Industrial plugin electromagnetic relays

Relays for general application

For plug-in sockets: 35 mm rail mount acc. to EN 60715; panel mounting
Miniature dimensions
Cadmium - free contacts
AC and DC coils
Recognitions, certifications, directives: RoHS, CE
Standards: EN61810-1:2008 (electromechanical relays); EN61984:2002, EN60998-2-1:2001, EN60664-1:2003 (sockets)

Table 1: Technical data

	ERM2	ERM4
Number and type of contacts	2 CO	4 CO
Contact material	AgNi	
Rated / max. switching voltage AC	250 V / 440 V	250 V / 250 V
Min. switching voltage	10 V	10 V AgNi, 10 V AgNi/Au 0,2 µm, 5 V AgNi/Au 5 µm
Rated load (capacity) AC1 AC15 AC3 DC1 DC13	 12 A / 250 V AC 3 A / 120 V 1,5 A / 240 V 370 W (single-phase motor) 12 A / 24 V DC (see Fig. 3) 0,22 A / 120 V 0,1 A / 250 V	 6 A / 250 V AC 1,5 A / 120 V 0,75 A / 240 V (C300) 125 W (single-phase motor) 6 A / 24 V DC (see Fig. 3) 0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current	5 mA	
Max. inrush current	24 A	12 A
Rated current	12 A	6 A
Max. breaking capacity AC1	3 000 VA	1 500 VA
Min. breaking capacity	0,3 W	0,3 W AgNi, 0,3 W AgNi/Au 0,2 µm, 0,1 W AgNi/Au 5 µm
Contact resistance	≤ 100 mΩ	
Max. operating frequency (cycles/hour) • at rated load AC1 • no load	 1 200 18 000	
Coil data		
Rated voltage 50/60 Hz AC DC	See table 2	
Must release voltage	AC: ≥ 0,2 Un DC: ≥ 0,1 Un	
Operating range of supply voltage	see Table 2	
Rated power consumption AC DC	1,6 VA 0,9 W	
Insulation according to EN 60664-1		
Insulation rated voltage	250 V AC	
Rated surge voltage	4 000 V 1,2 / 50 µs	2 500 V 1,2 / 50 µs
Overvoltage category	III	II
Insulation pollution degree	3	2
Dielectric strength • between coil and contacts • contact clearance • pole - pole	 2 500 V AC type of insulation: basic 1 500 V AC type of clearance: micro-disconnection 2 500 V AC type of insulation: basic	
Contact - coil distance • clearance • creepage	 ≥ 2,5 mm ≥ 4 mm	 ≥ 1,6 mm ≥ 3,2 mm
General data		
Operating / release time (typical values)	AC: 10 ms / 8 ms DC: 13 ms / 3 ms	
Electrical life • resistive AC1 • cosΦ	 $> 10^5$ 12 A, 250 V AC see Fig. 2	 $> 10^5$ 6 A, 250 V AC see Fig. 2
Mechanical life (cycles)	> 2 x 107	
Dimensions (L x W x H)	27,5 x 21,2 x 35,6 mm	
Weight	35 g	
Ambient temperature • storage • operating	 -40...+85 °C AC: -40...+55 °C DC: -40...+70 °C	
Cover protection category	IP40 EN 60529	
Environmental protection	RTI EN 61810-3	
Shock resistance (NO/NC)	10 g / 15 g	
Vibration resistance	5 g 10...150 Hz	

Description

Relays of general application - the new relays are distinguished by a modern design, high reliability and functionality. Modern technology ensures high quality and effectiveness

- ERM2 (2 pole CO »change over contact«) and ERM4 (4 pole CO »change over contact«)
- AC and DC coils (12, 24V), 230V AC only
- Two types of plug-in sockets (M type and T type)
- Accessories (connection terminals, retainer/retractor clips, description plates, RC modules...)
- Colour: grey

Features

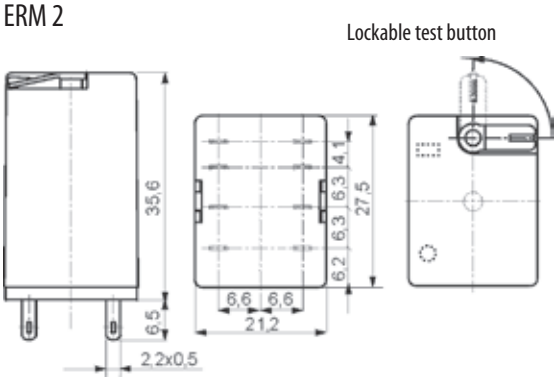
- Mechanical indicator with lockable test button as a standard version
- Optional: Light indication (with built in smd LED)
- Mounting on panel or 35 mm rail in accordance with EN60715
- Improved electromagnet efficiency
- Strong insulation between contacts (applied polyamide PA66)
- Cadmium - free contacts

