



RELAYS

INSTANTANEOUS BISTABLE (LATCHING) RELAYS - 7 TO 20 CONTACTS

RMB SERIES

USER SECTORS



Power generation



Nuclear



Power transmission



Rolling Stock



Fixed railway installations



Shipbuilding



Petroleum industry



Heavy industry



RMBE13

PRODUCT ADVANTAGES

- Plug-in instantaneous bistable relay
- Solid and rugged construction for heavy or intensive duty
- Very long electrical life expectancy and exceptional endurance
- Pulsed or permanent power supply, a.c. or d.c.
- Self-cleaning knurled contacts
- Fitted with mechanical optical contact status indicator as standard
- Lever for manual operation (optional)
- Wide variety of configurations and customizations
- Transparent cover, fixing/pulling screws
- Label holder in cover for customer's use
- Positive mechanical keying for relay and socket

DESCRIPTION

RMB relays are multipole bistable types sharing the same basic mechanical design as those of the RGB series, and offering the same specifications and performance. Available in versions with from **7 to 20 change-over contacts**, these highly reliable products provide top performance and are suitable for applications in **particularly harsh and unsettled environments**, such as high voltage electricity distribution stations and medium voltage substations. An automatic coil de-energization system ensures that power consumption of the relay reduces to zero once the operating cycle has been completed.

Versatility in manufacture allows the production of relays with any voltage from 12 to 250VDC/440VAC, and with a variety of operating ranges adaptable to different application requirements. The contacts used are of a type designed to give notable levels of performance both with high and strongly inductive loads, and with particularly low loads; knurled contacts ensure not only better **self-cleaning** characteristics, but also lower ohmic resistance thanks to multi-

ple points of electrical connection, thereby extending the electrical life expectancy of the component. All models offer the **facility of manual operation**, so that tests can be performed even in the absence of electrical power. To ensure that the relay remains firmly anchored to the sockets, these are equipped with fixing screws, so that there is no need for the use of retaining clips. A product of proven reliability, as demonstrated by its use for over **40 years in electrical energy transmission and distribution systems**, and fixed equipment used in the railway sector.

Like all our relays, models in the RMB series are assembled as part of a controlled manufacturing process in which every step of production is verified by the next step in succession. In effect, each relay is calibrated and tested individually, by hand, in such a way as to guarantee top reliability.

Models	Number of contacts	Power input to coils
RMB.x3	7	Common negative
RMBZ12	8	Coils galvanically separated
RMB.x5	11	Common negative
RMBZ13	12	Coils galvanically separated
RMB.x7	19	Common negative
RMBZ14	20	Coils galvanically separated

MONOSTABLE
INSTANTANEOUS

INSTANTANEOUS
MONOSTABLE WITH
FORCIBLY GUIDED
CONTACTS



FOR CONFIGURATION OF PRODUCT CODE, SEE "ORDERING SCHEME" TABLE

Coil specification	RMB.x3	RMB.x5-x7	RMBZ12	RMBZ13-14
Nominal voltages Un ⁽¹⁾	DC / AC: 12-24-48-110-125-132-144-230-380 ⁽²⁾ -440 ⁽²⁾			
Consumption at Un (DC/AC) ⁽³⁾	15 W / 15 VA	30 W / 30 VA	19 W / 19 VA	36 W / 36 VA
Operating range	DC: 80...120% Un - AC: 85...110% Un			
Type of duty	Continuous			

Minimum control pulse: 50ms.

(1) Other values on request.

(2) Maximum value, a.c. = 380V 50Hz - 440V 60Hz.

(3) Latch and unlatch. Power consumption is zero on completion of the operating cycle, as the coil de-energizes automatically.

