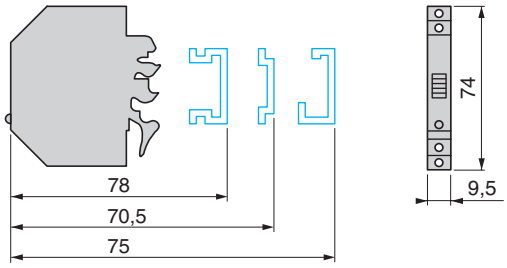
Description	For common	Color	Distance between wire ends	Catalog number	Weight
			cm		kg
Flexible comb modularity 8 x 1 mm²	Coil	White	12	**ABFC08R12W**	0.020
			2	**ABFC08R02W**	0.010
	∿	Red	12	**ABFC08R12R**	0.020
			2	**ABFC08R02R**	0.010
	⎓	Blue	12	**ABFC08R12B**	0.020
			2	**ABFC08R02B**	0.010

(1) Not for use with inductive loads.

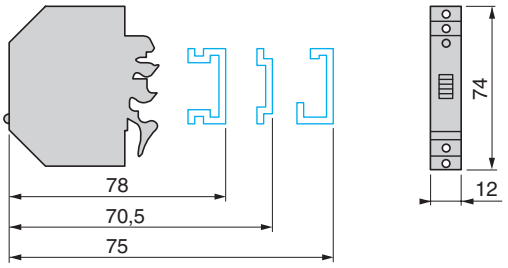
Interfaces
For discrete signals
Slim electromechanical interface modules

Dimensions (mm):

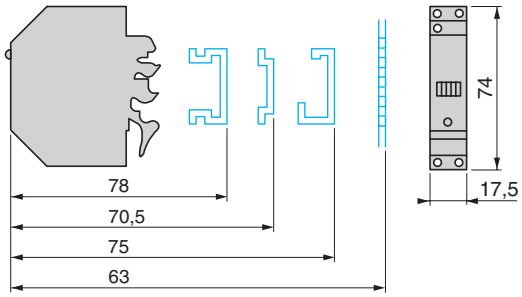
ABR2E11●●



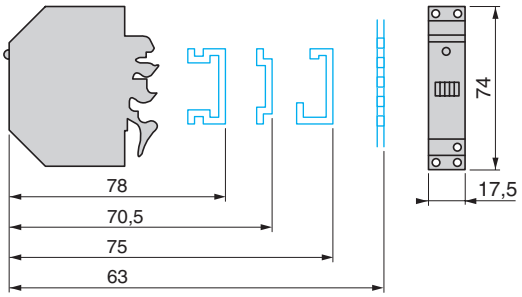
ABR2S1●2B



ABR2EB312B

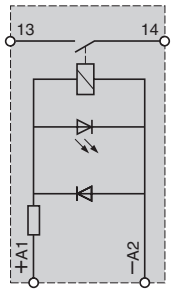


ABR2SB312B

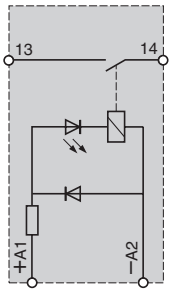


Circuit diagrams

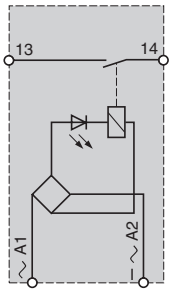
ABR2E112B (⎓ 24 V)



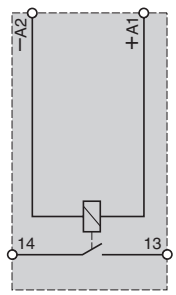
ABR2E112E (⎓ 48 V)



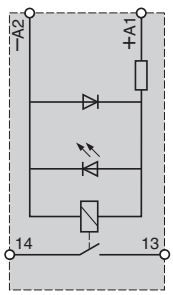
ABR2E11●F/M (~ 115...240 V)



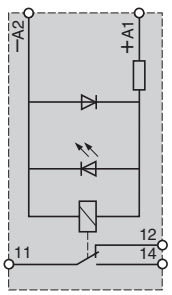
ABR2S102B (⎓ 24 V)



ABR2S112B (⎓ 24 V)

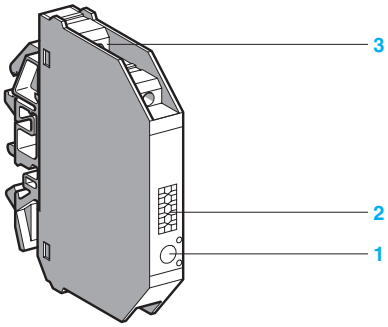


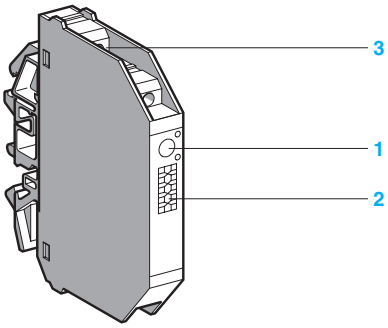
ABR2●B312B (⎓ 24 V)

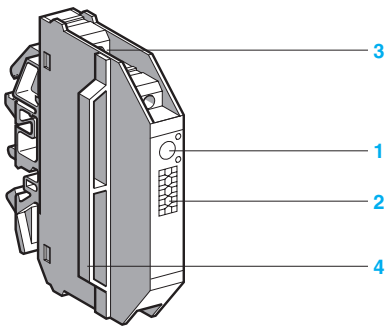


Interfaces
For discrete signals
Slim solid-state interface modules

The ABS-2 solid-state interface relays are supplied in the form of compact modules which appear identical to the ABR-2 electromechanical family.
They are designed for interfacing discrete digital control signals exchanged within an automated system between the processor (PLC, numerical controller, etc) and the other components (contactors, solenoid valves, indicator lamps, proximity sensors).
They are suitable for use in equipment which requires the benefits of electronic technology: a high operating rate, enhanced durability, silent operation.
These products are notable for their high performance and excellent adaptation to industrial environments. They also conform to the most recent IEC standards.







