



RELAYS

MONOSTABLE INSTANTANEOUS RELAY 4 CONTACTS

RGM SERIES

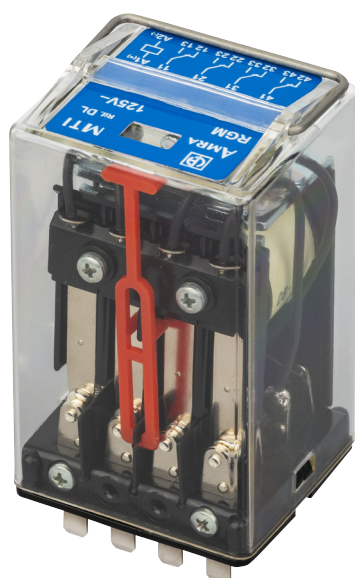
USER SECTORS

Power
generation

Nuclear

Power
transmissionRolling
stockFixed railway
installations

Shipbuilding

Petroleum
industryHeavy
industry

RGM

PRODUCT ADVANTAGES

- Plug-in monostable instantaneous relay
- Solid and rugged construction for heavy or intensive duty
- Very long electrical life expectancy and exceptional endurance
- Magnetic arc blow-out for higher breaking capacity
- Self-cleaning knurled contacts
- Lever for manual operation (optional)
- Fitted with mechanical optical contact status indicator as standard
- Operation using DC or AC power supply (directly, without rectifiers or diodes)
- Wide variety of configurations and customizations
- Also available in current-monitoring version
- Retaining clip for secure locking of relay on socket
- Transparent cover, pull-out handle
- Label holder in cover for customer's use
- Positive mechanical keying for relay and socket

DESCRIPTION

The relays in the **RGM series** are highly reliable products **providing top performance**, suitable for applications in particularly **harsh and unsettled environments**, such as high voltage electricity distribution stations and medium voltage substations. 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 with intensive switching frequency, where safety and continuity of operation are all-important. 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. Benefiting also from **careful selection of materials**, coupled with the technical and professional skills of human resources involved in design and production, this family of relays has found favour with many important and high profile customers..

Versatility in manufacture allows the production of relays with any voltage in the range 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 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.

All models offer the facility of manual operation, so that tests can be performed even in the absence of electrical power. Like all our relays, models in the G 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	Magnetic arc blow-out
RGM.x3	4	
RGM.x4	4 + 1NO	
RGM.x5	4 + 1NC	
RGM.x7	4	•
RGM.x8	4, long travel	•

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

Coil specifications	RGMExy - RGMFxy	RGMEx8
Nominal voltages Un	DC: 12-24-48-110-125-132-144-220 ⁽¹⁾ - AC: 12-24-48-110-125-220-230-380-440 ⁽¹⁻²⁾	
Consumption at Un (DC/AC)	3W / 6.5VA ⁽³⁾ - 11.5VA ⁽⁴⁾	3.5W / 8VA ⁽³⁾ - 13VA ⁽⁴⁾
Operating range	DC: 80...120 % Un - AC : 85...110 % Un	
Type of duty	Continuous	
Drop-out voltage ⁽⁵⁾	DC: > 5% Un - AC : > 15% Un	

(1) Other values on request.

(2) 380V 50Hz, 440V 60Hz.

(3) In operation.

(4) On pick-up.

