RM84
miniature relays

RM84

RM84-...-01 ❶

- CTI 250
- 5000 V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- AC and DC coils, insulation class F: 155 °C
- Available special versions: with transparent cover ❶; with the increased dielectric strength of the contact clearance ❷
- Compliance with standard EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts			2 CO, 2 NO ❷
Contact material			**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage		AC	250 V / 400 V
Min. switching voltage			5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)		AC1	8 A / 250 V AC
		AC15	3 A / 120 V 1,5 A / 240 V (B300)
		DC1	8 A / 24 V DC (see Fig. 3)
		DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Motor load	acc. to UL 508		1/3 HP 240 V AC, 3,6 FLA, single-phase motor ❸
	AC3 acc. to IEC 60947-4-1		0,37 kW 240 V AC, single-phase motor
Min. switching current			5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current			15 A $AgSnO_2$
Rated current			8 A
Max. breaking capacity		AC1	2 000 VA
Min. breaking capacity			0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance			≤ 100 mΩ
Max. operating frequency	• at rated load AC1		600 cycles/hour
	• no load		72 000 cycles/hour

Coil data

Rated voltage		50/60 Hz AC	12, **24**, 48, 60, 110, 115, 120, 220, **230**, 240 V
		DC	3, 5, 6, 9, **12**, 18, **24**, 36, 48, 60, 110 V
Must release voltage			AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage			see Tables 1, 2 and Fig. 4, 5
Rated power consumption		AC	0,75 VA
		DC	0,4 ... 0,48 W

Insulation according to EN 60664-1

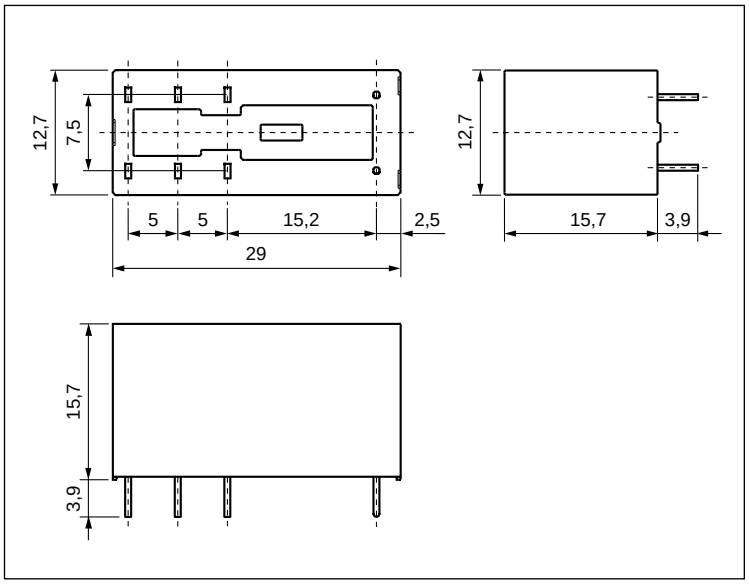
Insulation rated voltage			400 V AC
Rated surge voltage			4 000 V 1,2 / 50 µs
Overvoltage category			III
Insulation pollution degree			3
Dielectric strength	• between coil and contacts		5 000 V AC type of insulation: reinforced
	• contact clearance		1 000 V AC type of clearance: micro-disconnection
			2 000 V AC contacts 2 NO, type of clearance: full-disconnection ❷
	• pole - pole		2 500 V AC type of insulation: basic
Contact - coil distance		• clearance	≥ 10 mm
		• creepage	≥ 10 mm

