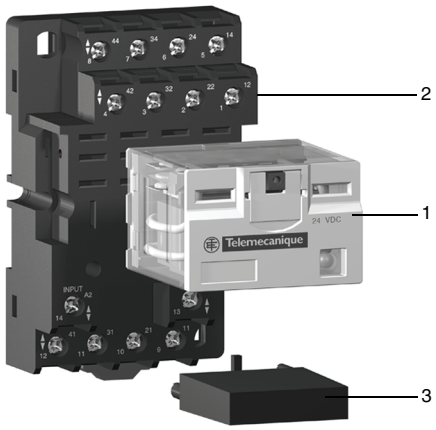
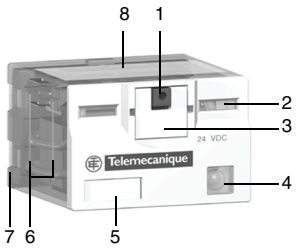
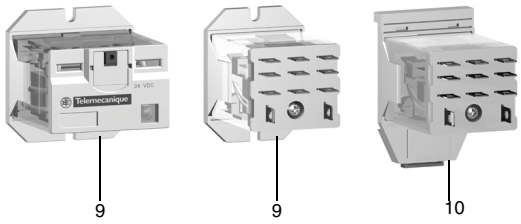


Product Description

The RPM miniature relay range consists of:

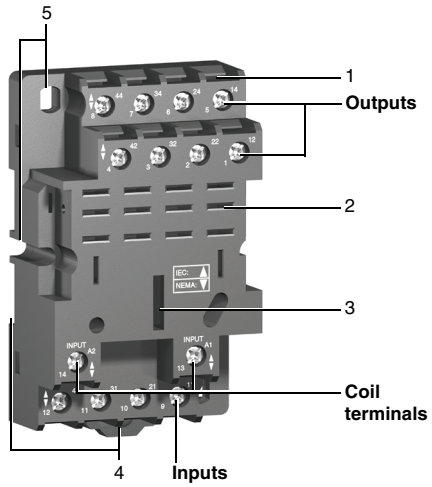
1. 15 A relays with SPDT, DPDT, 3PDT, and 4PDT contacts.
2. Sockets with mixed contact terminals.
3. Protection modules (diode, RC circuit, or varistor) or 1 timer module. All these modules are common to all the sockets except for the timer module, which can only be used on the 3-pole or 4-pole sockets.
4. A metal hold-down clip for SPDT relays.





Relay Description

1. Spring return push button for testing the contacts (green: DC, red: AC).
2. Mechanical “relay status” indicator.
3. Optional removable lock-down door and push button, enabling forced maintaining 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 legend for relay identification.
6. Four notches for DIN rail mounting adapter or panel mounting adapter.
7. Five, eight, eleven, or fourteen 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. 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.

NOTE: The inputs are mixed with the relay coil terminals, with the outputs being located on the opposite side of the socket.

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 pending; CE; RoHS compliant
Ambient air temperature around the device	Storage	-40—185 °F (-40—85 °C)
	Operation	-40—131 °F (-40—55 °C)
Vibration resistance	Conforming to IEC/EN 60068-2-6	6 gn (10–50 Hz)
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 (see page 38)		RT I
Mounting position		Any

Insulation characteristics

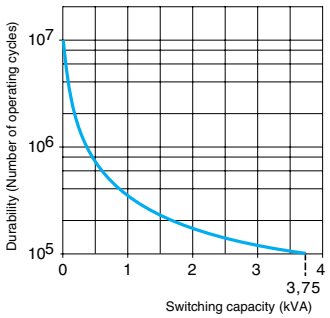
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947	250 V (IEC), 300 V (UL, CSA)
Rated impulse withstand voltage (Uimp)		3.6 kV (1.2/50 µs)
Dielectric strength (rms voltage)	Between coil and contact	2,500 Vac
	Between poles	2,500 Vac
	Between contacts	1,500 Vac