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

Contact specifications									
Number and type		4 CO, form C							
Current	Nominal ⁽¹⁾	12 A ⁽²⁾							
	Maximum peak ⁽²⁾	20A for 1min - 40A for 1s							
	Maximum pulse ⁽²⁾	150A for 10ms							
Example of electrical life expectancy ⁽⁴⁾		RGM.x3-x4-x5 : 0.5A - 110Vdc - L/R 40 ms - 10 ⁵ operations - 1,800 operations/hour RGM.x4-x5 (NC or NO auxiliary contact) : 0.2 A - 110 Vdc - L/R 40 ms - 10 ⁵ operations - 1,800 operations/hour RGM.x7 : 1A - 110 Vdc - L/R 40 ms - 10 ⁵ operations- 1,800 operations/hour RGM.x8 : 1 A - 125 Vdc - L/R 40 ms - 10 ⁶ operations - 600 operations/hour							
Minimum load	Standard contacts	200mW (10V, 10mA)							
	Gold-plated contacts	50mW (5V, 5mA)							
Maximum breaking voltage		350 VDC / 440 VAC							
Contact material		AgCdO							
		RGM.13-17-43-47	RGM. 33-37-63-67	RGM.18	RGM.38	RGM.14-44	RGM. 34-64	RGM. 15-45	RGM. 35-65
Operating time at Un (ms) ⁽⁵⁾		DC - AC	DC	DC - AC	DC	DC - AC	DC	DC - AC	DC
Pick-up (NC contact opening)		≤ 20 - ≤ 11	≤ 20	≤ 20 - ≤11	≤ 20	≤ 16 - ≤ 11	≤ 16	≤ 16 - ≤11	≤16
Pick-up (NO contact closing)		≤ 35 - ≤ 30	≤ 35	≤ 40 - ≤35	≤ 40	≤ 35 - ≤ 30	≤ 35	≤ 35 - ≤30	≤35
Drop-out (NO contact opening)		≤ 10 - ≤ 20	≤ 47	≤ 10 - ≤20	≤ 47	≤ 10 - ≤ 25	≤ 47	≤ 10 - ≤25	≤ 47
Drop-out (NC contact closing)		≤ 53 - ≤ 65	≤ 85	≤ 60 - ≤70	≤ 95	≤ 70 - ≤ 75	≤ 100	≤ 70 - ≤75	≤ 100
Pick-up (NC auxiliary contact opening)		-	-	-	-	-	-	≤ 16 - ≤12	≤ 20
Pick-up (NO auxiliary contact closing)		-	-	-	-	≤ 33 - ≤ 25	≤ 33	-	-
Drop-out (NO auxiliary contact opening)		-	-	-	-	≤ 30 - ≤ 45	≤ 46	-	-
Drop-out (NC auxiliary contact opening)		-	-	-	-	-	-	≤ 70 - ≤75	≤ 95

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

(2) Models RGM.x4 / RGM.x5 only: 5° NO or NC contact: nominal current 5 A.

(3) 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.

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

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

Insulation			
Insulation resistance (at 500Vdc)	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) ⁽¹⁾	
Impulse withstand voltage (1.2/50μs - 0.5J)	between adjacent contacts	2 kV (1 min) - 2.2 kV (1 s)	
	between electrically independent circuits and between these circuits and ground	5 kV ⁽²⁾	
		5 kV ⁽²⁾	

For auxiliary contacts (NO - NC) of models RGM.x4 and RGM.x5:

(1) 1kV.

(2) 2kV.



Mechanical specifications

	Mechanical life expectancy	20 x 10 ⁶ operations
Maximum switching rate	Mechanical	3,600 operations/hour
	Protection	IP40
	Dimensions (mm)	45x50x86 ⁽¹⁾
	Weight (g)	270

(1) Excluding output terminals



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 EN 60695-2-10 EN 61000 EN 60529	Electromechanical elementary relays Fire behavior Electromagnetic compatibility Degree of protection provided by enclosures
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Unless otherwise specified, products are designed and manufactured according 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%.



Configurations - Options

TROPICALIZATION	Surface treatment of coil with protective coating for use in conditions of RH 95%.
GOLD PLATING	Surface treatment of contacts, blades and output terminals with gold-cobalt alloy, thickness ≥2μ. This treatment ensures long-term capacity of the contact to conduct lower currents.
LED	LED indicator showing presence of power supply, wired in parallel with the coil, as alternative to mechanical optical indicator.
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. If the lever is fitted, there will be no luminous optical indicator.