Composition

The ABS-2 range includes 2 families:

Input interfaces
The 9.5 mm wide input interfaces are designed for switching input signals to processors. They offer a wide choice of electrical isolation between signals due to the wide range of input voltages from ⎓ 5 V to ∿ 230 V.

Output interfaces
Output interfaces are designed for the control of preactuators (contactors, solenoid valves, etc) for the signalling devices (indicator lamps, audible warnings, etc).
Two widths are available, 9.5 and 17.5 mm, depending on the switched current.

The 17.5 mm version includes a 9.5 mm interface and an integrated 8 mm spacer. This device can, with its increased ventilation, switch high levels of currents.

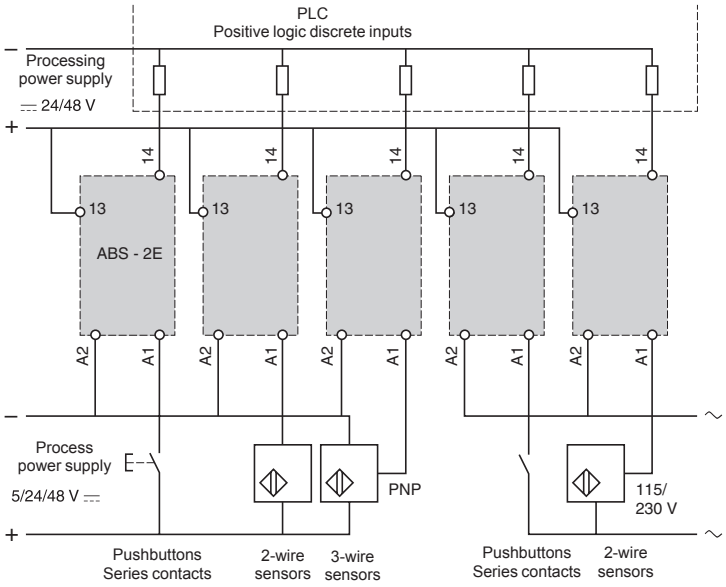
The front panel of the ABS-2 slim solid-state interface modules includes:
1 LED indicating the state of the control signal.
2 Channel identification : 5 individual characters for AB1-/G or one AB1-SA2 marker tag.
3 Connection by screw clamp terminal enabling easy attachment of 2 wires per terminal.
The layout of the connection terminals for both families (input and output) is designed for rational wiring and a clear separation between the incoming (processing) and outgoing (power and process control) circuits.
4 Integrated spacer.

Introduction: page 68
Characteristics: pages 69 to 71
Product selector, curves: page 72
Dimensions, Wiring diagrams: page 73

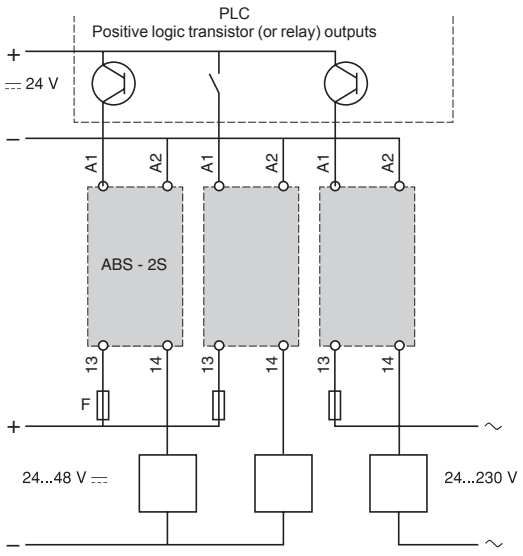
Interfaces
For discrete signals
Slim solid-state interface modules

Examples of applications with PLCs

Interfacing PLC discrete inputs



Interfacing PLC discrete outputs



Environment

Conforming to standards				IEC 60947-1, UL 508, CSA C22.2 No. 14
Product certifications				UL, CSA, BV, LROS, DNV
Degree of protection	Conforming to IEC 529 (protection against direct contact)			IP 20
Protective treatment				"TC"
Flame resistance	Conforming to IEC 695-2-1	Incandescent wire	**°C**	960
		Conforming to UL 94		V0
Shock resistance	Conforming to IEC 68-2-27	Semi-sinusoidal waves 11 ms		30 gn
Vibration resistance	Conforming to IEC 68-2-6	10…150 Hz		5 gn
Resistance to electrostatic discharges	Conforming to IEC 801-2	Level 3	**kV**	8
Resistance to electromagnetic fields	Conforming to IEC 801-3	Level 3 ; 27…1000 MHz	**V/m**	10
Resistance to rapid transients	Conforming to IEC 801-4 Level 3	On power supply	**kV**	2
		On I/O	**kV**	1
Resistance to shock waves	Conforming to IEC 947-1	Waveform 1.2/50 ms ; 0.5 J — U < 50 V	**kV**	0.5
		U < 150 V	**kV**	1.5
		U < 300 V	**kV**	2.5
Cross-sections which may be connected	Flexible wire with no cable end	1 or 2-wire	**mm²**	0.6…2.5
	Flexible wire with cable end	1 or 2-wire	**mm²**	0.34…2.5
	Rigid cable	1-wire	**mm²**	0.27…4
Operating position				Any
Ambient air temperature around the device	Unrestricted operation		**°C**	- 5…+ 55
	Operation at Us		**°C**	- 25…+ 70
	Storage		**°C**	- 40…+ 80
Operating altitude			**m**	≤ 300
Installation category	Conforming to IEC 947-1			II
Degree of pollution	Conforming to IEC 947-1			2
Mounting				Standard DIN rails

Control circuit characteristics (55°C ambient temperature)

