



RELAYS

INSTANTANEOUS RELAYS WITH 8 FORCIBLY GUIDED CONTACTS

RMGX SERIES with forcibly guided contacts

USER SECTORS



Power generation



Nuclear



Power transmission



Rolling Stock



Fixed railway installations



Shipbuilding



Petroleum industry



Heavy industry



RMGR16X_3

PRODUCT ADVANTAGES

- Mechanically linked contacts, relay compliant with IEC **EN 61810-3, type A**
- Weld-no-transfer technology
- Plug-in monostable instantaneous relay
- Suitable for safety applications
- Solid and rugged construction for heavy or intensive duty
- Self-cleaning knurled contacts
- Very long electrical life expectancy and exceptional endurance
- Magnetic arc blow-out (optional) for higher breaking capacity
- Wide range of options: LED indicating power on, FLYBACK DIODE
- Transparent cover, with access for manual operation (standard) and pull-out handle
- Retaining clip for secure locking of relay on socket

DESCRIPTION

RMGX relays are highly reliable products offering top performance, suitable for applications in particularly harsh and unsettled environments. Meeting the requirements of standard **EN 61810-3 type A**; the relay is equipped with mechanically linked contacts (forcibly guided), an indispensable feature for applications where there is a need to guarantee that make (NO) contacts will never assume the same status as break (NC) contacts. Forcibly guided contacts are also known as weld-no-transfer contacts. With change-over contacts, customers have the greatest possible flexibility in selecting the configuration (6 NC + 2 NO, 5 NC + 3 NO, etc.) best suited to their particular needs.

Thanks to its exceptional breaking capacity, the relay is suitable for **controlling heavy duty loads with intensive switching frequency**, where safety and continuity of operation are all-important. Manual operation as standard for all models, allowing tests to be conducted in the absence of any power supply. The contacts used are of a type designed to give top performance both with high and strongly inductive DC loads, and with particularly low loads; inclusion of the **magnetic arc blow-out function** (optional) helps to achieve a considerable increase in breaking capacity.

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.

In relays with forcibly guided (mechanically linked) or weld-no-transfer contacts, special design and constructional measures are used to ensure that make (normally-open) contacts can not assume the same state as break (normally-closed) contacts.

- If, when powering up a relay, a NC contact fails to open, the remaining NO contacts must not close, maintaining a contact gap ≥ 0.5 mm.
- When the relay is de-energized, if a NO contact fails to open, the remaining NC contact must not close, maintaining a contact gap ≥ 0.5 mm.

EN 61810-3 lays down the standard requirements for relays with forcibly guided contacts. This standard defines two types of relay with forcibly guided contacts, namely:

- Type A: Relay whose contacts are all mechanically linked (forcibly guided).
- Type B: Relay containing mechanically linked contacts and contacts which are not mechanically linked.

In the case of relays that include changeover contacts, either the make circuit or the break circuit of a changeover contact can be considered to meet the requirements of this standard.

Models	Number of contacts	Magnetic arc blow-out
RMG.x2X	6 CO + 2 NC	
RMG.x6X	6 CO + 2 NC	•

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

Coil specifications	RMGExyX - RMGFxyX	RMGRxyX
Nominal voltages Un	DC: 24-48-110-125-132-220 ⁽¹⁾	DC: 24-36-72-96-110 ⁽²⁾
Consumption at Un (DC/AC)	3W	
Operating range	DC: 80÷115% Un	DC: 70÷125% Un
Type of duty	Continuous	
Drop-out voltage ⁽³⁾	DC: > 5% Un	

(1) Other values on request.

(2) Suitable for application on rolling stock. Operating range in compliance with EN 60077 standard.

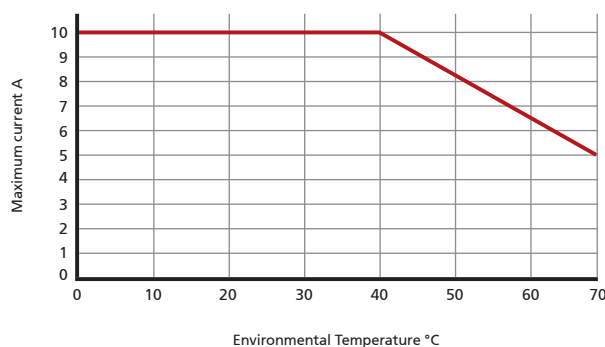
(3) Limit value for supply voltage, expressed as % of the nominal value, beneath which the relay is certain to be de-energized.

Contact specifications	RMG.12X-16X-42X-46X	RMG.32X-36X-62X-66X-52X-56X
Number and type	6 CO + 2 NA, form C	
Current	See following graph	
Nominal	20A for 1min - 40A for 1s	
Maximum peak ⁽¹⁾	150A for 10ms	
Maximum pulse ⁽¹⁾		
Example of electrical life expectancy	RMG.x2X : 0.5A - 110Vdc - L/R 40ms - 10 ⁵ operations - 1,800operations /hour RMG.x6X : 1A - 110Vdc - L/R 40ms - 10 ⁵ operations - 1,800operations /hour	
Minimum load	Standard contacts	200mW (10V, 10mA)
	Gold-plated contacts	50mW (5V, 5mA)
Maximum breaking voltage	350 VDC / 440 VAC	
Contact material	AgCdO	
Operating time at Un (ms) ⁽²⁾	DC	
Pick-up (NC contact opening)	≤ 35	
Pick-up (NO contact closing)	≤ 60	
Drop-out (NO contact opening)	≤ 4	
Drop-out (NC contact closing)	≤ 45	

(1) 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.

(2) Unless specified otherwise, the operating time signifies until stabilization of the contact (including bounces).