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⁾
RGM	E: Energy F: Railway Fixed Equipment	1: Standard 3: Diode // 4: Gold plating 5: Led 6: Gold plating + Diode // 7: Diode // + Led	3: 4 CO contracts 4: 4 CO contracts + 1 NO auxiliary contact 5: 4 CO contracts + 1 NC auxiliary contact 7: 4 CO contracts with magnetic arc blow-out 8: 4 CO contracts, long travel with magnetic arc blow-out	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 ⁽⁵⁾	xxx

Example	RGM	E	3	7	F	C	048	TM	
	RGM E37F-C048/TM = ENERGY series relay with flyback diode, magnetic arc blow-out, 48Vdc tropicalized coil and manual operating lever.								
	RGM	E	1	3	F	A	110		OOG
	RGM F17F-A110-OOG = RAILWAY series relay, fixed equipment, with 110V 50Hz coil and keying position OOG.								

(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".

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".

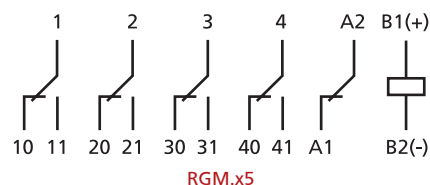
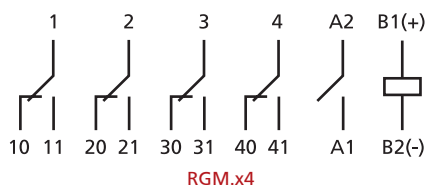
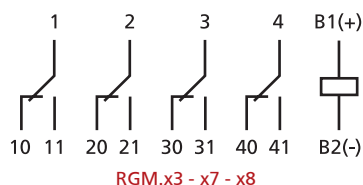
(2) Other values on request. Voltages 380V and 440V available as Vac only.

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

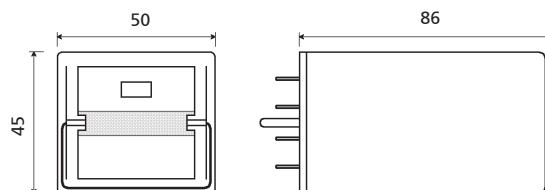
(4) Optional value. Positive mechanical keying is applied according to the manufacturer's model.

(5) With manual operation, no optical indicator.

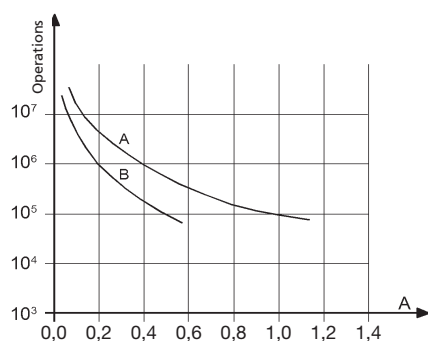
Wiring diagram



Dimensions



Electrical life expectancy



Contact loading: 110 Vdc, L/R 40 ms
Curve A : RGM.x7
Curve B : RGM.x3-4-5(NO/NC contact excluded)

RGM.x3 - RGM.x4 - RGM.x5			
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

RGM.x7			
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
U	I (A)	cosφ	Operations
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

RGM.x8			
U	I (A)	L/R (ms)	Operations
125 Vdc	1	40	1,000,000
125 Vdc	5	40	5,000

Sockets and retaining clips

Type of installation	Type of outputs	Model	Retaining clip
Wall or DIN rail mounting	Screw	PAVG161	VM1221
Flush mounting	Double faston (4.8 x 0.8 mm)	PRDG161	
	Screw	PRVG161	

Mounting tips

The preferred mounting position is on the wall, with the relay positioned horizontally in the reading direction on the nameplate. For correct use of the relays, they should be spaced apart by at least 5 mm in the horizontal direction and 20 mm in the vertical direction. This is to allow correct upward dissipation of the heat generated by the coil. Set these distances according to the socket used. Distances can be reduced depending on the environmental application conditions and on the relay duty cycle.

For safe and secure operation, it is advisable to use retaining clips.

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.