Type of interface			ABS 2EC01EA	ABS 2EC01EB	ABS 2EC01EE	ABS 2EA01EF	ABS 2EA02EF	ABS 2EA01EM	ABS 2EA02EM
Rated voltage Us	⎓	**V**	5	24	48	–	–	–	–
	∿	**V**	–	–	–	115/127 50 Hz	120/127 60 Hz	230/240 50 Hz	230/240 60 Hz
Maximum voltage	⎓	**V**	Negative logic 6 (TTL)	28.8	57.6	–	–	–	–
	∿	**V**	–	–	–	140	140	264	264
Maximum current at Us	⎓	**mA**	13.6	12	10.5	–	–	–	–
	∿	**mA**	–	–	–	14	17	12.5	15
State 1	⎓	**V**	3.75	16.9	36	–	–	–	–
		mA	4.5	7.7	7.5	–	–	–	–
	∿	**V**	–	–	–	86.3	90	173	173
		mA	–	–	–	8.4	9.7	7.9	9.3
State 0	⎓	**V**	2	5.6	10.8	–	–	–	–
		mA	0.09	2	2	–	–	–	–
	∿	**V**	–	–	–	25.4	25.4	48	48
		mA	–	–	–	2.5	2.5	2.5	2.5
State 1 display			Yes	Yes	Yes	Yes	Yes	Yes	Yes
Internal protection reversed polarity			Yes	Yes	Yes	–	–	–	–

Output circuit characteristics

Rated operating voltage Ue	⎓	**V**	5...48
Min/max voltage	⎓	**V**	2/60
Min/max current switched		**mA**	1/50
Maximum residual current at state 0		**mA**	0.1
Maximum volt drop at state 1		**V**	1
Internal protection			Reversed polarity
External protection			Against short-circuits for Ik ≤ 100 A (⎓) Quick-blow fuse, ref. : HA21 0.25 A or equivalent

Other characteristics

Type of interface				ABS 2EC01EA	ABS 2EC01EB	ABS 2EC01EE	ABS 2EA01EF	ABS 2EA02EF	ABS 2EA01EM	ABS 2EA02EM
Time delay characteristics Response time max Ue ≤ 30 V Ie ≥ 5 mA		0 ➡ 1	**ms**	0.05	0.05	0.05	10	10	10	10
		1 ➡ 0	**ms**	0.4	0.4	0.4	20	20	20	20
Maximum switching rate Duty cycle 50 % Ue ≤ 30 V Ie ≥ 5 mA			**Hz**	1000	1000	1000	25	25	25	25
Rated insulation voltage				Conforming to IEC 947-1 : 300 V						
				Conforming to VDE 0110 : 250 V group C						
Insulation test voltage for 1 minute	I/O		**kVrms**	4						
	Wired interface/ground		**kVrms**	2.5						

Control circuit characteristics (55°C ambient temperature)

Type of interface			ABS2SC01EB	ABS2SC02EB	ABS2SA01MB	ABS2SA02MB
Rated voltage Us	⎓	**V**	24		24	
Maximum voltage		**V**	28.8		28.8	
Maximum current at Us		**mA**	12		13.6	
State 1		**V**	16.9		16.9	
		mA	7.7		8.3	
State 0		**V**	5.6		5.3	
		mA	2		2	
State 1 display			Yes		Yes	
Internal protection reversed polarity			Yes		Yes	

Output circuit characteristics

Rated operating voltage Ue		**V**	⎓ 5...48	⎓ 5...48	∿ 24...240	∿ 24...240
Maximum voltage		**V**	⎓ 57.6	⎓ 57.6	∿ 264	∿ 264
Maximum continuous current (Ith) *(1)* at 40 °C		**A**	2	3	2.3	3
Rated operating voltage (Ie) Conforming to IEC 947-5-1 Single/touching product at 55 °C vertical position		**A**	DC12 1.5/0.9	2.5/2.2	AC12 1.9/0.5	2.1/1.5
		A	DC13 1.5/0.9	2.5/2.2	AC13 1.6/0.5	1.6/1.5
		A	DC14 0.6/0.6	0.6/0.6	AC14 1.6/0.5	1.6/1.5
		A	– –	–	AC15 1/0.5	1/1
Minimum current	⎓/∿	**mA**	1		10	
Maximum residual current	⎓/∿	**mA**	1		2.5	
Maximum volt drop		**V**	1.5		3 (Ie ≥ 10 mA) 1.5 (Ie ≥ 100 mA)	
"0 crossing" voltage		**V**	–		50 peak	
Solid-state dV/dt		**V/µs**	–		500	
Internal protection			Reversed polarity			
External protection			Against short-circuits for Ik ≤ 1 kA (∿) and ≤ 100 A (⎓) Quick-blow fuse with high breaking capacity: 3.15 A			

Other characteristics

Maximum response time at Ie ≥ 10 mA	0 ➡ 1	**ms**	0.05		10 (50 Hz) ; 8 (60Hz)	
	1 ➡ 0	**ms**	0.6		10 (50 Hz) ; 8 (60Hz)	
Maximum switching rate	At 55 °C ; at Ie: module alone duty cycle 40 %	**Hz**	DC13 6	6	AC13 0.6	0.7
		Hz	DC14 1	3	AC14 0.6	0.7
		Hz	– –	–	AC15 0.6	0.7
	On resistive load duty cycle 50 %	**Hz**	700		50	
Rated operating voltage			Conforming to IEC 947-1 : ⎓ 300 V			
			Conforming to VDE 0110 : 250 V group C			
Rated Insulation voltage for 1 minute	I/O	**kVrms**	4			
	Wired interface/ground	**kVrms**	2.5			

(1) See temperature derating curves.

Interfaces
For discrete signals
Slim solid-state interface modules

Solid-state input modules

Width	Input circuit		Output circuit		Sold in lots of	Catalog number	Weight
	Current	Nominal voltage	Current	Nominal voltage			
mm		V		V			kg
9.5	⎓	5	⎓	5…48	5	ABS2EC01EA	0.029
		24	⎓	5…48	5	ABS2EC01EB	0.029
		48	⎓	5…48	5	ABS2EC01EE	0.029
	∿	115…127 (50 Hz)	⎓	5…48	5	ABS2EA01EF	0.032
		120…127 (60 Hz)	⎓	5…48	5	ABS2EA02EF	0.032
		230…240 (50 Hz)	⎓	5…48	5	ABS2EA01EM	0.033
		230…240 (60 Hz)	⎓	5…48	5	ABS2EA02EM	0.033