Contact characteristics

Relay type			**RPM1●●●**	**RPM2●●●**	**RPM3●●●**	**RPM4●●●**
Number and type of contacts (see page 20)			SPDT	DPDT	3PDT	4PDT
Contact materials			AgNi			
Conventional thermal current (Ith)	For ambient temperature ≤ 131 °F (55 °C)		15 A			
Rated operational current	Conforming to IEC in utilization category AC-1	N.O.	15 A			
		N.C.	7.5 A			
	Conforming to UL Resistive @277 Vac, hp @120 Vac		15 A, 1/2 hp			
Maximum operating rate In operating cycles/hour	No load		18,000			
	Under load		1,200			
Switching voltage	Maximum		250 Vac/Vdc			
Switching capacity	Minimum		10 mA on 17 V			
	Maximum		3,750 VA			
Utilization coefficient			20%			
Mechanical durability in millions of operating cycles			10			
Electrical durability in millions of operating cycles	Resistive load		0.1			0.06

Electrical durability of contacts

Resistive load AC



Coil characteristics

Relay type			RPM1●●●	RPM2●●●	RPM3●●●	RPM4●●●
Average consumption		AC	0.9 VA	1.2 VA	1.5 VA	1.5 VA
		DC	0.7 W	0.9 W	1.7 W	2 W
Drop-out voltage threshold		AC	⩾ 0.15 Uc			
		DC	⩾ 0.1 Uc			
Operating time (response time)	Between coil energization and making of the N.O. contact	AC	20 ms	25 ms	25 ms	20 ms
		DC	20 ms	25 ms	25 ms	20 ms
	Between coil de-energization and making of the N.C. contact	AC	20 ms			
		DC	20 ms			

Control circuit voltage Uc			12 V	24 V	48 V	110 V	120 V	230 V
Relay control voltage codes			JD	BD	ED	FD	—	—
DC	Average resistance at 68 °F (20 °C) ± 10%	RPM1●●●	180 Ω	750 Ω	2,600 Ω	13,100 Ω	—	—
		RPM2●●●	160 Ω	650 Ω	2,600 Ω	11,000 Ω	—	—
		RPM3●●●	100 Ω	400 Ω	2,600 Ω	8,600 Ω	—	—
		RPM4●●●	96 Ω	388 Ω	1,550 Ω	7,340 Ω	—	—
	Operating voltage limits	Min.	9.6 V	19.2 V	38.4 V	88 V	—	—
		Max.	13.2 V	26.4 V	52.8 V	121 V	—	—
Relay control voltage codes			—	B7	E7	—	F7	P7
AC	Average resistance at 68 °F (20 °C) ± 15%	RPM1●●●	—	160 Ω	720 Ω	—	4,430 Ω	15,720 Ω
		RPM2●●●	—	180 Ω	770 Ω	—	4,430 Ω	15,000 Ω
		RPM3●●●	—	103 Ω	770 Ω	—	2,770 Ω	12,000 Ω
		RPM4●●●	—	84.3 Ω	338 Ω	—	2,220 Ω	9,120 Ω
	Operating voltage limits	Min.	—	19.2 V	38.4 V	—	96 V	184 V
		Max.	—	26.4 V	52.8 V	—	132 V	253 V

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●●●
Product certifications		cURus File E172326 CCN SWIV2, SWIV8; CSA (pending); CE; RoHS compliant			
Conventional thermal current (Ith)		16 A			
Degree of protection	Conforming to IEC/EN 60529	IP 20			
Connection	Solid wire without cable end	1 conductor: AWG 20–12 (0.5–2.5 mm^2) 2 conductors: AWG 20–14 (0.5–1.5 mm^2)			
	Flexible wire with cable end	1 conductor: AWG 24–14 (0.2–2.5 mm^2) 2 conductors: AWG 24–16 (0.2–1.5 mm^2)			
	Flexible wire without cable end	1 conductor: AWG 24–14 (0.2–2.5 mm^2) 2 conductors: AWG 24–16 (0.2–1.5 mm^2)			
Maximum tightening torque		7.1 lbf-in (0.8 N●m) (M3.5 screw)			
Contact terminal arrangement		Mixed			

