



RELAYS

BISTABLE (LATCHING) RELAYS WITH 7-8 CONTACTS

RMBX SERIES

USER SECTORS



Power generation



Nuclear



Power transmission



Rolling Stock



Fixed railway installations



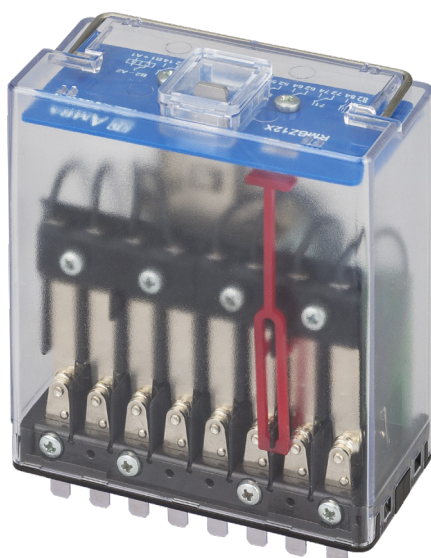
Shipbuilding



Petroleum industry



Heavy industry



RMBZ12X_3

PRODUCT ADVANTAGES

- Plug-in instantaneous latching relay
- Compact dimensions than RMB Series
- Solid and rugged construction for heavy or intensive duty
- Self-cleaning knurled contacts
- Pulsed or permanent power supply and de-energization system
- Long electrical life expectancy and exceptional endurance
- Operation with DC or AC power supply
- Fitted with mechanical optical contact status indicator as standard
- Transparent cover, with access for manual operation (standard) and pull-out handle
- Retaining clip for secure locking of relay on socket
- Wide variety of configurations and customizations
- Positive mechanical keying for relay and socket

DESCRIPTION

RMBX relays are derived from models in the RMB line, offering the same specifications and performance and available with a generous number of contacts (up to 8); in short, highly reliable products providing top performance and suitable for applications in particularly harsh and unsettled environments, such as high voltage electricity distribution stations and medium voltage substations, rail transport and rolling stock applications. The mechanical design of the relay is such as to allow the development of numerous custom solutions, in the event that the standard models do not fully respond to the required performance parameters.

Thanks to its exceptional breaking capacity, the relay is suitable for controlling **heavy duty loads** where **safety** and continuity of operation are all-important.

Versatility in manufacture allows the production of relays with any voltage between 12 and 250Vd.c./230Va.c., and with a variety of operating ranges adaptable to different application requirements.

Manual operation is foreseen for all models, allowing tests to be conducted in the absence of any power supply. RMBX relays are equipped with an automatic coil de-energization system, operated mechanically, designed to reduce the power consumption of the device to zero on completion of the cycle.

The contacts used are of a type designed to give **top 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 multiple points of electrical connection, thereby extending the electrical life expectancy of the component.

Benefiting from careful selection of materials, plus the technical and professional skills of human resources involved in design and production, this is a product suitable for the most demanding of environments.

Like all our relays, these models are assembled as part of a controlled manufacturing process in which every step of production is verified by the next step in succession. **Each relay is calibrated and tested individually**, by hand, so as to guarantee top reliability.



Models	Number of contacts	Power input to coils
RMB.x3X	7	Common negative
RMB.x2X ⁽¹⁾	8	Common negative

(1) Model RMBR.x2X suitable for rolling stock applications



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



Coil specifications	RMB.x3X, RMB.x2X	RMBR.x2X
Nominal voltages Un	DC: 12-24-48-110-125-132-220 ⁽¹⁾ - AC: 12-24-48-110-125-230-380-440 ⁽¹⁾	DC: 24 - 36 - 72 - 96 - 110 ⁽³⁾
Consumption at Un (DC/AC) ⁽²⁾	RMB.x3X: 15W / 15VA - RMB.x2: 19W / 19VA	19W / 19VA
Operating range	DC: 80÷120% Un - AC: 85÷110% Un	DC: 70÷125 % Un
Type of duty	Continuous	

Minimum control pulse: 50ms.