Solid-state output modules

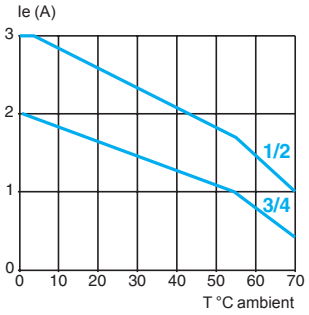
Width	Input circuit		Output circuit		Sold in lots of	Catalog number	Weight
	Current	Nominal voltage	Current	Nominal voltage			
mm		V	A	V			kg
9.5	⎓	24	⎓ 2	24…48	5	ABS2SC01EB	0.034
			∿ 2.3	24…230	5	ABS2SA01MB	0.034
17.5	⎓	24	⎓ 3	24…48	1	ABS2SC02EB	0.043
			∿ 3	24…230	1	ABS2SA02MB	0.044

Accessories

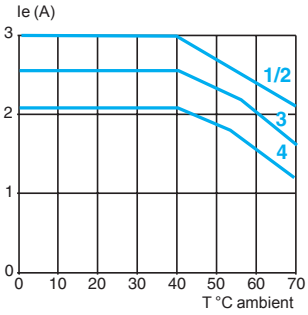
For connecting commons, use **ABFC08●●●** flexible combs (Please consult your Regional Sales Offices).

Temperature derating curve for solid-state output modules Uc = Us = ⎓ 24 V

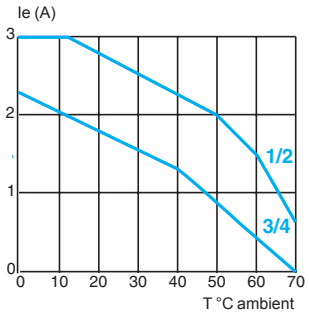
ABS2SC01EB d.c.



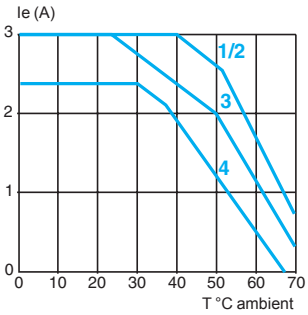
ABS2SC02EB d.c.



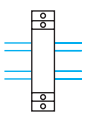
ABS2SA01MB a.c.



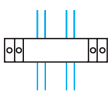
ABS2SA02MB a.c.



1 Vertical module alone or adjacent to modules with low heat dissipation.



2 Horizontal module alone or adjacent to modules with low heat dissipation.



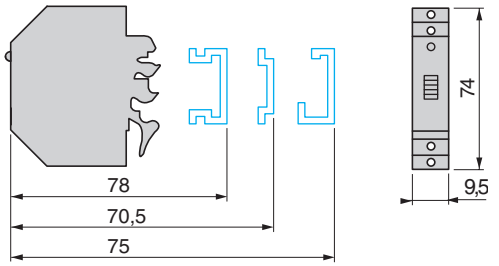
3 Vertical module mounted with 2 modules with identical heat dissipation on both sides.

4 Horizontal module mounted with 2 modules with identical heat dissipation on both sides.

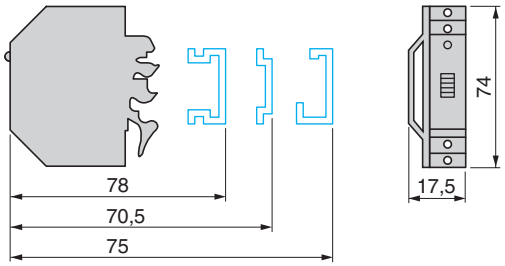
Interfaces
For discrete signals
Slim solid-state interface modules

Dimensions (mm):

ABS2E/ABS 2S●01●●



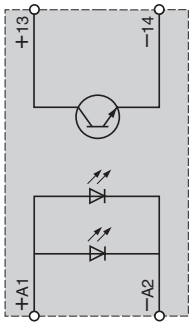
ABS2S●02●●



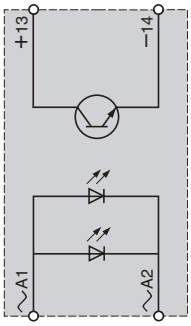
Circuit diagrams

Solid-state input modules

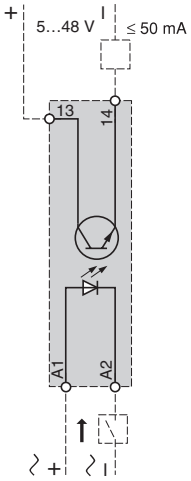
ABS2EC●●●●



ABS2EA●●●●

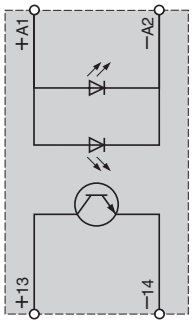


ABS2E●●●●

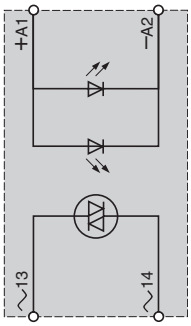


Solid-state output modules

ABS2SC0●EB



ABS2SA0●MB



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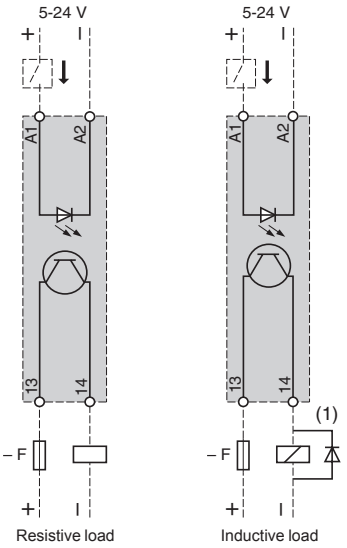
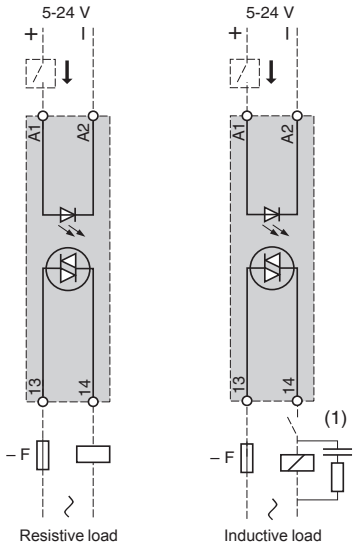


