



RELAYS

INSTANTANEOUS MONOSTABLE RELAY 8-12-20 CONTACTS

RMM SERIES

USER SECTORS



Power generation



Nuclear



Power transmission



Rolling stock



Fixed railway installations



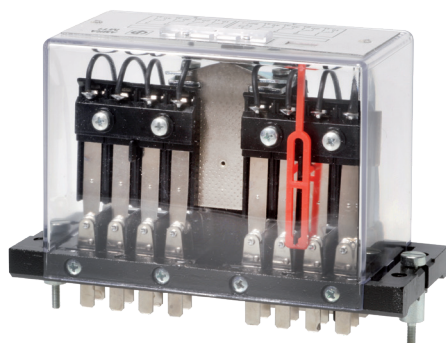
Shipbuilding



Petroleum industry



Heavy industry



RMME16



RMME17

PRODUCT ADVANTAGES

- Plug-in monostable instantaneous relay
- Compact dimensions than RMM Series
- Solid and rugged construction for heavy or intensive duty
- Long electrical life expectancy and exceptional endurance
- Operation using d.c. or a.c. power supply (directly, without rectifiers or diodes)
- Magnetic arc blow-out (optional) for higher breaking capacity
- Self-cleaning knurled contacts
- Operation using d.c. or a.c. power supply
- Transparent cover, with access for manual operation (standard) and pull-out handle
- Retaining clip for secure locking of relay on socket
- Positive mechanical keying for relay and socket

DESCRIPTION

Relays of the **RMM series** are monostable multipole types with 8, 12 and 20 change-over contacts. RMM relays share the same basic mechanical design as those of the RGM series, and offer the same specifications and performance.

These 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 transport 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 favor 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 good levels of performance both with high and strongly inductive d.c. loads, and with particularly low loads. Inclusion of the magnetic arc blow-out function (optional) helps to achieve a considerable increase in breaking capacity, whilst the 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. 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.

Like all AMRA relays, models of the RMM 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 the maximum level of reliability possible.

Models	Number of contacts	Magnetic arc blow-out
RMM.x2	8	
RMM.x6	8	•
RMM.x3	12	
RMM.x7	12	•
RMM.x4	20	
RMM.x8	20	•

MONOSTABLE
INSTANTANEOUS

INSTANTANEOUS
MONOSTABLE WITH
FORCIBLY GUIDED
CONTACTS

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

Coil specifications	RMM.x2-x6	RMM.x3-x4-x7-x8
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)	3 W / 6.5 VA ⁽³⁾ - 11.5 VA ⁽⁴⁾	6 W / 15 VA ⁽³⁾ - 25 VA ⁽⁴⁾
Operating range	DC: 80...120% Un - AC: 85...110% Un	
Type of duty Continuous	Continuous	
Drop-out voltage ⁽⁵⁾	DC: > 5% Un - AC: > 15% Un	

(1) Other values on request.

(2) Maximum value, a.c. = 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.

BISTABLE

FAST-ACTING
MONOSTABLE
(AND BISTABLE)