RPM22F7

RPM32F7

RPM43BD

Power relays with lockable test button, without LED (sold in lots of 10)

	Number and type of contacts - Thermal current (Ith)											
	SPDT - 15 A			DPDT - 15 A			3PDT - 15 A			4PDT - 15 A		
Coil Voltage	Catalog Number	Weight		Catalog Number	Weight		Catalog Number	Weight		Catalog Number	Weight	
		lb.	kg		lb.	kg		lb.	kg		lb.	kg
12 Vdc	**RPM11JD**	0.05	0.024	**RPM21JD**	0.08	0.036	**RPM31JD**	0.12	0.054	**RPM41JD**	0.15	0.068
24 Vdc	**RPM11BD**	0.05	0.024	**RPM21BD**	0.08	0.036	**RPM31BD**	0.12	0.054	**RPM41BD**	0.15	0.068
48 Vdc	**RPM11ED**	0.05	0.024	**RPM21ED**	0.08	0.036	**RPM31ED**	0.12	0.054	**RPM41ED**	0.15	0.068
110 Vdc	**RPM11FD**	0.05	0.024	**RPM21FD**	0.08	0.036	**RPM31FD**	0.12	0.054	**RPM41FD**	0.15	0.068
24 Vac	**RPM11B7**	0.05	0.024	**RPM21B7**	0.08	0.036	**RPM31B7**	0.12	0.054	**RPM41B7**	0.15	0.068
48 Vac	**RPM11E7**	0.05	0.024	**RPM21E7**	0.08	0.036	**RPM31E7**	0.12	0.054	**RPM41E7**	0.15	0.068
120 Vac	**RPM11F7**	0.05	0.024	**RPM21F7**	0.08	0.036	**RPM31F7**	0.12	0.054	**RPM41F7**	0.15	0.068
230 Vac	**RPM11P7**	0.05	0.024	**RPM21P7**	0.08	0.036	**RPM31P7**	0.12	0.054	**RPM41P7**	0.15	0.068
Power relays with lockable test button, with LED (sold in lots of 10)												
12 Vdc	**RPM12JD**	0.05	0.024	**RPM22JD**	0.08	0.036	**RPM32JD**	0.12	0.054	**RPM42JD**	0.15	0.068
24 Vdc	**RPM12BD**	0.05	0.024	**RPM22BD**	0.08	0.036	**RPM32BD**	0.12	0.054	**RPM42BD**	0.15	0.068
48 Vdc	**RPM12ED**	0.05	0.024	**RPM22ED**	0.08	0.036	**RPM32ED**	0.12	0.054	**RPM42ED**	0.15	0.068
110 Vdc	**RPM12FD**	0.05	0.024	**RPM22FD**	0.08	0.036	**RPM32FD**	0.12	0.054	**RPM42FD**	0.15	0.068
24 Vac	**RPM12B7**	0.05	0.024	**RPM22B7**	0.08	0.036	**RPM32B7**	0.12	0.054	**RPM42B7**	0.15	0.068
48 Vac	**RPM12E7**	0.05	0.024	**RPM22E7**	0.08	0.036	**RPM32E7**	0.12	0.054	**RPM42E7**	0.15	0.068
120 Vac	**RPM12F7**	0.05	0.024	**RPM22F7**	0.08	0.036	**RPM32F7**	0.12	0.054	**RPM42F7**	0.15	0.068
230 Vac	**RPM12P7**	0.05	0.024	**RPM22P7**	0.08	0.036	**RPM32P7**	0.12	0.054	**RPM42P7**	0.15	0.068