Table 2: Coil data

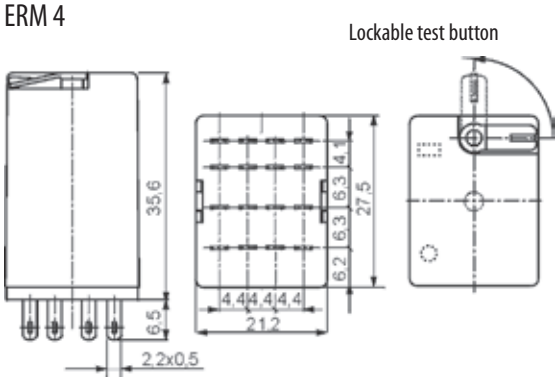
Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 55 °C)
DC voltage version					
012DC	12	160	± 10%	9,6	13,2
024DC	24	640	± 10%	19,2	26,4
AC voltage version					
024AC	24	158	± 10%	19,2	26,4
230AC	230	16100	± 10%	184,0	253,0

Dimensions

ERM 2

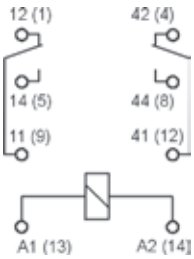


ERM 4

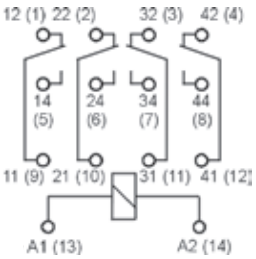


Connection diagram (pin side view)

ERM 2



ERM 4



Ordering designation

ERMX-YYYYYZ

X – Number of contacts:
4: 4 CO (4 changeover)
2: 2 CO (2 changeover)

YYYYY – Coil code:
024AC: 24 V AC 50/60 Hz
230AC: 230 V AC 50/60 Hz
024DC: 24 V DC
012DC: 12 V DC

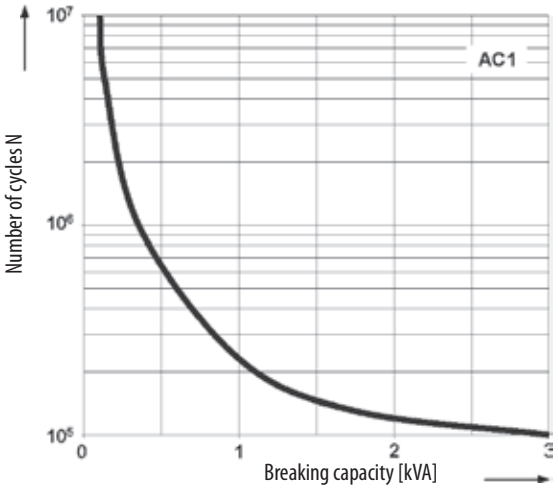
Z – Additional features:
L – Light indicator (smd LED - red)

Example:
ERM4-024DCL Electromagnetic relay for plugin sockets with mechanical indication and lockable test button, four changeover contacts, coil voltage 24 V DC with light indicator.

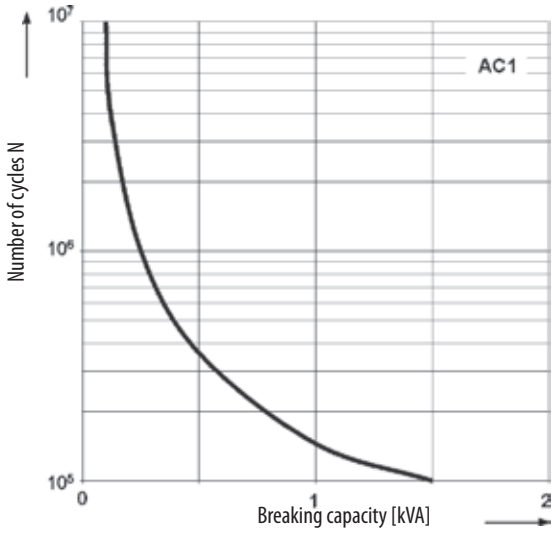
Meaning of color codes:

Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour Fig. 1

ERM 2

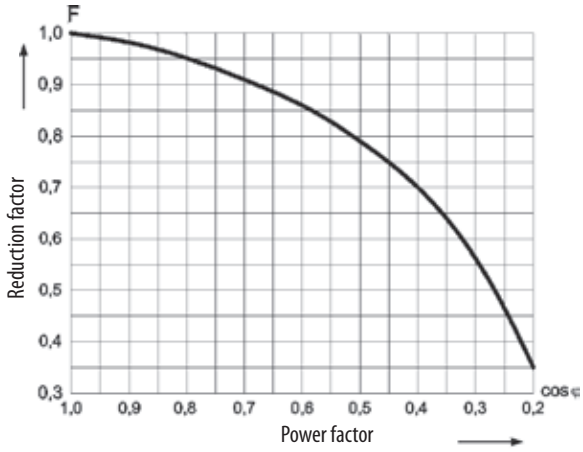


ERM 4



Electrical life reduction factor at AC inductive load Fig. 2

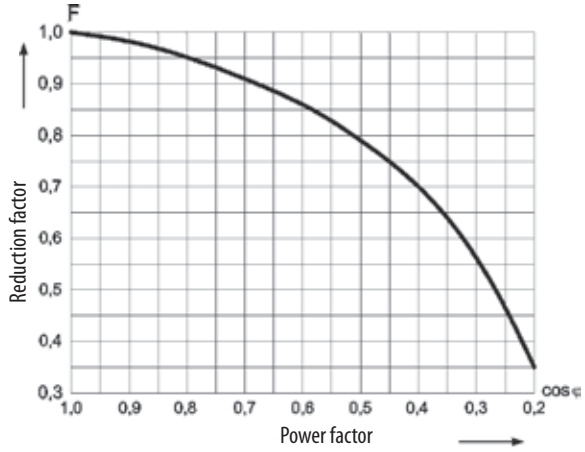
ERM 2



$N_{cos\varphi} = N \times F$

N - electrical life at AC1

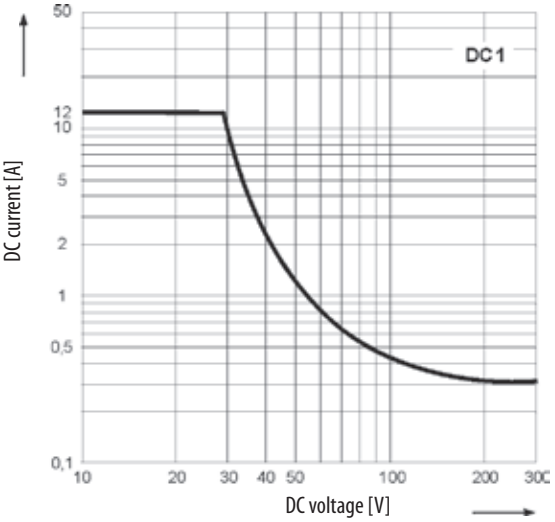
ERM 4



$N_{cos\varphi} = N \times F$

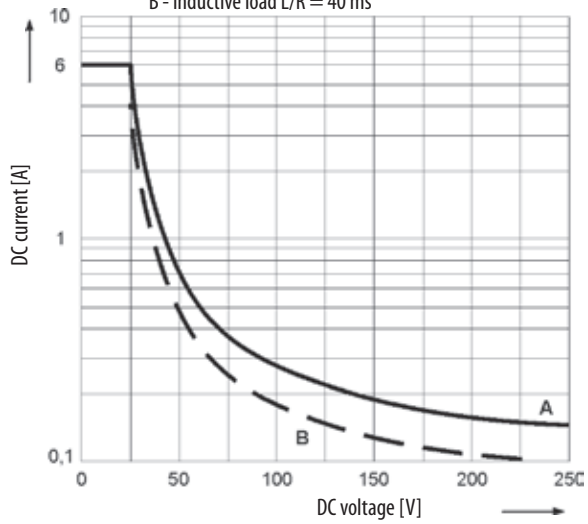
Max. DC resistive load breaking capacity Fig. 3

ERM 2



ERM 4

A - resistive load DC1
B - inductive load L/R = 40 ms



DATA

Contact material selection for different load types ERM2 and ERM4

AgNi - for resistive or inductive loads,

Mounting

ERM 2

Relays ERM2 are designed for mounting in plug-in sockets, standard version includes mechanical indicator with lockable front test button.
Relays ERM2 are designed for:

- screw terminals plug-in
- sockets ERB2-T*
- sockets ERB2-M* with clip ER-CLIP
- 35 mm rail mount acc. to EN 60715 or
- panel mounting

protecting modules type ERC are available as accessories /sockets (see below)