General data

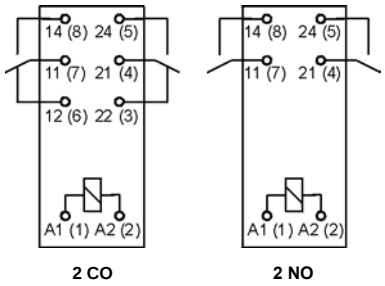
Operating / release time (typical values)			7 ms / 3 ms
Electrical life (number of cycles)	• resistive AC1		$> 10^5$ 8 A, 250 V AC
	• cosφ		see Fig. 2
	• DC L/R=40 ms		$> 10^5$ 0,15 A, 220 V DC
Mechanical life (cycles)			$> 3 \times 10^7$
Dimensions (L x W x H) / Weight			29 x 12,7 x 15,7 mm / 14 g
Ambient temperature		• storage	-40...+85 °C
(non-condensation and/or icing)		• operating	AC: -40...+70 °C DC: -40...+85 °C -20...+70 °C ❶
Cover protection category			IP 40 ❶ or **IP 67** EN 60529
Environmental protection			RTII ❶ or **RTIII** EN 61810-7
Shock resistance			20 g
Vibration resistance		(NO/NC)	10 g / 5 g 10...150 Hz
Solder bath temperature			max. 270 °C
Soldering time			max. 5 s

The data in bold type relate to the standard versions of the relays. ❶ Relate to the special versions - relays with transparent cover, only available with IP 40 and RTII, operating temperature -20...+70 °C. See "Ordering codes". ❷ Relate to the special versions - relays with two normally open contacts 2 NO, with increased contact gap - dielectric strength 2000 V AC, only available with DC coils. See "Ordering codes". ❸ For single phase motors for 110-120 V AC do not use motors with higher FLA than given for 240 V AC.

Dimensions



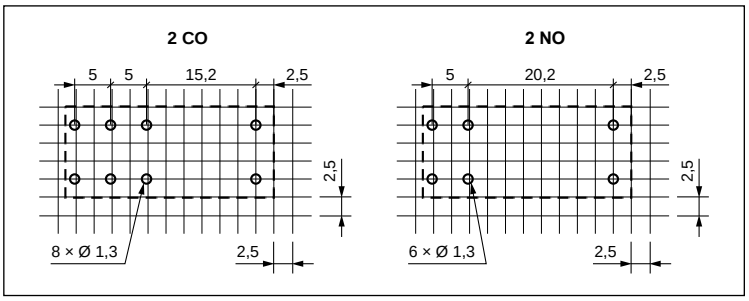
Connection diagrams (pin side view)



2 CO **2 NO**

Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9
Drilling hole: • for relays • for sockets	 Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm	

Pinout (solder side view)



Mounting, sockets and accessories for relays

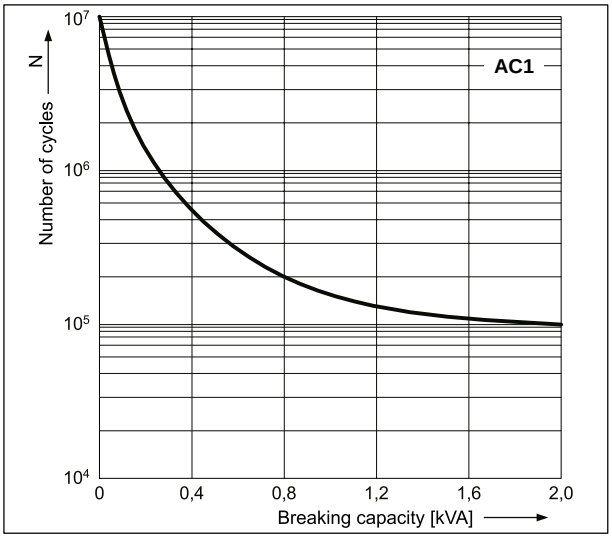
Relays **RM84** ❹ are designed for: • direct PCB mounting • plug-in sockets.