(1) Other values on request.

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

(3) Suitable for rolling stock applications. Operating range in compliance with EN 60077 standard.



Contact specifications	RMBE.x3X	RMB.x2X
Number and type	7 CO, form C	8 CO, form C
Courant	10A	
Nominal ⁽¹⁾	20A for 1min - 40A for 1s	
Maximum peak ⁽²⁾	150A for 10ms	
Maximum pulse ⁽²⁾		
Example of electrical life expectancy ⁽³⁾	0.7 A - 132 Vdc - L/R 40ms - 10 ⁵ operations - 600 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⁾	DC - AC	DC - AC
Pick-up (NC contact opening)	≤ 25 - ≤ 25	≤ 25 - ≤ 25
Pick-up (NO contact closing)	≤ 45 - ≤ 40	≤ 28 - ≤ 35
Drop-out (NO contact opening)	≤ 12 - ≤ 25	≤ 10 - ≤ 20
Drop-out (NC contact closing)	≤ 45 - ≤ 55	≤ 43 - ≤ 53

(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, the operating time signifies until stabilization of the contact (including bounces).



Insulation		
Insulation resistance (at 500VCD)		
between electrically independent circuits and between these circuits and ground	> 10,000 MΩ	
between open contact parts	> 10,000 MΩ	
Withstand voltage at industrial frequency		
between electrically independent circuits and between these circuits and ground	2 kV (1 min) - 2.2 kV (1 s)	
between open contact parts	2 kV (1 min) - 2.2 kV (1 s)	
between adjacent contacts	2 kV (1 min) - 2.2 kV (1 s)	
Impulse withstand voltage (1,2/50µs - 0,5J)		
between electrically independent circuits and between these circuits and ground	5 kV	
between open contact parts	4 kV	



Mechanical specifications

Mechanical life expectancy	10x10 ⁶ operations
Maximum mechanical switching rate	900 operations/hour
Degree of protection	IP50 fitted to socket
Dimensions (mm) ⁽¹⁾	45x90x100 ⁽¹⁾
Weight (g)	RMB.x3X: 400 RMB.x2X: 410

(1) Excluding output terminals



Environmental specifications

Standard operating temperature	standard	-25 to +55 °C
Version for railways, rolling stock (RMBR)		-25 to +70°C (+85°C for 10 min) -40°C as option
Storage and shipping temperature		-25 to +85°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	All-or-nothing relays
EN 61810-3, type A	Guided contact relays (mechanically linked), type A
EN 60695-2-10	Fire behavior
EN 60529	Degree of protection provided by enclosures

Unless otherwise specified, products are designed and manufactured to the requirements of the European and International standards indicated above.
In accordance with EN 61810-1, all items of technical data are referred to ambient temperature 23 °C, atmospheric pressure 96kPa and 50% humidity.
Tolerance for coil resistance, nominal electrical input and nominal power is ±7%.



Railways, rolling stock - Standards

Applicable to RMBR model

EN 60077	Electric equipment for rolling stock - General service conditions and general rules
EN 61373 ⁽¹⁾	Shock and vibration tests, cat 1, class B
EN 45545-2	Fire behavior, cat EL10, requirement R26, V0
ASTM E162, E662	Fire behavior

(1) Opening of NC contacts allowed only at de-energized relay t<3ms.