BISTABLE

FAST-ACTING
(MONOSTABLE
AND BISTABLE)

Contact specifications	RMB.x3	RMBZ12	RMB.x5	RMBZ13	RMB.x7	RMBZ14
Nombre et type	7 CO, form C	8 CO, form C	11 CO, form C	12 CO, form C	19 CO, form C	20 CO, form C
Current	10A					
Nominal ⁽¹⁾	20A for 1min - 40A for 1s					
Maximum peak ⁽²⁾	150A for 10ms					
Maximum pulse ⁽²⁾						
Exemple de durée de vie électrique ⁽³⁾	0.5 A - 110 Vdc - L/R 40ms - 10 ⁵ operations - 1,200 operations/hour					
Minimum load	200 mW (10 V, 10 mA)					
Standard contacts	50 mW (5 V, 5 mA)					
Gold-plated contacts						
Maximum breaking voltage	350 VDC / 440 VAC					
Contact material	AgCdO					
Operating time at Un (ms) ⁽⁴⁾	RMB.x3	RMBZ12	RMB.x5	RMBZ13	RMB.x7	RMBZ14
DC - AC	DC - AC	DC - AC	DC - AC	DC - AC	DC - AC	DC - AC
Pick-up (NC contact opening)	≤ 8 - ≤ 20	≤ 9 - ≤ 20	≤ 9 - ≤ 20	≤ 10 - ≤ 20	≤ 8 - ≤ 20	≤ 8 - ≤ 20
Pick-up (NO contact closing)	≤ 30 - ≤ 35	≤ 26 - ≤ 37	≤ 32 - ≤ 37	≤ 33 - ≤ 37	≤ 25 - ≤ 35	≤ 25 - ≤ 36
Drop-out (NO contact opening)	≤ 9 - ≤ 25	≤ 8 - ≤ 25	≤ 8 - ≤ 20	≤ 9 - ≤ 22	≤ 8 - ≤ 25	≤ 9 - ≤ 27
Drop-out (NC contact closing)	≤ 56 - ≤ 65	≤ 40 - ≤ 60	≤ 50 - ≤ 60	≤ 36 - ≤ 57	≤ 43 - ≤ 53	≤ 43 - ≤ 58

(1) On all contacts simultaneously, reduction of 30%.

(2) Maximum peak and pulse currents are those currents that can be handled, for a specified time, by the contact. They do not refer to steady or interrupted currents.

(3) For other examples, see electrical life expectancy curves.

(4) Unless specified otherwise, operating times are understood as comprising stabilization of the contact (inclusive of bounces)

TIME DELAY
(ON PICK-UP
OR DROP-OUT)

TIME DELAY WITH
FORCIBLY GUIDED
CONTACTS

MEASUREMENT

SOCKET
NUMBERING
EXPLANATIONS

Insulation
Insulation resistance (at 500Vdc)
between electrically independent circuits and between these circuits and ground
between open contact parts
Withstand voltage at industrial frequency
between electrically independent circuits and between these circuits and ground
between open contact parts
between adjacent contacts
Impulse withstand voltage (1.2/50µs - 0.5J)
between electrically independent circuits and between these circuits and ground
between open contact parts

> 10,000 MΩ

> 10,000 MΩ

2 kV (1 min) - 2.2 kV (1 s)

2 kV (1 min) - 2.2 kV (1 s)

2 kV (1 min) - 2.2 kV (1 s)

5 kV

5 kV

FRONT
CONNECTION

BACK
CONNECTION

PCB MOUNT

Mechanical specifications	RMB.x3-RMBZ12	RMB.x5-RMBZ13	RMB.x7-RMBZ14
Mechanical life expectancy	20x10 ⁶ operations		
Maximum switching rate	900 operations/hour		
Degree of protection	IP40		
Dimensions (mm)	132x58x84 ⁽¹⁾	188x58x84 ⁽¹⁾	300x58x84 ⁽¹⁾
Weight (g)	450	760	1140

(1) Excluding output terminals

RETAINING CLIPS

KEYING



Environmental specifications

Operating temperature	-25 to 55°C
Storage and shipping temperature	-25 to 70°C
Relative humidity	Standard: 75% RH - Tropicalized: 95% RH
Fire behavior	V0



Standards and reference values

EN 61810-1, EN 61810-2, EN 61810-7	Electromechanical elementary relays
EN 60695-2-10	Fire behavior
EN 61000	Electromagnetic compatibility
EN 60529	Degree of protection provided by enclosures

Sauf indication contraire, les produits sont conçus et fabriqués conformément aux prescriptions des normes européennes et internationales citées ci-dessus.
Conformément à la norme EN 61810-1, toutes les données techniques s'appliquent pour une température ambiante de 23 °C, une pression atmosphérique de 96 kPa et une humidité de 50 %.
La tolérance pour la résistance de bobine et la puissance nominale est de $\pm 7\%$.



