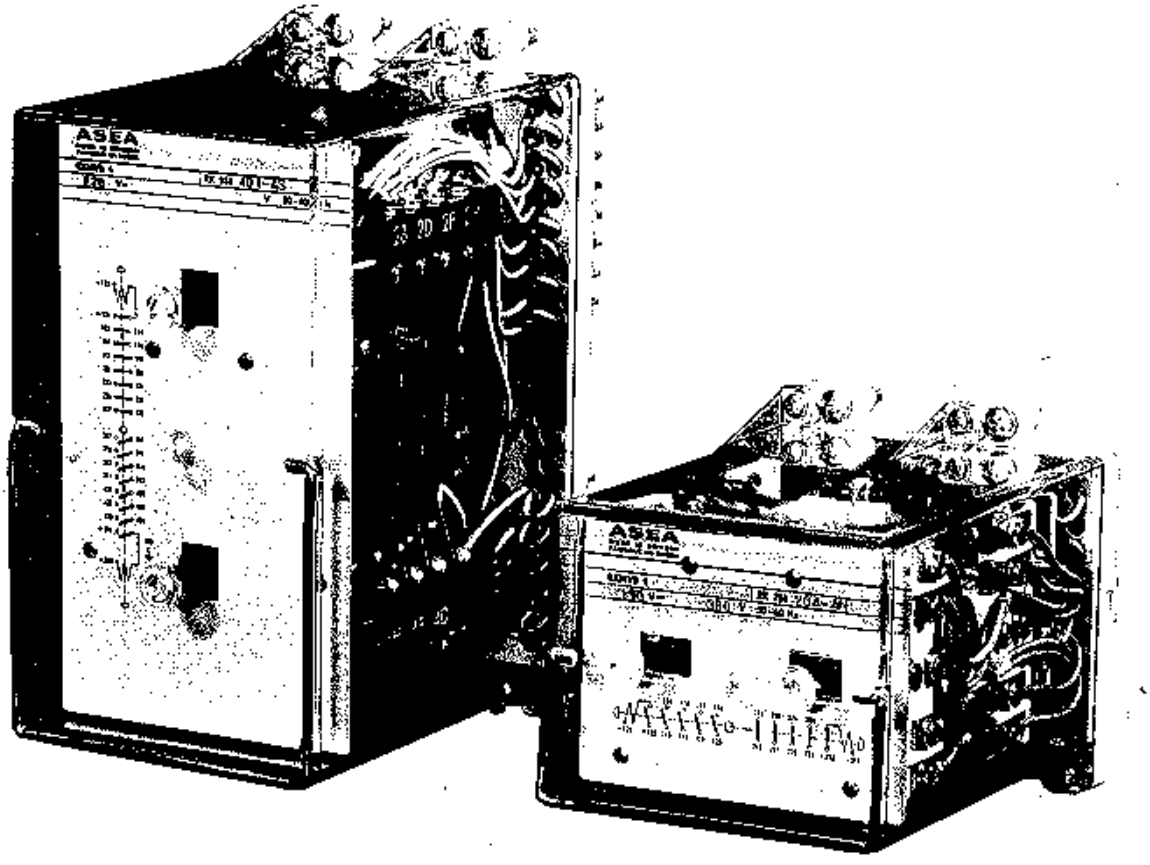
Throw-over relays type RXMVB 2 and RXMVB 4

- With 8 or 14 contacts divided in two groups.
- Requires no permanent energisation – contacts in series with the coils interrupt the supply after operation.
- Highly resistant to vibrations – the relay is retained in its operated position by permanent-magnetic forces.
- For d.c. or a.c. voltage supply.
- With mechanical indication of its position – (which also permits manual operation).
- Utilised, among other things, as auxiliary relay in operating, indicating and protective circuits when it is required that the relay does not drop out when the supply voltage is interrupted or when manual or electrical resetting of the relay is required.
- Tropic-resistant design

RXMVB is suitable for the following applications:

- For switching of the tripping circuits of a protective relay between the usual circuit-breaker and a back-up-breaker
- On equipments with many contacts in a switching device, e.g. a central selector switch for remote control of plants. In this way, a large selector switch can be replaced by a small one with a few contacts that operate throw-over relays and the lay-out of the wiring can be simplified.
- In control equipment instead of auxiliary relays and contactors, the upper temperature limit of which can be exceeded if the supply voltage varies above the normal limits (80–110 % of the rated voltage).