Sockets for RM84	Accessories			Additional features
	Retainer / retractor clips	Spring wire clips	Description plates	
Screw terminals sockets, 35 mm rail mount (acc. to EN 60715) or on panel mounting (one M3 screw)				
GZT80	GZT80-0040	GZM80-0041	GZT80-0035	modules ❻, strips ❼
GZM80	GZT80-0040	GZM80-0041	GZT80-0035	modules ❻, strips ❼
GZS80	GZS-0040	GZM80-0041	TR	modules ❻, strips ❼
GZF80	–	GZM80-0041	–	–
Spring terminals sockets, 35 mm rail mount (acc. to EN 60715)				
GZMB80 ❺	GZMB80-0040	GZM80-0041	TR	modules ❻
Sockets for PCB				
EC 50	–	MP16-2 ❽, MH16-2	–	–
PW80	–	MH16-2	–	–
GD50	–	MP16-2 ❽, MH16-2, GD-0016	–	–

❹ For relays with transparent cover: the distance at least 5 mm between the relays mounted side by side. ❺ Sockets GZMB80: wire connection - see page 361. ❻ Signalling / protecting modules type M... - see page 376. ❼ Interconnection strips ZGGZ80 - see page 377. ❽ Plastic clips MP16-2.

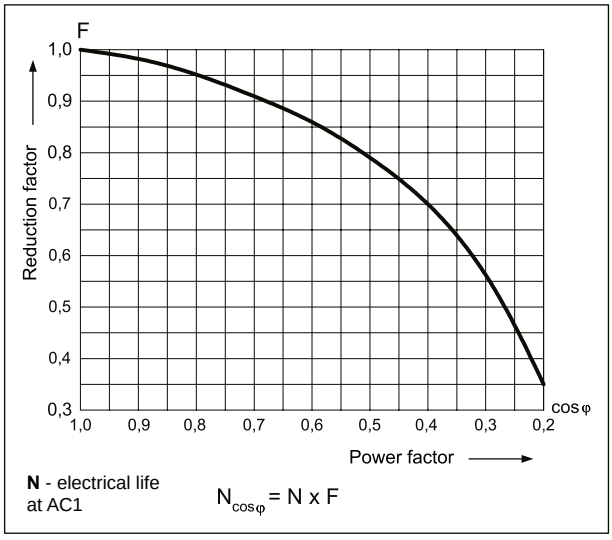
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour

Fig. 1



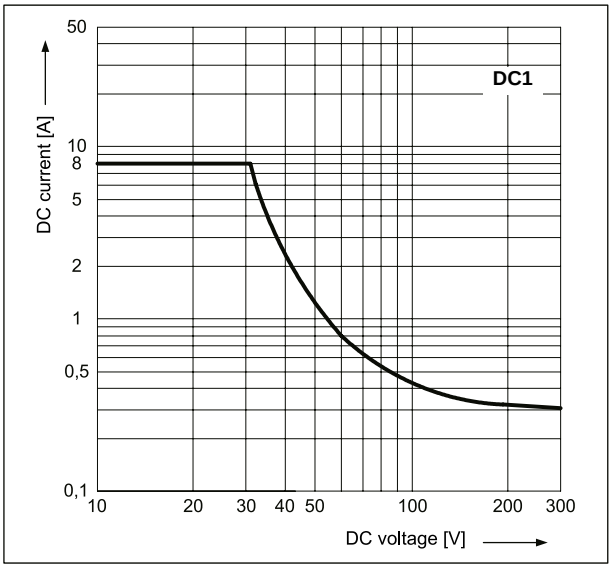
Electrical life reduction factor at AC inductive load

Fig. 2



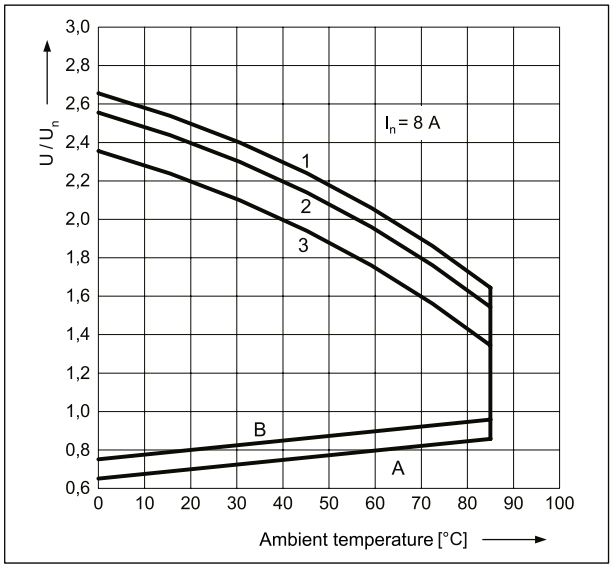
Max. DC resistive load breaking capacity