Configurations - Options

TROPICALIZATION	Surface treatment of coil with protective coating for use in conditions of RH 95%. This treatment serves to give the coil added protection against corrosion that could occur as a result of moisture reacting with certain chemical agents such as those found in acid or saline atmospheres.
GOLD PLATING	Surface treatment of contacts, blades and output terminals with gold, thickness ≥ 2μ. This treatment ensures long-term capacity of the contact to conduct low levels of current, even in adverse ambient conditions.
FLYBACK DIODE	Component connected in parallel with the coil designed to suppress overvoltages generated by the coil when de-energized.
LOW TEMPERATURE	Minimum operating temperature -40°C, only for rolling stock version (option "L")



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 R: Railway Rolling stock	1: Standard 3: Diode // 4: Gold-plating 6: Gold-plating + Diode //	2X: 8 CO contacts 3X: 7 CO contacts	F	C : Vdc A: Vac 50 Hz H: Vac 60 Hz	012 - 024 - 036 048 - 072 - 096 110 - 125 - 132 220 - 230 - 380 440	T: Tropicalized coil L: Low temperature	XX

RMB	E	4	3X	F	C	110		
RMBE43XF-C110 = ENERGY series relay, with 7 CO gold-plated contacts and 110Vdc coil								
RMB	R	1	2X	F	C	072	T	
RMBR12XF-C072T = RAILWAY, rolling stock series, relay with 8 CO contacts and 72Vdc tropicalized coil								

(1) ENERGY: all applications except for railway.

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

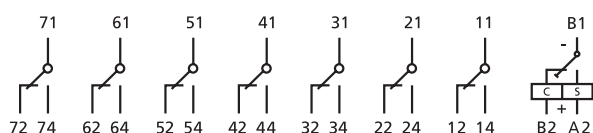
RAILWAYS, ROLLING STOCK: application on board rolling stock. Electrical characteristics according to EN60077.

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

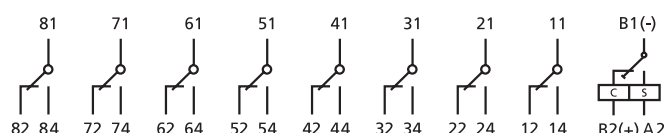
(3) Optional value.

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

Wiring diagram

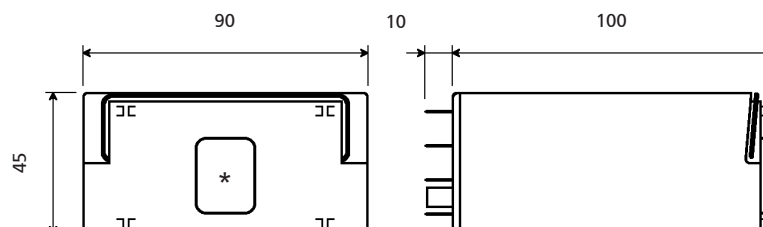


RMB.x3X



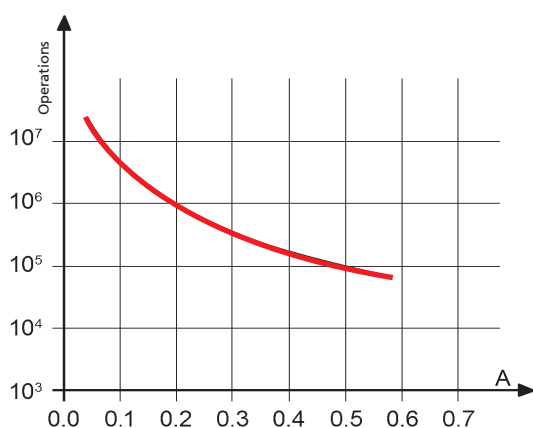
RMB.x2X

Dimensions



(*) access to the manual operating lever

Electrical life expectancy



Contact loading: 110Vdc, L/R 40 ms

U	I (A)	L/R (ms)	Operations
110 Vdc	0.5	40	150,000
110 Vdc	0.6	10	300,000
132 Vdc	0.7	40	100,000
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	Model	Retaining clip
Wall or DIN rail mounting	Screw	96IP20-I DIN	RMC48
	quick wiring	PAIR320	
Flush mounting	Double faston (4.8 x 0.8 mm)	ADF4	
	quick wiring	PRIR320	

(1) Suitable for mounting 2 relays side by side.

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 used to ensure that the relay is secured correctly to the socket.

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.