*Plug-in sockets ERB2-T and ERB2-M may be linked with interconnection strip type ER-TERMINAL

ERM 4

Relays ERM4 are designed for mounting in plug-in sockets, standard version includes mechanical indicator with lockable front test button.
Relays ERM4 are designed for:

- screw terminals plug-in
- sockets ERB4-T*
- sockets ERB4-M* with clip ER-CLIP
- 35 mm rail mount acc. to EN 60715 or
- panel mounting

protecting modules type ERC are available as accessories /sockets (see below)

*Plug-in sockets ERB4-T and ERB4-M may be linked with interconnection strip type ER-TERMINAL

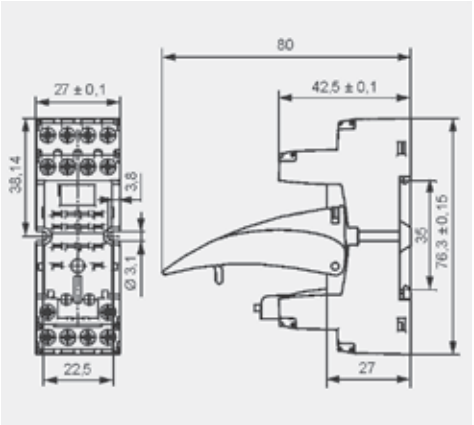
Plugin Sockets And Accessories

ERB2-T and ERB4-T
Plugin sockets (base) type T

- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- 35 mm rail mount acc. to EN 60715
- or on panel mounting
- 76,3 x 27 x 42,5(80) mm*

*In the bracket the height of socket with retainer / retractor clip is shown.

Dimensions



Two poles

12A, 300 V AC

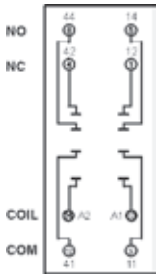
For ERM2

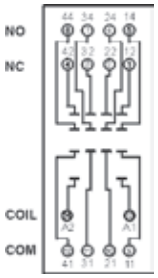
Four poles

6A, 300 V AC

For ERM4

Connection diagram



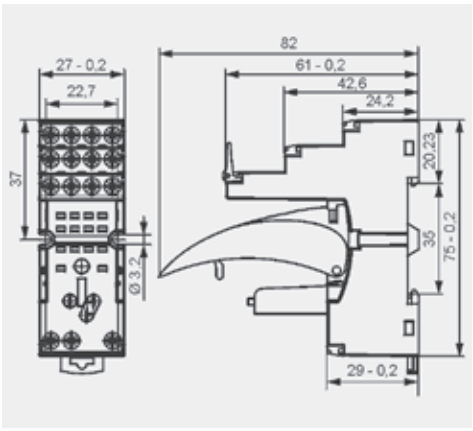


ERB2-M and ERB4-M
Plugin sockets (base) type M

- Screw terminals
- Max. tightening moment for the terminal: 0,7 Nm
- 35 mm rail mount acc. to EN 60715
- or on panel mounting
- 75 x 27 x 61(82) mm*

*In the bracket the height of socket with retainer / retractor clip is shown.

Dimensions



Two poles

12A, 300 V AC

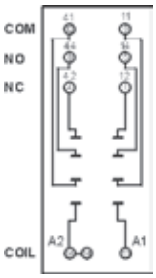
For ERM2

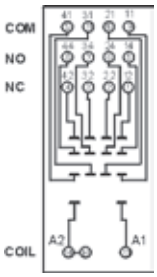
Four poles

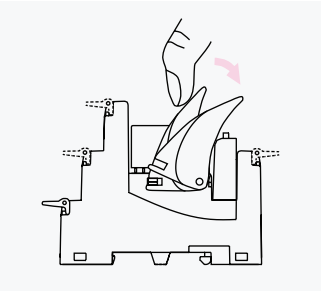
6A, 300 V AC

For ERM4

Connection diagram







Removing the relay from the socket with a retrainer / retractor clip

Protection RC modules type ERC

It protects against EMC disturbance and limits overvoltage.	A2 A1	6/24 V AC 110/240 V AC	ERC-024AC ERC-230AC

Modules are parallely connected with relay coil

Interconnection strip ER-CLIP

designed for the co-operation with plug-in sockets ERB of miniature industrial relays, which are equipped with screw terminals; sockets and relays are mounted on 35 mm rail mount acc. to EN 60715.

- bridges common input signals (coil terminals A1 or A2)
- maximum permissible current is 10 A / 250 V AC,
- possibility of connection of 6 sockets or relays

Dimensions