Power relays without lockable test button, with LED

	Number and type of contacts - Thermal current (Ith)											
	SPDT - 15 A			DPDT - 15 A			3PDT - 15 A			4PDT - 15 A		
Coil Voltage	Catalog Number	Weight		Catalog Number	Weight		Catalog Number	Weight		Catalog Number	Weight	
		lb.	kg		lb.	kg		lb.	kg		lb.	kg
Sold in lots of 10												
12 Vdc	**RPM13JD**	0.05	0.024	**RPM23JD**	0.08	0.036	**RPM33JD**	0.12	0.054	**RPM43JD**	0.15	0.068
24 Vdc	**RPM13BD**	0.05	0.024	**RPM23BD**	0.08	0.036	**RPM33BD**	0.12	0.054	**RPM43BD**	0.15	0.068
48 Vdc	**RPM13ED**	0.05	0.024	**RPM23ED**	0.08	0.036	**RPM33ED**	0.12	0.054	**RPM43ED**	0.15	0.068
110 Vdc	**RPM13FD**	0.05	0.024	**RPM23FD**	0.08	0.036	**RPM33FD**	0.12	0.054	**RPM43FD**	0.15	0.068
24 Vac	**RPM13B7**	0.05	0.024	**RPM23B7**	0.08	0.036	**RPM33B7**	0.12	0.054	**RPM43B7**	0.15	0.068
48 Vac	**RPM13E7**	0.05	0.024	**RPM23E7**	0.08	0.036	**RPM33E7**	0.12	0.054	**RPM43E7**	0.15	0.068
120 Vac	**RPM13F7**	0.05	0.024	**RPM23F7**	0.08	0.036	**RPM33F7**	0.12	0.054	**RPM43F7**	0.15	0.068
230 Vac	**RPM13P7**	0.05	0.024	**RPM23P7**	0.08	0.036	**RPM33P7**	0.12	0.054	**RPM43P7**	0.15	0.068

See page 17 for sockets and accessories.

RPZF2 + relay RPM22F7

Sockets (sold in lots of 10)

Contact terminal arrangement	Connection	Relay type	Catalog Number	Weight	
				lb.	kg
Mixed	Screw clamp terminals	RPM1●●●	**RPZF1**	0.09	0.042
		RPM2●●●	**RPZF2**	0.12	0.064
		RPM3●●●	**RPZF3**	0.16	0.072
		RPM4●●●	**RPZF4**	0.21	0.094

Protection modules

RXM041●●●

Description	Voltage	For use with	Sold in lots of	Catalog Number	Weight	
					oz.	g
Diode	6–250 Vdc	RPZF1 RPZF2	20	**RXM040W**	0.11	3.0
		RPZF3 RPZF4	10	**RUW240BD**	0.14	4.0
RC circuit	24–60 Vac	RPZF1 RPZF2	20	**RXM041BN7**	0.35	10.0
	110–240 Vac	RPZF1 RPZF2	20	**RXM041FU7**	0.35	10.0
		RPZF3 RPZF4	10	**RUW241P7**	0.14	4.0
Varistor	6–24 Vac/Vdc	RPZF1 RPZF2	20	**RXM021RB**	0.11	3.0
	24–60 Vac/Vdc	RPZF1 RPZF2	20	**RXM021BN**	0.11	3.0
	110–240 Vac/Vdc	RPZF1 RPZF2	20	**RXM021FP**	0.11	3.0
	24 Vac/Vdc	RPZF3 RPZF4	10	**RUW242B7**	0.14	4.0
	240 Vac/Vdc	RPZF3 RPZF4	10	**RUW242P7**	0.14	4.0

Timer module [1] (sold in lots of 10)

Description	Voltage	Socket Type	Catalog Number	Weight	
				lb.	kg
Multifunction	24–240 Vac/Vdc	RPZF3 RPZF4	**RUW101MW**	0.04	0.02

[1] See timer module description (selection of functions and time delays) on page 29.