ABS2SA0●MB



F: fuse DF1 SS133.2

(1) or peak limiter

Zelio® Solid State Relays
SSR solid state relays

Applications	**Panel mounted**

Contact type		1 N/O SPST contact
Control voltage ranges	∼	90…280 V
	⎓	3…32 V, 3.5…32 V
Operating voltages	∼	24…280 V, 48…530 V, 48…660 V
	⎓	0…100 V
Type of switching	∼	Zero voltage switching
	⎓	DC switching
Current	∼	10, 25, 50, 75, 90, 125 A
	⎓	12, 25, 40
Degree of protection		IP20
LED indication		Yes
Cooling		Thermal protection or with heat sink accessory
Solid state relay type		**SSRP**
Page		76

DIN rail mounted

1 N/O SPST contact

90…280 V	90…140 V
4…32 V	3…32 V

24…280 V

Zero voltage switching

10, 20, 30 A	45 A

IP20

Yes

Built-in heat sink

SSRD

76

Zelio® Solid State Relays
SSR solid state relays

Introduction

The **SSR** solid state relay range includes:
- relays for panel mounting: **SSRP**.
- relays for DIN rail mounting: **SSRD**.

Description

SSRP relays for panel mounting

1 2 x Ø 4.9 holes for mounting.
2 Connection terminals.
3 Connection terminal screws.
4 Input voltage indicator LED, green.
5 Thermal interface which must be via the back of the product.

SSRD relays for DIN rail mounting

1 Lugs for plate mounting.
2 Built-in heat sink.
3 Connection terminals.
4 Connection terminal screws.
5 Input voltage indicator LED, green.
6 Bracket for mounting on 35 mm DIN rail.

General characteristics

SSRP solid state relays, panel mounting			
Product certifications			UR E258297, CSA LR 40787, IEC 60950-1, IEC 62314
Product marking			CE
Ambient air temperature around the device	Storage	**°C**	- 40…+ 80
	Operation	**°C**	- 40…+ 125
Encapsulation			Thermally conductive epoxy
Degree of protection			IP20 (with cover), IP00 (without cover)
Terminal screw torque		**Nm**	Inputs: 1.1 (screw: Ø 3.5 / length 6 mm) Outputs: 2.2 (screw: Ø 4 / length 7.4 mm)
SSRD solid state relay, DIN rail mounting			
Product certifications			UR E258297, CSA LR 40787, IEC 60950-1, IEC 62314
Product marking			CE
Ambient air temperature around the device	Storage	**°C**	- 40…+ 80
	Operation	**°C**	- 40…+ 125
Encapsulation			Thermally conductive epoxy
Degree of protection			IP20
Terminal screw torque	10…30 A relays	**Nm**	Inputs: 0.6…0.7 / Outputs: 0.6…0.7
	45 A relays	**Nm**	Inputs: 0.6…0.7 / Outputs: 1.1…1.7
Max. wire size	10…30 A relays		Inputs: 5.3 mm^2 - AWG 10 / Outputs: 5.3 mm^2 - AWG 10
	45 A relays		Inputs: 3.3 mm^2 - AWG 12 / Outputs: 8.4 mm^2 - AWG 8

SSRP solid state relays, panel mounting				
Relay type	**SCR output, Zero voltage switching**		**SSRPCDS10A1**	**SSRPCDS25A1**	**SSRPCDS50A1**
Input specification					
Control voltage range		⎓ V	3…32	3…32	3…32
Maximum turn-on voltage		⎓ V	3	3	3
Maximum turn-off voltage		⎓ V	1.0	1.0	1.0
Maximum typical input current		mA	10 at ⎓ 12 V	10 at ⎓ 12 V	10 at ⎓ 12 V
Output specification					
Operating voltage		~ V	24…280	24…280	24…280
Load current range		A	0.15 …10	0.15…25	0.15…50
Transient overvoltage		Vpk	600	600	600
Maximum surge current (16.6 ms)		Apk	120	250	625
Maximum On-state voltage drop at rated current		Vrms	1.6	1.6	1.6
Thermal resistance junction to base plate		°C/W	1.48	1.02	0.63
Maximum I^2t for fusing (8.3 ms)		A^2sec	60	260	1620
Maximum off-state leakage current at rated voltage		mA	1.0	1.0	1.0
Minimum off-sate dv/dt at maximum rated voltage		V/µsec	500	500	500
Maximum turn-on time		Cycle	1/2	1/2	1/2
Maximum turn-off time		Cycle	1/2	1/2	1/2
Relay type	**SCR output, Zero voltage switching**		**SSRPCDS75A2**	**SSRPCDS90A3**	**SSRPCDS125A3**
Input specification					
Control voltage range		⎓ V	3…32	3…32	3…32
Maximum turn-on voltage		⎓ V	3	3	3
Maximum turn-off voltage		⎓ V	1.0	1.0	1.0
Typical input current		mA	10 at ⎓ 12 V	10 at ⎓ 12 V	10 at ⎓ 12 V
Output specification					
Operating voltage		~ V	48…530	48…660	48…660
Load current range		A	0.15…75	0.25…90	0.25…125
Transient overvoltage		Vpk	1200	1200	1200
Maximum surge current (16.6 ms)		Apk	1110	1350	2000
Maximum On-state voltage drop at rated current		Vrms	1.6	1.7	1.7
Thermal resistance junction to base plate		°C/W	0.31	0.28	0.22
Maximum I^2t for fusing (8.3 ms)		A^2sec	4150	6000	12 700
Maximum off-state leakage current at rated voltage		mA	1.0	1.0	1.0
Minimum off-sate dv/dt at maximum rated voltage		V/µsec	500	500	500
Maximum turn-on time		Cycle	1/2	1/2	1/2
Maximum turn-off time		Cycle	1/2	1/2	1/2
Relay type	**SCR output, Zero voltage switching**		**SSRPP8S10A1**	**SSRPP8S25A1**	**SSRPP8S50A1**
Input specification					
Operating voltage		~ V	90…280	90…280	90…280
Maximum turn-on voltage		Vrms	90	90	90
Maximum turn-off voltage		Vrms	10	10	10
Typical input current		mA	6 at 120 Vrms	6 at 120 Vrms	6 at 120 Vrms
Output specification					
Operating voltage		~ V	24…280	24…280	24…280
Load current range		A	0.15…10	0.15…25	0.15…50
Transient overvoltage		Vpk	600	600	600
Maximum surge current (16.6 ms)		Apk	400	600	850
Maximum On-state voltage drop at rated current		Vrms	1.6	1.6	1.6
Thermal resistance junction to base plate		°C/W	1.48	1.02	0.63
Maximum I^2t for fusing (8.3 ms)		A^2sec	60	260	1620
Maximum off-state leakage current at rated voltage		mA	10 max.	10 max	10 max
Minimum off-sate dv/dt at maximum rated voltage		V/µsec	500	500	500
Maximum turn-on time		ms	10 max.	10 max.	10 max.
Maximum turn-off time		ms	40 max.	40 max.	40 max.
Relay type	**Mosfet output**		**SSRPCDM12D5**	**SSRPCDM25D5**	**SSRPCDM40D5**
Input specification					
Control voltage range (input voltage)		⎓ V	3.5…32	3.5…32	3.5…32
Maximum turn-on voltage		⎓ V	3.5	3.5	3.5
Maximum turn-off voltage		⎓ V	1.0	1.0	1.0
Typical input current		mA	1.6 (⎓ 5 V), 28 (⎓ 32 V)	1.6 (⎓ 5 V), 28 (⎓ 32 V)	1.6 (⎓ 5 V), 28 (⎓ 32 V)
Output specification					
Control voltage range		⎓ V	0…100	0…100	0…100
Load current range		A	12	25	40
Minimum load current		mA	0	0	0
Maximum surge current (16.6 ms)		Apk	28	51	106
Maximum On-state voltage drop at rated current		Vpk	1.6	2.1	2.1
Thermal resistance junction to base plate		°C/W	1.34	0.83	0.83
Maximum off-state leakage current at rated voltage		mA	0.2	0.3	0.3
On-state resistance		Ω	0.13	0.05	0.05
Maximum turn-on time		µsec	100	100	100
Maximum turn-off time		msec	1.0	1.0	1.0