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

Contact specifications							
Number and type		8 - 12 - 20 CO, form C					
Current	Nominal ⁽¹⁾	10A					
	Maximum peak ⁽²⁾	20A for 1min - 40A for 1s					
	Maximum pulse ⁽²⁾	150A for 10ms					
Example of electrical life expectancy ⁽³⁾		RMM.x2-x3-x4: 0.5A - 110Vdc - L/R 40ms - 10 ⁵ operations - 1,800 operations/hour RMM.x6-x7-x8: 1A - 110 Vdc - L/R 40ms - 10 ⁵ operations - 1,800 operations/hour					
Minimum load	Standard contacts	200 mW (10 V, 10 mA)					
	Gold-plated contacts	50 mW (5 V, 5 mA)					
Maximum drop-out voltage		350 VDC / 440 VAC					
Contact material		AgCdO					
Operating time at Un (ms) ⁽⁴⁾		RMM. 12-16-42-46	RMM. 13-17-43-47	RMM. 14-18-44-48	RMM. 32-36-62-66	RMM. 33-37-63-67	RMM. 34-38-64-68
Pick-up (NC contact opening)		DC - AC ≤ 15 - ≤ 10	DC - AC ≤ 13 - ≤ 10	DC - AC ≤ 14 - ≤ 10	DC ≤ 15	DC ≤ 13	DC ≤ 14
Pick-up (NO contact closing)		≤ 40 - ≤ 32	≤ 37 - ≤ 35	≤ 45 - ≤ 35	≤ 40	≤ 37	≤ 40
Drop-out (NO contact opening)		≤ 12 - ≤ 30	≤ 12 - ≤ 30	≤ 8 - ≤ 35	≤ 104	≤ 31	≤ 35
Drop-out (NC contact closing)		≤ 64 - ≤ 110	≤ 70 - ≤ 80	≤ 42 - ≤ 73	≤ 150	≤ 80	≤ 75

(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 WITH
FORCIBLY GUIDED
CONTACTS

MEASUREMENT

SOCKET
NUMBERING
EXPLANATIONS

FRONT
CONNECTION

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)	
	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	5 kV	

BACK
CONNECTION

PCB MOUNT

RETAINING CLIPS

Mechanical specifications		RMM.x2-x6	RMM.x3-x7	RMM.x4-x8
Mechanical life expectancy		20x10 ⁶ operations		
Maximum switching rate	Mechanical	3,600 operations/hour		
Degree of protection		IP40		
Dimensions (mm)		132x58x84 ⁽¹⁾	188x58x84 ⁽¹⁾	300x58x84 ⁽¹⁾
Weight (g)		430	720	1100

(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

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 the coil with protective coating for use with RH 95%.
GOLD PLATING	Surface treatment of contacts, blades and output terminals with gold-cobalt, thickness ≥ 2μ. This treatment ensures long-term capacity of the contact to conduct lower currents.
LED	Luminous 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.

Ordering scheme								
Code produit	Application ⁽¹⁾	Configuration A	Configuration B	Label	Type of power supply	Nominal voltage (V) ⁽²⁾	Finish ⁽³⁾	Keying position code ⁽⁴⁾
RMM	E: Energy F: Railway Fixed Equipment	1: Standard 3: Diode // 4: Gold plating 5: Led 6: Gold plating + Diode // 7: Diode // + Led	2: 8 CO contacts 3: 12 CO contacts 4: 20 CO contacts 6: 8 CO contacts with magnetic arc blow-out 7: 12 CO contacts with magnetic arc blow-out 8: 20 CO contacts 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	RMM	E	4	7	F	A	024	M	
	RMM E47F-A024/M = ENERGY series relay with 20 gold-plated contacts, magnetic arc blow-out, 24Vac coil and manual operating lever.								
	RMM	F	1	3	F	C	110	T	
	RMM F13F-C110/T = RAILWAY series relay, fixed equipment, 12 contacts with 110Vdc 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".

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".

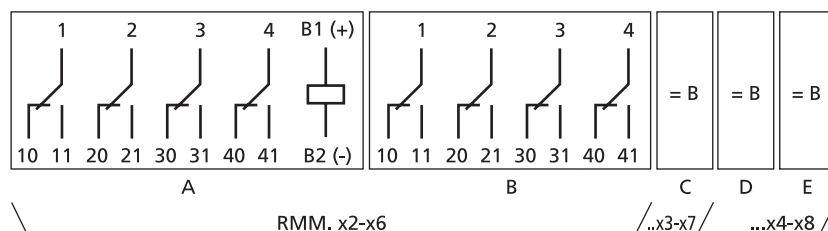
(2) Other values on request. Voltages 380V and 440V available as Vac only.