(91203)

Design and mode of operation

The RXMVB 2 and RXMVB 4 throw-over relays are of electromagnetic type and are available for both d.c. and a.c. supply. The relays have 8 or 14 contacts divided in two groups.

The design of the throw-over relay is shown schematically in Fig. 1. When the relay is de-energised, the contacts in the one group are closed and those in the other group are open (with symmetrical sets of contacts). The relay is latched in both positions by a permanent magnet in the centre limb of the core. When the left-hand coil in the figure is supplied with direct current of the correct polarity, a flux is generated in the core which counter-acts the flux of the permanent magnet. The force of the permanent magnet is overcome and the spring forces in the contacts force the relay over to the other position, whereupon the supply to the left-hand coil is interrupted as the contact in series with the coil is opened. The relay is now latched in the other position by the permanent magnet.

The a.c. relay changes position during the first half cycle when the alternating current flows in such a direction that the force of the permanent magnet is overcome.

The relay requires no supply to hold it in position as the permanent magnet retains the armature in the one or the other position when the supply to the contact in series with the coil has been interrupted.

If the relay, after being supplied with a voltage which exceeds the upper limit of the operating range (110 % of U_n), is reset by hand, the relay remains in the reset position as the flux from the coil is then greater than that from the permanent magnet.

For certain voltages, the same relay can be used for both d.c. and a.c. circuits, in which case one of the coil circuits is supplied with e.g. 110 V d.c. and the other with 380 V, 50–60 Hz.

The relay coils can be interference-suppressed with e.g. diodes, see the ordering tables.

RXMVB is tested at 2500 V, 50 Hz for 1 min. The relay has bridge contacts and in the basic version these are symmetrically adjusted, i.e. the relay has e.g. 7 closing and 7 opening contacts. On request, the relay can be supplied with other contact arrangements, see ordering data.

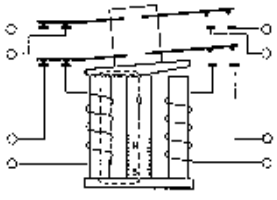


Fig. 1. Schematic diagram

Technical data

Rated voltage	See ordering table	
Operating range[1]	80–110 % of rated voltage	
Max. voltage between lines	450 V d.c./400 V a.c.	
Test voltage	2500 V, 50 Hz, 1 min	
Power consumption	**RXMVB 2**	**RXMVB 4**
At rated voltage, d.c.	2.5 W	4 W
a.c.	13 VA	13 VA
Operating times	**RXMVB 2**	**RXMVB 4**
On d.c., for make contacts	20 ms	25 ms
for break contacts	15 ms	15 ms
On a.c., for make contacts	10–30 ms	10–25 ms
for break contacts	5–25 ms	5–20 ms
Permissible ambient temperature	−25°C to +55°C	
Mechanical life		
On d.c.	Approx. 10 million operations	
On a.c.	Approx. 0.5 million operations	
Weight	**RXMVB 2**	**RXMVB 4**
	Approx. 0.5 kg	Approx. 1 kg
Contact data		
Max. voltage between lines	450 V d.c./400 V a.c.	
Current carrying capacity		
Continuous	10 A	
For 1 s	50 A	
Ability to make and conduct		
For 200 ms inductive load $L/R \geqslant 10$ ms	30 A	
For 1 s	20 A	
For 1 s, 2 parallel-connected contacts	30 A	
Breaking capacity		
On a.c., max. 250 V, $P.F. \geqslant 0.1$	20 A	
On d.c., $L/R \leqslant 40$ ms		
single contacts		
48 V	12 A	
55 V	10 A	
110 V	3 A	
125 V	2,5 A	
220 V	1 A	
250 V	0,8 A	
two series connected contacts		
48 V	20 A	
55 V	20 A	
110 V	10 A	
125 V	10 A	
220 V	3 A	
250 V	2,5 A	

[1] Provided that it is not manually operated, a d.c. relay can be used for up to 150 % of the rated voltage

Ordering

The Cat. No. is to be supplemented with a letter code which represents the voltage. The letter code is selected from the tables on the right.
Interference-suppressing diodes can be connected across the coils as follows:

RXMVB 2: 111–121, 221–211. 111 and 221 are not shown in the symbols.