Zelio® Solid State Relays

SSR solid state relays

Panel mounting *(continued)*

DIN rail mounting

SSRP solid state relays, panel mounting *(continued)*				
Relay type SCR output, Zero voltage switching		**SSRPP8S75A2**	**SSRPP8S90A3**	**SSRPP8S125A3**
Input specification				
Operating voltage	∼ V	90…280	90…280	90…280
Maximum turn-on voltage	Vrms	90	90	90
Maximum turn-off voltage	Vrms	10	10	10
Typical input current	mA	6 at 120 Vrms	6 at 120 Vrms	6 at 120 Vrms
Output specification				
Operating voltage	∼ V	48…530	48…660	48…660
Load current range	A	0.15…75	0.25…90	0.25…125
Transient overvoltage	Vpk	1200	1200	1200
Maximum surge current (16.6 ms)	Apk	1110	1350	2000
Maximum On-state voltage drop at rated current	Vrms	1.6	1.7	1.7
Thermal resistance junction to base plate	°C/W	0.31	0.28	0.22
Maximum I^2t for fusing (8.3 ms)	A^2sec	4150	6000	12 700
Maximum off-state leakage current at rated voltage	mA	10 max.	5 max.	5 max.
Minimum off-sate dv/dt at maximum rated voltage	V/µsec	500	500	500
Maximum turn-on time	ms	10 max.	10 max.	10 max.
Maximum turn-off time	ms	40 max.	40 max.	40 max.

SSRD solid state relay, DIN rail mounting					
Relay type SCR output, Zero voltage switching		**SSRDP8S10A1**	**SSRDP8S20A1**	**SSRDP8S30A1**	**SSRDF8S45A1**
Input specification					
Operating voltage	∼ V	90…280	90…280	90…280	90…140
Maximum turn-on voltage	Vrms	90	90	90	90
Maximum turn-off voltage	Vrms	10	10	10	10
Typical input current	mA	2 (120 Vrms), 4 (240 Vrms)	2 (120 Vrms), 4 (240 Vrms)	2 (120 Vrms), 4 (240 Vrms)	15 (120 Vrms)
Output specification					
Operating voltage	∼ V	24…280	24…280	24…280	24…280
Load current range	A	10	20	30	45
Transient overvoltage	Vpk	600	600	600	600
Maximum surge current (16.6 ms)	Apk	120	250	625	625
Maximum On-state voltage drop at rated current	Vrms	1.6	1.6	1.6	1.6
Maximum I^2t for fusing (8.3 ms)	A^2sec	60	260	1620	1620
Maximum off-state leakage current at rated voltage	mA	10	10	10	10
Minimum off-sate dv/dt at maximum rated voltage	V/µsec	500	500	500	500
Maximum turn-on time	ms	10 max.	10 max.	10 max.	10 max.
Maximum turn-off time	ms	40 max.	40 max.	40 max.	40 max.
Relay type SCR output, Zero voltage switching		**SSRDCDS10A1**	**SSRDCDS20A1**	**SSRDCDS30A1**	**SSRDCDS45A1**
Input specification					
Control voltage range	⎓ V	4…32	4…32	4…32	3…32
Maximum turn-on voltage	⎓ V	4.0	4.0	4.0	4.0
Maximum turn-off voltage	⎓ V	1.0	1.0	1.0	1.0
Typical input current	mA	8…12	8…12	8…12	17
Output specification					
Operating voltage	∼ V	24…280	24…280	24…280	24…280
Load current range	A	10	20	30	45
Transient overvoltage	Vpk	600	600	600	600
Maximum surge current (16.6 ms)	Apk	120	250	625	625
Maximum On-state voltage drop at rated current	Vrms	1.6	1.6	1.6	1.6
Maximum I^2t for fusing (8.3 ms)	A^2sec	60	260	1620	1620
Maximum off-state leakage current at rated voltage	mA	10	10	10	10
Minimum off-sate dv/dt at maximum rated voltage	V/µsec	500	500	500	500
Maximum turn-on time	Cycle	1/2	1/2	1/2	1/2
Maximum turn-off time	Cycle	1/2	1/2	1/2	1/2