Configurations - Options

TROPICALIZATION	Surface treatment of the coil with protective coating for use with RH 95%.
GOLD PLATING	Surface treatment of contacts, blades and output terminals with gold-cobalt, thickness $\geq 2\mu$. This treatment ensures long-term capacity of the contact to conduct lower currents.
FLYBACK DIODE	Component connected in parallel with the coil (type 1N4007) designed to suppress overvoltages generated by the coil when de-energized.
LEVER FOR MANUAL OPERATION	Allows manual operation of the relay, with the cover closed, using a screwdriver.



Ordering scheme

Product code	Application ⁽¹⁾	Configuration A	Configuration B	Label	Type of power supply	Nominal voltage (V) ⁽²⁾	Finish ⁽³⁾	Keying position code ⁽⁴⁾
RMB	E: Energy F: Railway Fixed Equipment	1: Standard 3: Diode // 4: Gold plating 6: Gold plating + Diode//	3: 7 CO contacts 5: 11 CO contacts 7: 19 CO contact	F	C: Vdc A: Vac 50 Hz H: Vac 60 Hz	012 - 024 - 048 110 - 125 - 132 144 - 220 - 230 380 - 440	T: Tropicalized coil M: Manual operation ⁽⁶⁾	xxx
		Z12 - 8 CO contacts ⁽⁵⁾ Z13 - 12 CO contacts ⁽⁵⁾ Z14 - 20 CO contacts ⁽⁵⁾						

Example	RMB	E	4	3	F	C	110	SAH
	RMBE43F-C110-SAH = ENERGY series relay, with 7 CO gold-plated contacts, 110Vdc coil and keying position SAH							
	RMB	E	1	4	F	C	110	
	RMBF15F-C110 = RAILWAY series relay, fixed equipment, with 11 CO contacts, 110VDC coil							

(1) **ENERGY**: all applications except for railway.

RAILWAYS, FIXED EQUIPMENT: application on fixed power systems and electrical railway traction. For list of RFI approved and conforming products, consult dedicated catalog "RAILWAY SERIES – RFI APPROVED".

Also available is the **STATIONS** series, with ENEL approved material meeting LV15/LV16 specifications. For list of ENEL compliant and type-approved products, consult dedicated catalog "STATIONS SERIES – LV15-LV16-LV20".

(2) Other values on request. Voltages 380V and 440V available as Vac only.

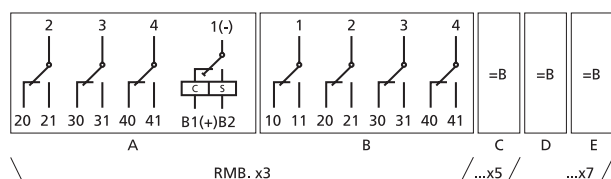
(3) Optional value. Multiple selection possible (e.g. TM).

(4) Optional value. Positive mechanical keying is applied according to the manufacturer's model.

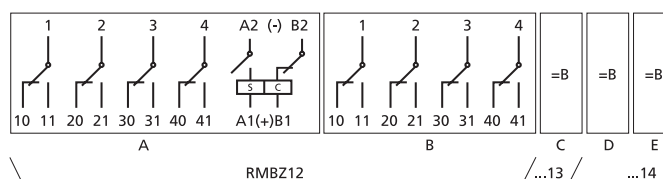
(5) Suitable for "E" and "F" applications. Gold-plated (2 μ) contacts and terminals available on request.

(6) With manual operation, no optical indicator.