RXMVB 4: 111–122, 214–212. 111 and 214 are not shown in the symbols.

Selection table for d.c. voltage; RXMVB 2

Rated voltage, V	24	48	55	110	125	220	250
Letter code	**AD**	**AH**	**AK**	**AN**	**AP**	**AS**	**AT**

Selection table for d.c. voltage; RXMVB 4

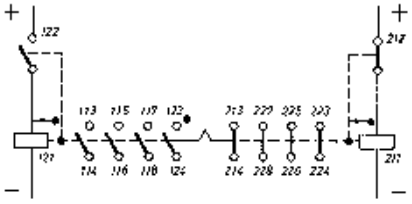
Rated voltage, V	24	48–55	110	125	220	250
Letter code	**AD**	**AH**	**AN**	**AP**	**AS**	**AT**

Selection table for a.c. voltage, 50–60 Hz; RXMVB 2 and RXMVB 4

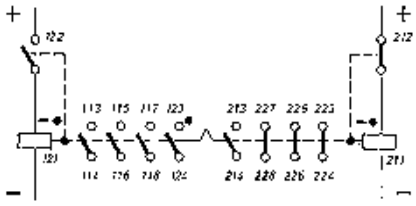
Rated voltage, V	24	55	110–127	220	380
Letter code	**DD**	**AB**	**AD**	**AH**	**AN**

RXMVB 2

The symbols show the relay after energising the coil 121–122 or after manual operation of the right pushbutton



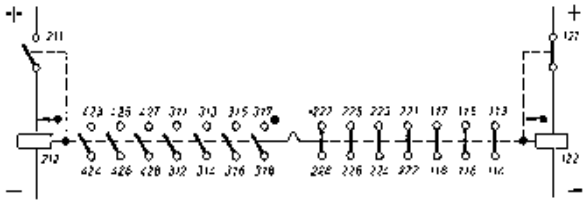
Cat. No.
RK 251 204–



Cat. No.
RK 251 206–

RXMVB 4

The symbols show the relay after energising the coil 211–212 or after manual operation of the upper pushbutton



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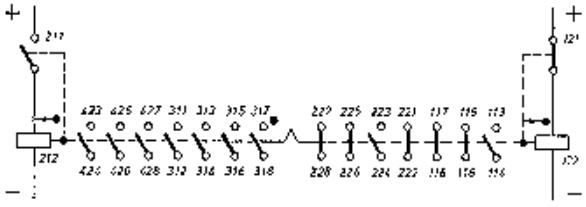
RK 251 401–



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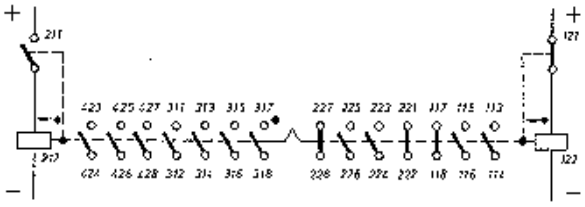


Cat. No.
RK 251 403–

Operation and indication

RXMVB 2 and RXMVB 4 have indicating knobs which can also be used to operate the relay manually.
When the right-hand knob of RXMVB 2 and the upper knob of RXMVB 4 are depressed, the relay takes up the position as shown in the contact symbol in the ordering table.
The relays can also be supplied with covers which have pushbuttons for external manual operation.

Maintenance

Under normal conditions, the relays require no special maintenance. They should be protected against moisture and corrosive atmospheres. The relay covers must be in place.