Zelio® Solid State Relays
SSR solid state relays

SSR PCDS25A1

SSR DCDS10A1

SSR DCDS45A1

SSR AH1

SSR AT1

Solid state relays, 1 N/O SPST contact

■ Panel mounting

Switching	Voltage range		Load current range	Catalog numbers	Weight
	Input	Output			
	V	V	A		kg
SCR output					
Zero voltage switching	⎓ 3…32	∿ 24…280	10	**SSRPCDS10A1**	0.113
			25	**SSRPCDS25A1**	0.113
			50	**SSRPCDS50A1**	0.113
		∿ 48…530	75	**SSRPCDS75A2**	0.113
		∿ 48…660	90	**SSRPCDS90A3**	0.113
			125	**SSRPCDS125A3**	0.113
	∿ 90…280	∿ 24…280	10	**SSRPP8S10A1**	0.113
			25	**SSRPP8S25A1**	0.113
			50	**SSRPP8S10A1**	0.113
		∿ 48…530	75	**SSRPP8S75A2**	0.113
		∿ 48…660	90	**SSRPP8S90A3**	0.113
			125	**SSRPP8S125A3**	0.113
Mosfet output					
DC switching	⎓ 3.5…32	⎓ 0…100	12	**SSRPCDM12D5**	0.113
			25	**SSRPCDM25D5**	0.113
			40	**SSRPCDM40D5**	0.113

■ DIN rail mounting

SCR output					
Zero voltage switching	∿ 90…280	∿ 24…280	10	**SSRDP8S10A1**	0.272
			20	**SSRDP8S20A1**	0.272
			30	**SSRDP8S30A1**	0.272
	∿ 90…140	∿ 24…280	45	**SSRDF8S45A1**	0.482
	⎓ 4…32	∿ 24…280	10	**SSRDCDS10A1**	0.272
			20	**SSRDCDS20A1**	0.272
			30	**SSRDCDS30A1**	0.272
	⎓ 3…32	∿ 24…280	45	**SSRDCDS45A1**	0.482

Accessories for panel mounted relays

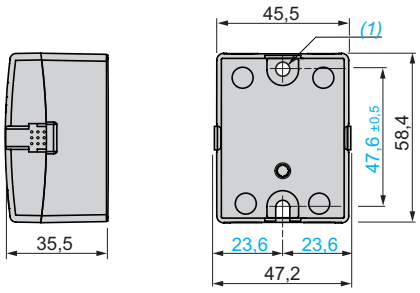
Description	For use with 10…50A relays *(1)*	Catalog numbers	Weight kg
Heat sink	SSR PP8S●●●●, SSR PCDS●●●●, SSR PCDM●●●●	**SSRAH1**	0.487
Thermal interface **Sold in lots of 10**	SSR PP8S●●●●, SSR PCDS●●●●, SSR PCDM●●●●	**SSRAT1**	0.011

(1) for load current range 75, 90 and 125 A relays, please contact your Customer Care Center.