RPZ1DA

RPZ3FA

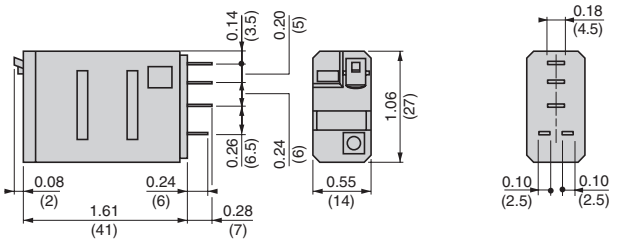
Accessories (sold in lots of 10)

Description	For use with	Catalog Number	Weight	
			oz.	g
Metal hold-down clip (for single-pole relays)	RPZF1	**RPZR235**	0.04	1.0
Mounting adapters for DIN rail [2]	RPM1●●●	**RPZ1DA**	0.14	4.0
	RPM2●●●	**RXZE2DA**	0.14	4.0
	RPM3●●●	**RPZ3DA**	0.14	4.0
	RPM4●●●	**RPZ4DA**	0.21	6.0
Mounting adapters for mounting directly to a panel	RPM1●●●	**RPZ1FA**	0.07	2.0
	RPM2●●●	**RXZE2FA**	0.07	2.0
	RPM3●●●	**RPZ3FA**	0.11	3.0
	RPM4●●●	**RPZ4FA**	0.14	4.0
Clip-in markers (sheet of 108 markers)	All relays	**RXZL520**	2.82	80

[2] Test button becomes inaccessible.

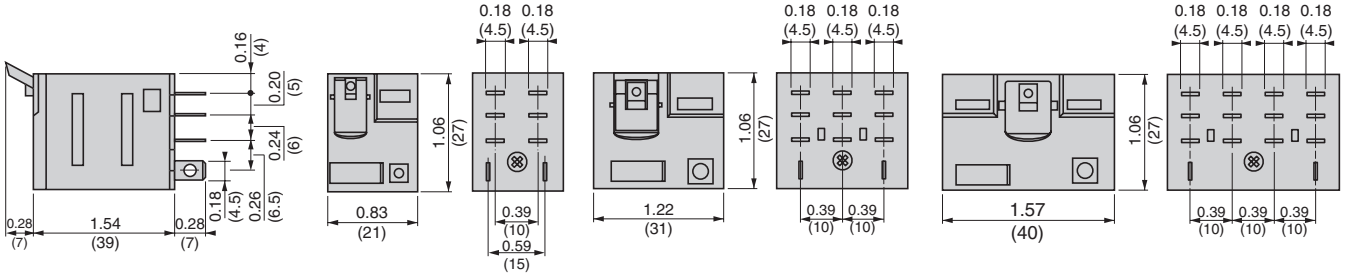
Power relays

RPM1



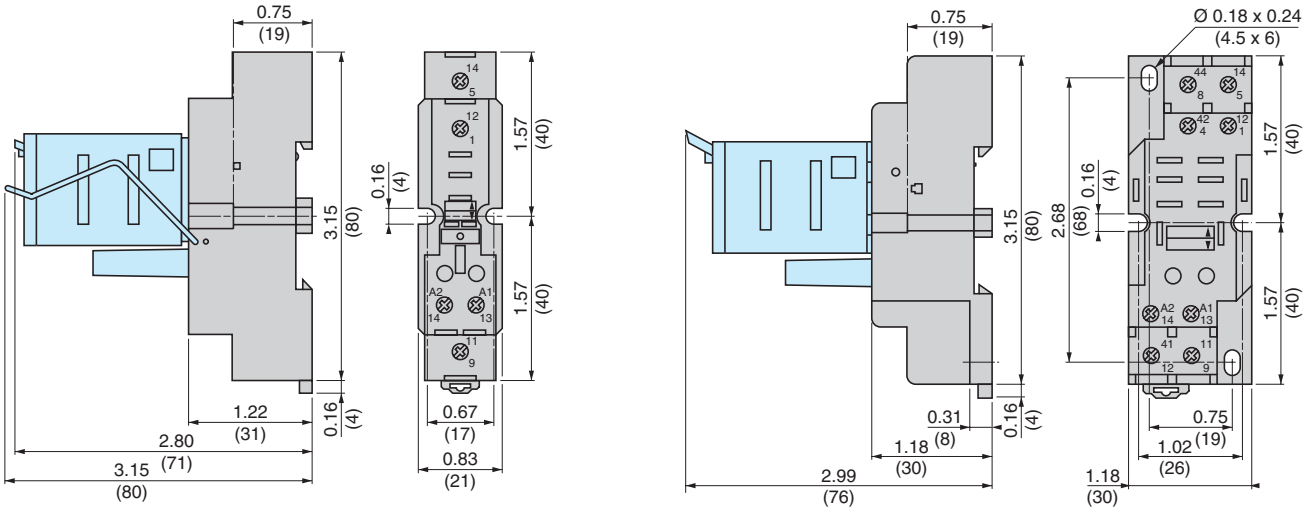
Dimensions = Inches / (mm)