Installation

The RXMVB 2 and 4 relays are included in the COMBIFLEX modular system and require a space equivalent to 2S 12C and 4S 12C respectively. S and C are modular units where the height S = 44.45 mm and the width C = 7 mm.
RXMVB is intended to be screwed to a terminal base which can be mounted in an equipment frame, case or in a panel base. The panel base can be mounted on a wall or a panel and can be fitted with front screw-type terminals.
The d.c. relays are polarity-dependent and the pin terminals for the coil are therefore marked with + and – in the symbol.

Reference publications

Auxiliary relays
Catalogue RK 21-10 E

Remanence relay type RXMVE 1
Catalogue RK 25-11 E

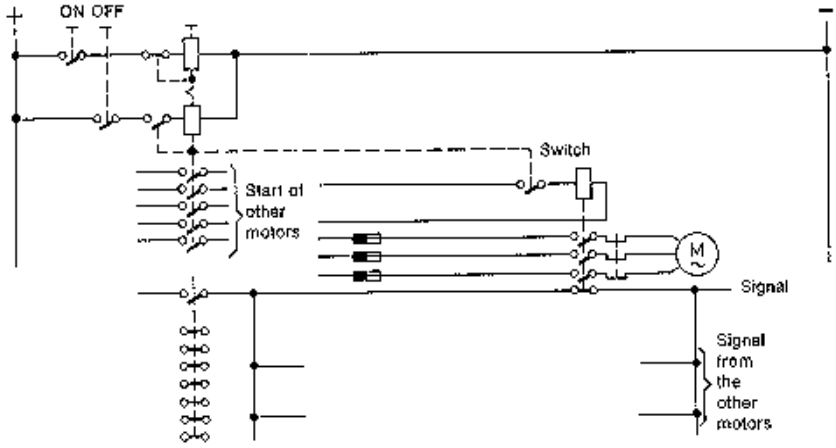
COMBIFLEX modular system
Catalogue RK 92-10 E

Installation, testing and maintenance of protective relays
Information RK 926-100 E

Index of printed matter
Information RK 000-100 E

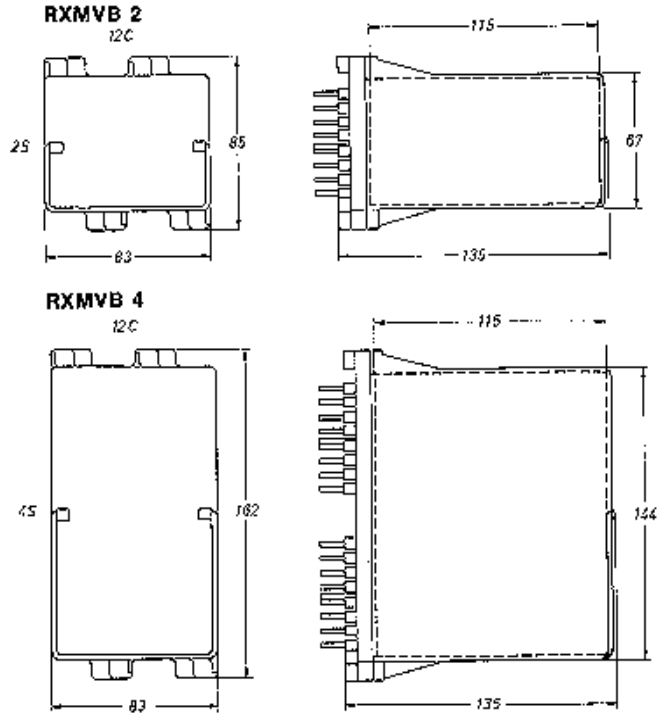
Example of application

A number of motors are to run continuously from when the ON impulse is given to when the OFF impulse is given. As the contacts of the throw-over relay in the operating circuit of the motor starter are in the closed position, the motors will be restarted if the voltage to the motors should be interrupted and then later be recovered. If one or more of the motors should stop, despite the fact that the throw-over relay is in the ON position, a signal will be given.



Dimension drawings

Dimensions i mm. The design, data and dimensions are subject to modification without notice.



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