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

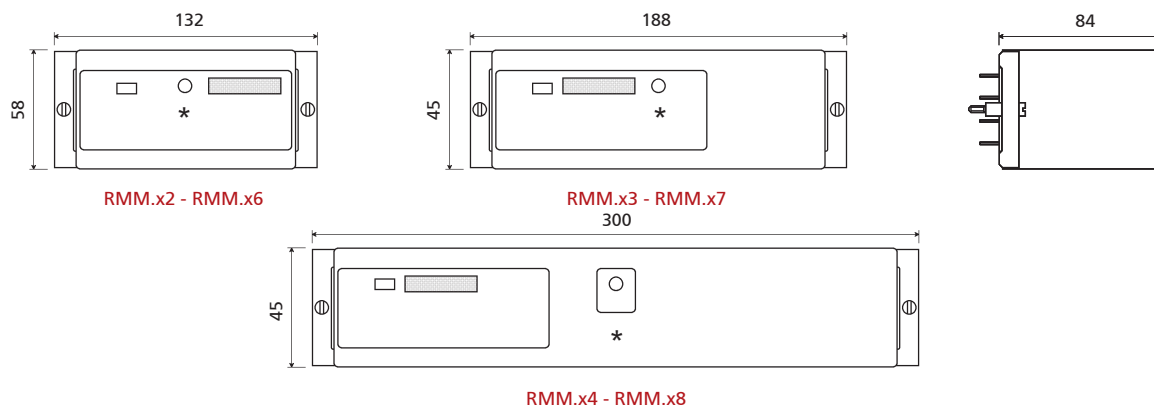
(4) Optional value. Positive mechanical keying is applied according to the manufacturer's product model.

(5) With manual operation, no optical indicator.

Wiring diagram

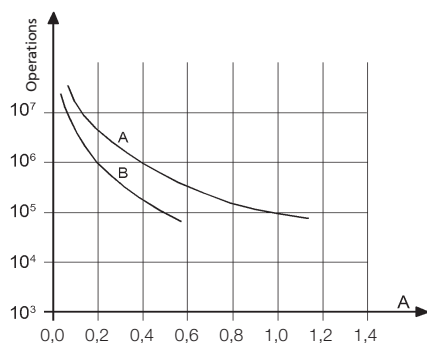


Dimensions



(*) 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



Contact loading: 110Vdc, L/R 40 ms
Curve A: RMM.x6-7-8
Curve B: RMM.x2-3-4

RMM.x2 - RMM.x3 - RMM.x4				RMM.x6 - RMM.x7 - RMM.x8			
U	I (A)	L/R (ms)	Operations	U	I (A)	L/R (ms)	Operations
110 Vdc	0.5	40	100,000	24 Vdc	1	0	7,000,000
110 Vdc	0.6	10	300,000	24 Vdc	1	40	3,000,000
120 Vdc	0.7	40	50,000	24 Vdc	2	40	2,000,000
125 Vdc	1.2	0	1,000,000	24 Vdc	5	0	3,000,000
220 Vdc	0.1	40	100,000	24 Vdc	5	40	200,000
220 Vdc	0.25	10	100,000	24 Vdc	9	0	800,000
U	I (A)	cosφ	Operations	48 Vdc	5	20	200,000
110 Vac	1	1	2,000,000	110 Vdc	0.4	40	1,000,000
110 Vac	1	0.5	1,500,000	110 Vdc	1	40	100,000
110 Vac	5	1	1,000,000	110 Vdc	10	0	100,000
110 Vac	5	0.5	500,000	U	I (A)	cosφ	Operations
220 Vac	0.5	1	2,000,000	220 Vac	5	0.5	100,000
220 Vac	1	0.5	600,000	220 Vac	10	1	100,000
220 Vac	5	1	650,000	230 Vac	1	0.7	2,500,000
220 Vac	5	0.5	600,000	230 Vac	3	0.7	1,200,000

Switching frequency: 1,200 operations/hour

Sockets		RMM.x2-x6	RMM.x3-x7	RMM.x4-x8
Type of installation	Type of outputs			
Wall or DIN H35 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.

For correct use of the relays, they should be spaced apart by at least 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 conditions during operation, and on the relay duty cycle.

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.