Common side view — RPM2 — RPM3 — RPM4

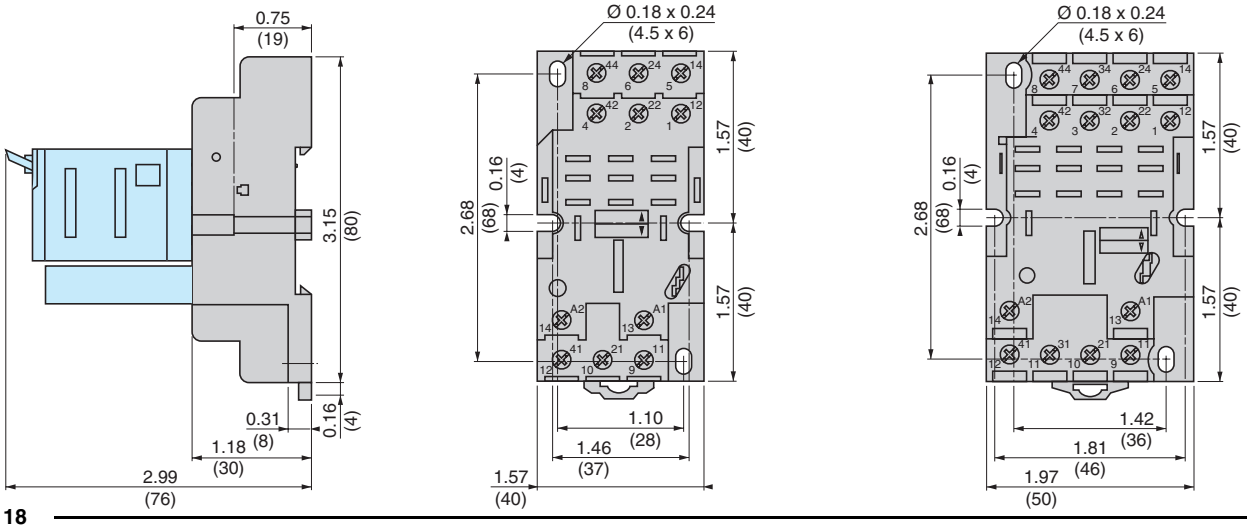


Sockets

RPZF1 — RPZF2

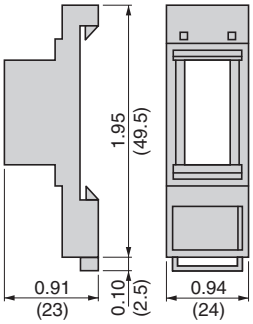


Common side view — RPZF3 — RPZF4

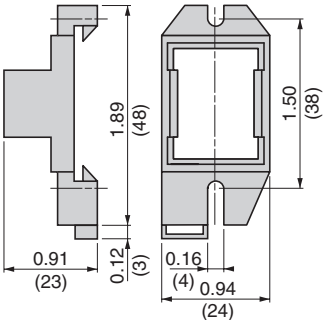


Mounting adapters for DIN rail

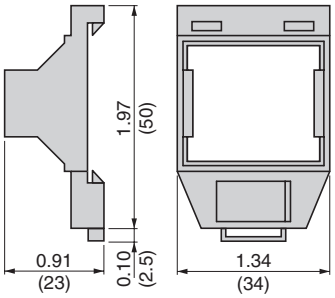
RPZ1DA



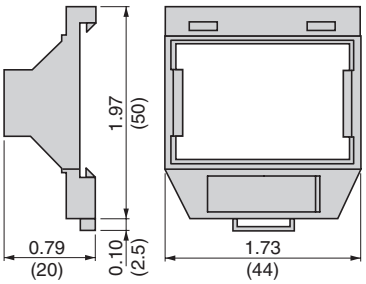
RXZE2DA



RPZ3DA

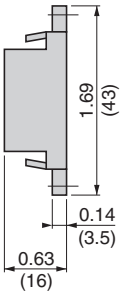


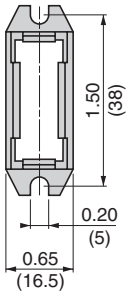
RPZ4DA



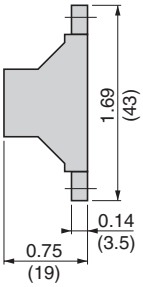
Mounting adapters for mounting directly to a panel

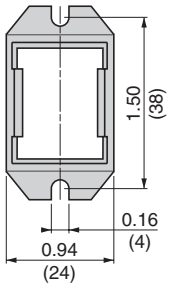
RPZ1FA



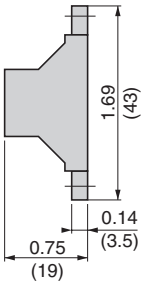


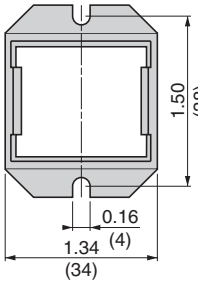
RXZE2FA



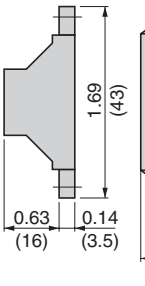


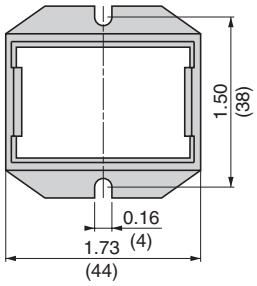