Solid state relays, 1 N/O SPST contact

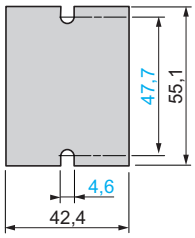
■ Panel mounting

Solid state relays SSRP

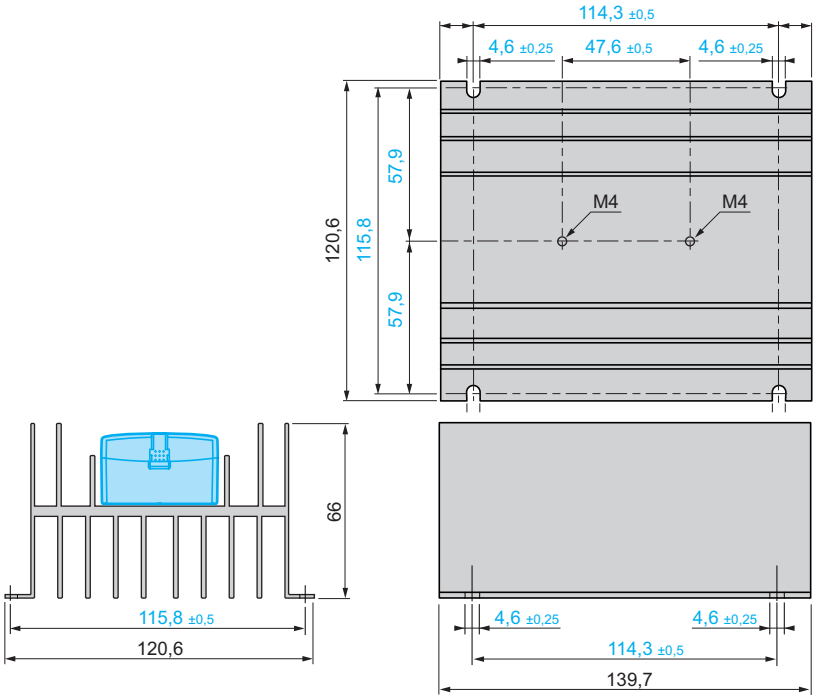


(1) Ø4,9 ±0,25 hole

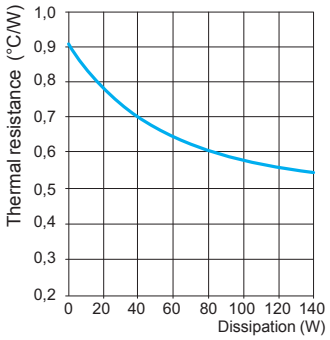
Thermal interface SSRAT1



Heat sink SSRAH1

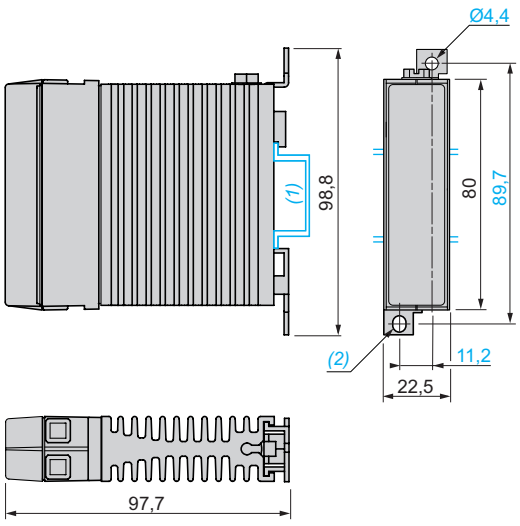


Heat sink dissipation curve



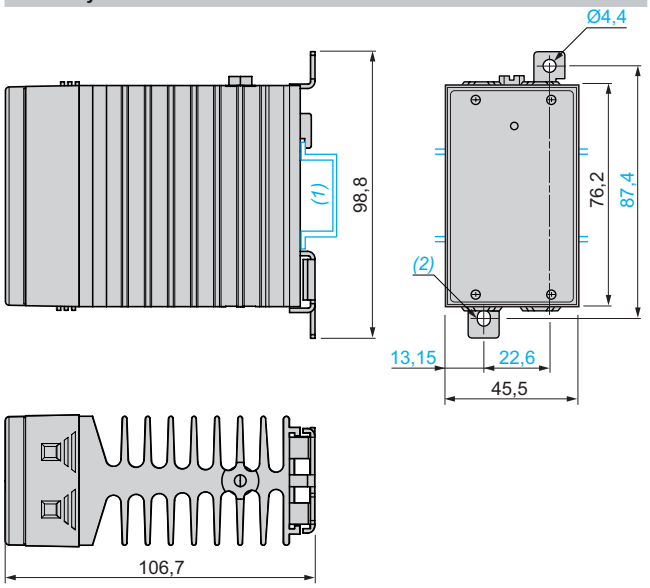
■ DIN rail mounting

10…30 A relays



(1) 35 mm DIN rail. (2) Ø 4.4 x 5.5 elongated hole

45 A relays



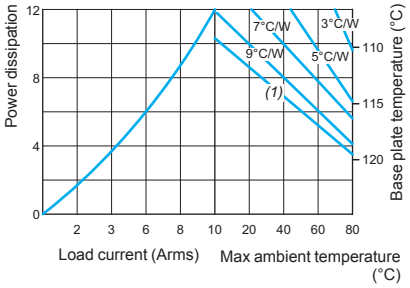
(1) 35 mm DIN rail. (2) Ø 4.4 x 5.5 elongated hole

Thermal derating curves

■ Panel mounting **SSRP** relays

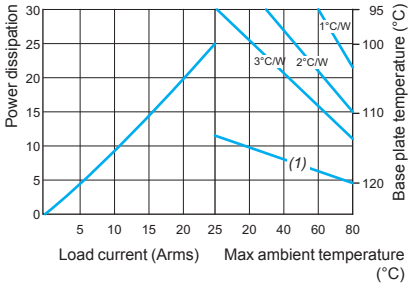
□ SCR output

10 A relays



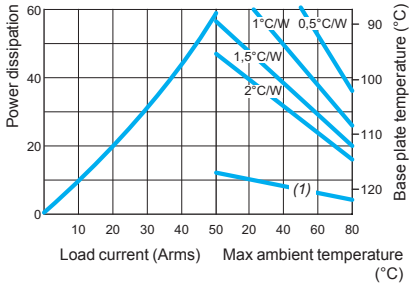
(1) No heat sink

25 A relays



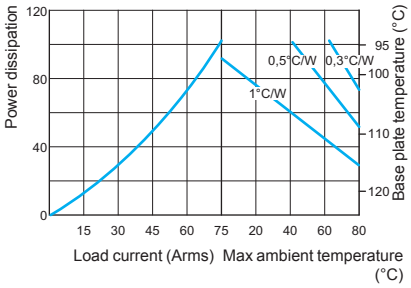
(1) No heat sink

50 A relays

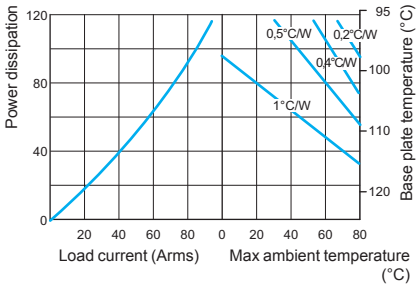


(1) No heat sink

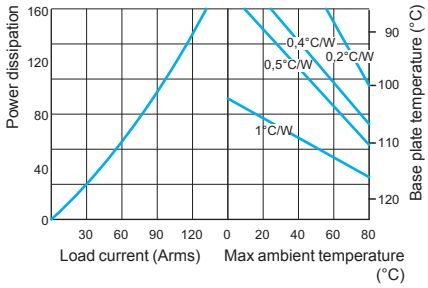
75 A relays



90 A relays

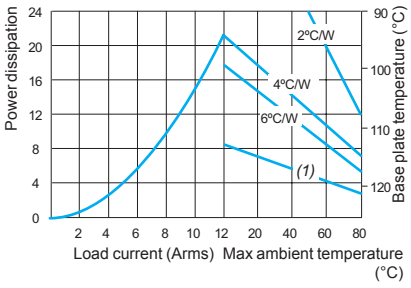


125 A relays



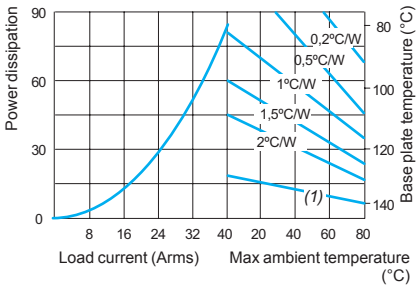
□ Mosfet output

12 A relays



(1) No heat sink

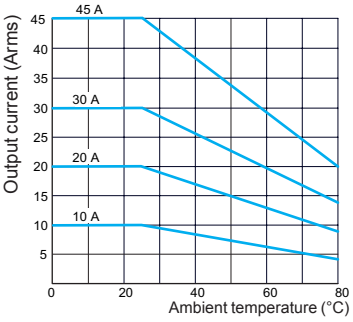
25 and 40 A relays



(1) No heat sink

■ ⊔ Rail mounting **SSRD** relays

10…45 A relays



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