Fig. 3



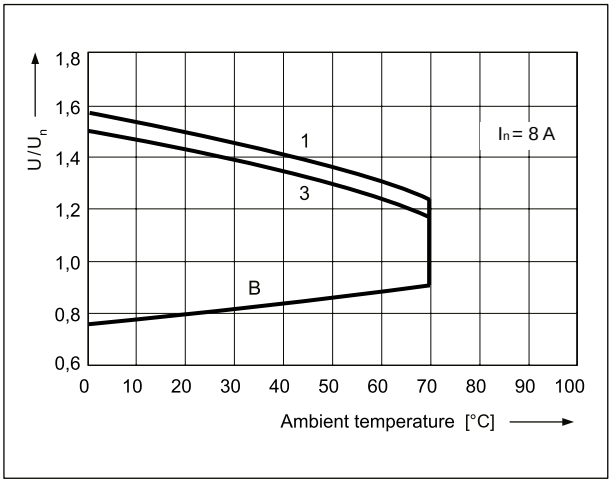
Coil operating range - DC

Fig. 4



Coil operating range - AC 50 Hz

Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

Coil data - DC voltage version Table 1

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 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	**12**	**360**	**± 10%**	**8,4**	**30,6**
1018	18	710	± 10%	12,6	45,9
1024	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

The data in bold type relate to the standard versions of the relays.

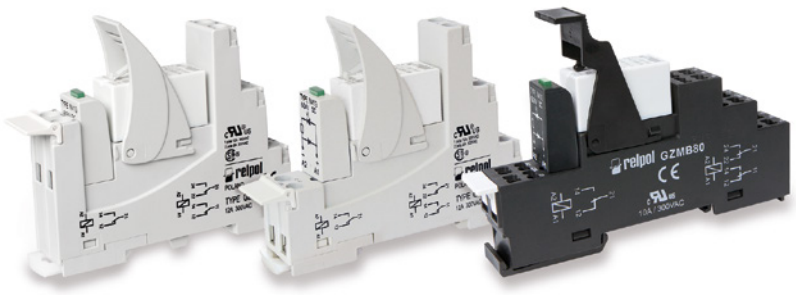
Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
5012	12	100	± 10%	9,6	13,2
5024	**24**	**400**	**± 10%**	**19,2**	**28,8**
5048	48	1 550	± 10%	38,4	57,6
5060	60	2 600	± 10%	48,0	72,0
5110	110	8 900	± 10%	88,0	132,0
5115	115	9 600	± 10%	92,0	138,0
5120	120	10 200	± 10%	96,0	144,0
5220	220	35 500	± 10%	176,0	264,0
5230	**230**	**38 500**	**± 10%**	**184,0**	**276,0**
5240	240	42 500	± 15%	192,0	288,0