RPZ3FA





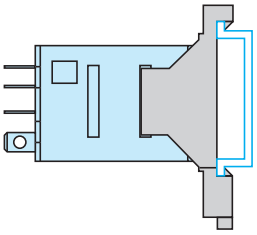
RPZ4FA



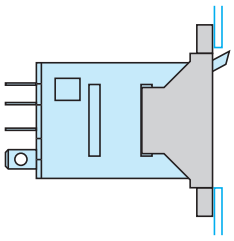


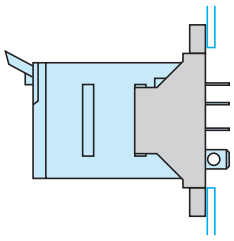
Mounting

Mounting adapters for DIN rail [1]



Mounting adapters for mounting directly to a panel



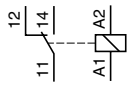


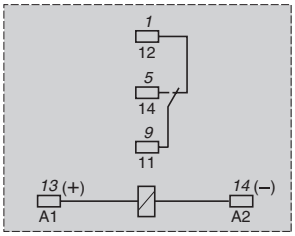
[1] Test button becomes inaccessible

Dimensions = Inches (mm)

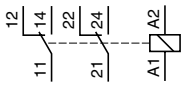
Power relays

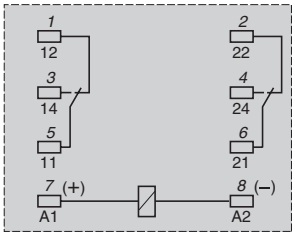
RPM1●●●



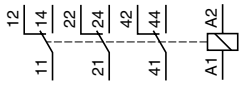


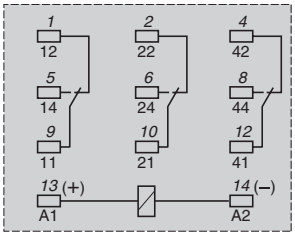
RPM2●●●



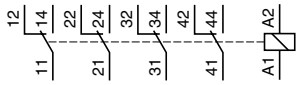


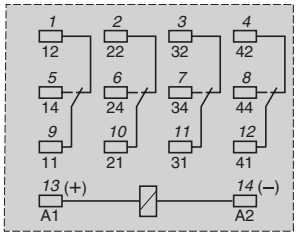
RPM3●●●





RPM4●●●





Numbers shown in *italics* correspond to NEMA marking. Viewed from pin end.