Rated current contact



Note: reduction of 30% on all the contacts simultaneously.

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

Mechanical specifications	
Mechanical life expectancy	10x10 ⁶ operations
Maximum mechanical switching rate	3,600 operations/h
Degree of protection	IP50 fitted to socket
Dimensions (mm)	45x90x100 ⁽¹⁾
Weight (g)	380

⁽¹⁾ Excluding output terminals

Environmental specifications	
Standard operating temperature	standard -25 to +55 °C
Version for railways, rolling stock (RMGR)	-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 EN 61810-3, type A EN 60695-2-10 EN 60529	All-or-nothing relays Relays with forcibly guided (mechanically linked) contacts Fire behavior 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 RMGRX version
EN 60077 EN 61373 ⁽¹⁾ EN 45545-2 ASTM E162, E662		Electric equipment for rolling stock - General service conditions and general rules Shock and vibration tests, cat 1, class B Fire behavior, cat EL10, requirement R26, V0 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.
LED	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⁾
RMG	E: Energy F: Railway Fixed Equipment R: Railway Rolling stock	1: Standard 2: Diode // + Led 3: Diode // 4: Diode 5: Led 6: Diode // + Led 7: Diode // + Led	2X: 6 CO contacts + 2 NO 6X: 6 CO contacts + 2 NO with magnetic arc blow-out	F	C: Vdc	024 - 036 - 048 072 - 096 - 110 125 - 132 - 220	T: Tropicalized coil L: Low temperature	XX

Example	RMG	E	3	6X	F	C	048	T	
	RMGE36XF-C048/T = ENERGY series relay with back EMF suppression diode, magnetic arc blow-out and 48Vdc tropicalized coil.								
	RMG	R	7	2X	F	C	110		
	RMGR72XF-C110 = RAILWAY series relay, equipped with flyback diode and indicator Led and 110Vdc coil.								

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

RAILWAYS, FIXED EQUIPMENT: application on fixed power systems and electrical railway traction. Construction according to RFI (FS Group, Italy) specification n° RFI DPRIM STF IFS TE 143 A, if applicable for list of RFI approved and conforming products, consult dedicated catalog "RAILWAY SERIES - RFI APPROVED"

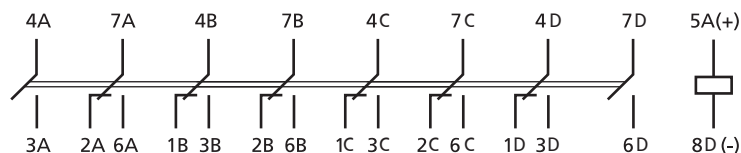
RAILWAYS, ROLLING STOCK: Application on board rolling stock. Electrical characteristics according to EN60077.

2. Other values on request.

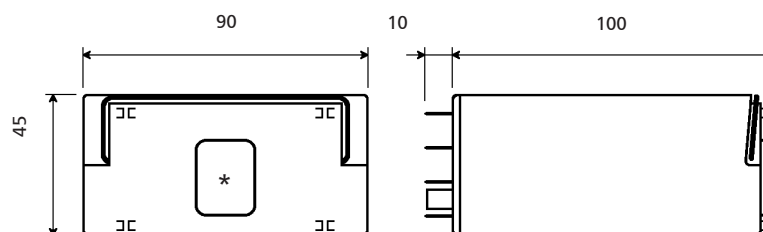
3. Optional value.

4. Optional value. The positive mechanical keying is applied according to the manufacturer's model.

Wiring diagram



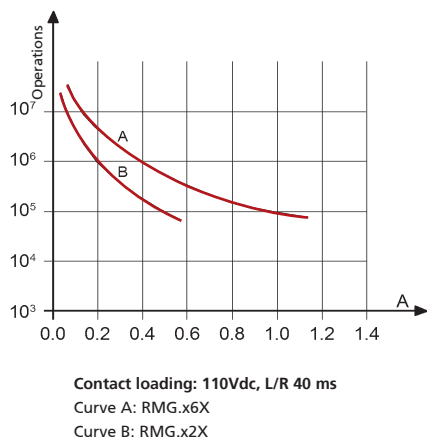
Dimensions



RMG.x2X - RMG.x6X

(*) access to the manual operating lever

Electrical life expectancy



RMG.x2X			
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

RMG.x6X			
U	I (A)	L/R (ms)	Operations
24 Vdc	1	0	7,000,000
24 Vdc	1	40	3,000,000
24 Vdc	2	40	2,000,000
24 Vdc	5	0	3,000,000
24 Vdc	5	40	200,000
24 Vdc	9	0	800,000
48 Vdc	5	20	200,000
110 Vdc	0.4	40	1,000,000
110 Vdc	1	40	100,000
110 Vdc	10	0	100,000
U	I (A)	cosφ	Operations
220 Vac	5	0.5	100,000
220 Vac	10	1	100,000
230 Vac	1	0.7	2,500,000
230 Vac	3	0.7	1,200,000

Sockets and retaining clips

Type of installation	Type of outputs	Model	Retaining clip
Wall or DIN rail mounting	Screw	96IP20-I DIN	RMC48
	Spring clamp	PAIR320	
Flush mounting	Double faston (4.8 x 0.8 mm)	ADF4-E1	
	Spring clamp	PRIR321	

Mounting tips

The preferred mounting position is on the wall, with the relay positioned horizontally in the reading direction on the nameplate. To ensure correct use of the relays, they should be spaced apart by at least 20 mm in the vertical direction; this will allow the heat generated by the coils to rise and dissipate as necessary. Check the distances according to the socket used. These distances can be reduced, depending on the environmental conditions during operation and on the relay duty cycle.

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.