Wiring diagram

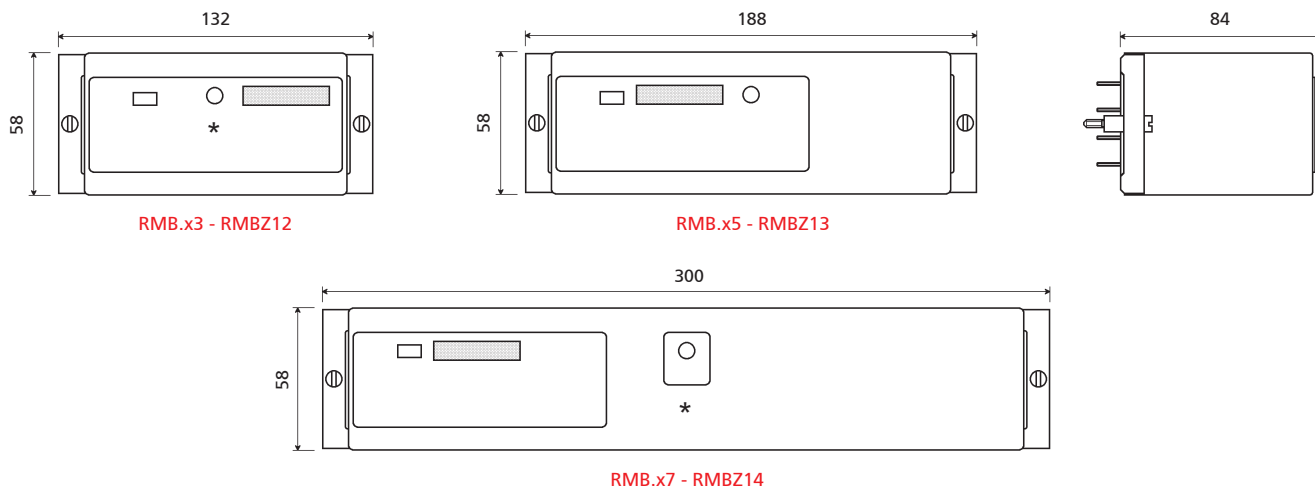


RMB.x3-5-7



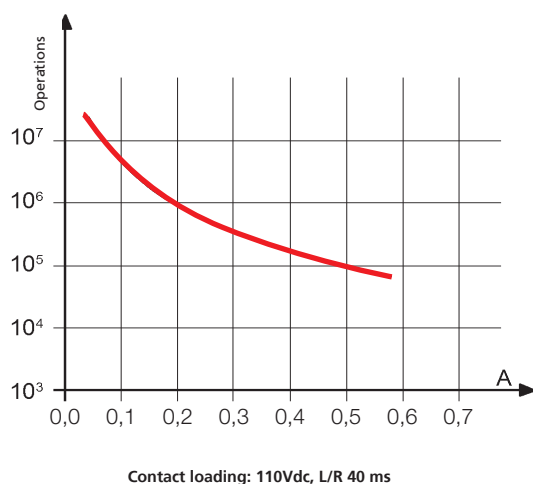
RMBZ12-13-14

Dimensions



(*) Models with manual operating lever (optional) are provided with a hole at the front giving access to the lever. The position of the data plate holder and the mechanical optical indicator can vary depending on the version.

Electrical life expectancy



U	I (A)	L/R (ms)	Operations
110 Vdc	0.5	40	100,000
110 Vdc	0.6	10	300,000
120 Vdc	0.7	40	50,000
125 Vdc	1.2	0	1,000,000
220 Vdc	0.1	40	100,000
220 Vdc	0.25	10	100,000
U	I (A)	cosφ	Operations
110 Vac	1	1	2,000,000
110 Vac	1	0.5	1,500,000
110 Vac	5	1	1,000,000
110 Vac	5	0.5	500,000
220 Vac	0.5	1	2,000,000
220 Vac	1	0.5	600,000
220 Vac	5	1	650,000
220 Vac	5	0.5	600,000

Switching frequency: 1,200 operations/hour

Sockets and retaining clips

Type of installation	Type of outputs	RMB.x3-Z12	RMB.x5-Z13	RMB.x7-Z14
Wall or DIN rail mounting	Screw	PAVM321	PAVM481	PAVM801
Flush mounting	Double faston (4.8 x 0.8 mm)	PRDM321	PRDM481	PRDM801
	Screw	PRVM321	PRVM481	PRVM801

Mounting tips

The preferred mounting position is on the wall, with the relay positioned horizontally in the reading direction on the nameplate. Retaining clips are not required, as a secure connection is guaranteed by the fixing screws. These same screws also serve to facilitate installation and removal of the relay. To ensure correct use, the screws must be tightened / loosened in alternating sequence, by degrees. No special maintenance is required.

Condensation can form inside the relay when powered up and the outside ambient temperature is cold; this is quite normal and does not affect the operation of the relay. The plastic materials of the relay do not possess hygroscopic properties.