Relays

Contact types

Symbol	Configuration	USA	EU
	Make contact (Normally Open)	SPST-N.O. DPST-N.O. nPST-N.O. [1]	N.O.
	Break contact (Normally Closed)	SPST-N.C. DPST-N.C. nPST-N.C. [1]	N.C.
	Changeover Contact (Form C)	SPDT DPDT nPDT [1]	C/O

[1] n = number of contacts.

Utilization categories

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

[2] The switchable voltage can be doubled, for an equal current, by connecting two contacts in series.

Protection categories

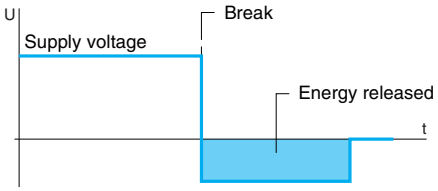
Category	Explanation	Condition
RT 0	Unenclosed relay	Relay not provided with a protective case.
RT I	Dust protected relay	Relay provided with a case which protects its mechanism from dust.
RT II	Flux-proof relay	Relay capable of being automatically soldered without allowing the migration of solder fluxes 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.

Protection Modules

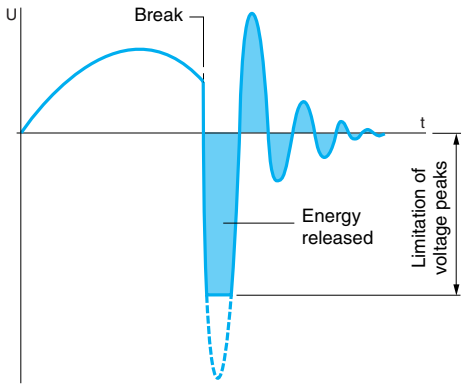
Whenever an inductive load is de-energized (coil of a relay or of a contactor), an overvoltage appears at its terminals. This voltage peak can reach several thousand volts and a frequency of several MHz. It is likely to disturb the operation of automation systems which contain electronic devices.

Protection modules are used to reduce the voltage peak on de-energization and, therefore, limit the energy of interference signals to a level that will not disturb surrounding coils and electronic devices. They are used to avoid:

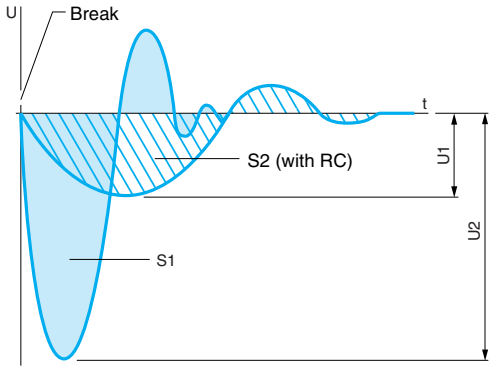
- electromagnetic compatibility problems
- the deterioration of contact materials
- the destruction of insulation due to overvoltage
- the destruction of electronic components



Coil voltage with diode protection module (Vdc only)



Coil voltage with varistor protection module (Vac and Vdc)



Coil voltage with RC circuit protection module (Vac only)

S1 = S2 = Energy released

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
- Disadvantages
  - increase in relay drop-out time (3 to 4 times the usual time)
  - no polarity protection

Protection Module with Varistor

- Advantages
  - can be used with AC and DC supply
  - voltage peak limited to about 2 Un
  - little effect on relay drop-out time
- Disadvantages
  - no modification of coil's own oscillating frequency
  - limitation of switching frequency

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
- Disadvantages
  - no protection for low voltages