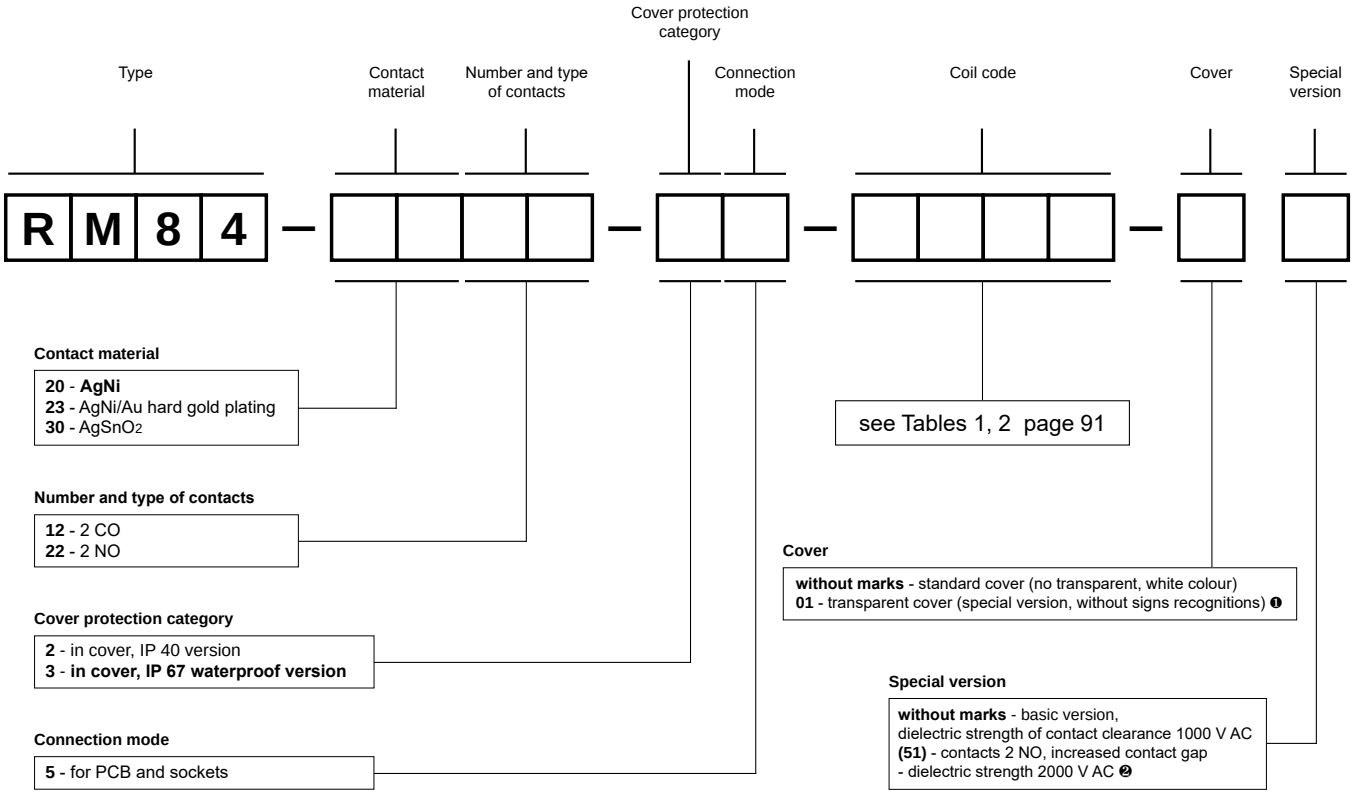
The data in bold type relate to the standard versions of the relays.

Interface relays PI84 (PI85)

set: relay RM84 (RM85) + socket GZT80 (GZM80, GZMB80) - see pages 198-225



Ordering codes



❶ **01**: special version - relay with transparent cover, only available with IP 40 and RTII, operating temperature -20...+70 °C ❷ **(51)**: special version - relay with two normally open contacts 2 NO, with increased contact gap - dielectric strength 2000 V AC, only available with DC coil

Examples of ordering code:

RM84-3012-25-5024 relay **RM84**, for PCB and sockets, two changeover contacts,contact material $AgSnO_2$, coil voltage 24 V AC 50/60 Hz, in standard cover (no transparent, white colour) IP 40

RM84-2012-25-1012-01 relay **RM84**, for PCB and sockets, two changeover contacts, contact material AgNi, coil voltage 12 V DC with transparent cover (special version, without signs recognitions) IP 40

RM84-2322-35-1024 (51) relay **RM84**, special version with increased contact gap, for PCB and sockets, two normally open contacts, contact material AgNi/Au hard gold plating, coil voltage 24 V DC, in standard cover (no transparent, white colour) IP 67