

RM84 / RM85 / RM87

Miniature Electromagnetic Relays



- Miniature dimensions
- 5000 V / 10 mm reinforced insulation
- Available special versions with the increased dielectric strength of the contact clearance
- IP67 flux proof, water proof and sealed cover protection (For IP40 unsealed, contact Altech)
- Cadmium - free contacts
- For PCB and plug-in sockets

Contact Data		RM84	RM85	RM87
No. and type of contacts		DPDT, DPST (2NO)	SPDT, SPST (1NO)	SPDT, SPST (1NO)
Contact material		AgNi	AgNi	AgNi
Rated / max. switching voltage	AC	250 V / 440 V	250 V / 440 V	250 V / 440 V
Min. switching voltage		5 V	5 V	5 V
Rated load (capacity)	AC1	8 A / 250 V AC	16 A / 250 V AC	12 A / 250 V AC
	AC15	3 A / 120 V; 1.5 A / 240 V (B300)	3 A / 120 V; 1.5 A / 240 V (B300)	3 A / 120 V; 1.5 A / 240 V (B300)
	AC3	550 W (single-phase motor)	750 W (single-phase motor)	750 W (single-phase motor)
	DC1	8 A / 24 V DC (see Fig. 3.1)	16 A / 24 V DC (see Fig. 3.2)	12 A / 24 V DC (see Fig. 3.3)
	DC13	0.22 A / 120 V; 0.1 A / 250 V (R300)	0.22 A / 120 V; 0.1 A / 250 V (R300)	0.22 A / 120 V; 0.1 A / 250 V (R300)
Min. switching current		5 mA	5 mA	5 mA
Max. inrush current		12 A	24 A	18 A
Rated current		8 A	16 A	12 A
Max. breaking capacity	AC1	2 000 VA	4 000 VA	3 000 VA
Min. breaking capacity		0.3 W	0.3 W	0.3 W
Contact resistance		≤ 100 mΩ	≤ 100 mΩ	≤ 100 mΩ
Max. operating frequency	AC1	600 cycles/hour 72000 cycles/hour	600 cycles/hour 72000 cycles/hour	600 cycles/hour 72000 cycles/hour
Coil Data				
Rated voltage	50/60 Hz AC	12 ... 240 V	12 ... 240 V	12 ... 240 V
	DC	3 ... 110 V	3 ... 110 V	3 ... 110 V
Must release voltage		AC: ≥ 0.15 U _N ; DC: ≥ 0.1 U _N	AC: ≥ 0.15 U _N ; DC: ≥ 0.1 U _N	AC: ≥ 0.15 U _N ; DC: ≥ 0.1 U _N
Operating range of supply voltage		see page 80 and Fig. 4.1. 5.1	see page 80 and Fig. 4.2. 5.2	see page 80 and Fig. 4.3. 5.3
Rated power consumption	AC	0.75 VA	0.75 VA	0.75 VA
	DC	0.4 ... 0.48 W	0.4 ... 0.48 W	0.4 ... 0.48 W
Insulation				
Insulation rated voltage		400 V AC	400 V AC	400 V AC
Rated surge voltage		4000 V 1.2 / 50 μs	4000 V 1.2 / 50 μs	4000 V 1.2 / 50 μs
Overvoltage category		III	III	III
Insulation pollution degree		3	3	3
Dielectric strength		5000 V AC type of insulation: reinforced	5000 V AC type of insulation: reinforced	5000 V AC type of insulation: reinforced
• between coil and contacts		1000 V AC type of clearance: micro-disconnection	1000 V AC type of clearance: micro-disconnection	1000 V AC type of clearance: micro-disconnection
• contact clearance		2000 V AC contacts DPST (2NO). type of clearance: full-disconnect	2000 V AC contacts DPST (2NO). type of clearance: full-disconnect	2000 V AC contacts SPST (1NO). type of clearance: full-disconnect
• pole - pole		2500 V AC type of insulation: basic	-	-
Contact - coil distance		≥ 10 mm	≥ 10 mm	≥ 10 mm
• clearance		≥ 10 mm	≥ 10 mm	≥ 10 mm
• creepage				
General data				
Operating / release time (typical values)		7 ms / 3 ms	7 ms / 3 ms	7 ms / 3 ms
Electrical life	AC1	> 10 ⁵ ; 8 A. 250 V AC see Fig. 2.1	> 0.7 x 10 ⁵ ; 16 A. 250 V AC see Fig. 2.2	> 10 ⁵ ; 12 A. 250 V AC see Fig. 2.3
• resistive		> 10 ⁵ ; 0.15 A. 220 V DC	> 10 ⁵ ; 0.15 A. 220 V DC	> 10 ⁵ ; 0.15 A. 220 V DC
• cosφ		> 3 x 10 ⁷	> 3 x 10 ⁷	> 3 x 10 ⁷
• DC L/R=40 ms		29 x 12.7 x 15.7 mm	29 x 12.7 x 15.7 mm	29 x 12.7 x 15.7 mm
Mechanical life (cycles)		14 g	14 g	14 g
Dimensions (L x W x H)		-40...+85 °C	40...+85 °C	40...+85 °C
Weight		AC: -40...+70 °C DC: -40...+85 °C	AC: -40...+70 °C DC: -40...+85 °C	AC: -40...+70 °C DC: -40...+85 °C
Ambient temperature		IP 67 PN-EN 60529	IP 67 PN-EN 60529	IP 67 PN-EN 60529
• storage		RTIII PN-EN 116000-3	RTIII PN-EN 116000-3	RTIII PN-EN 116000-3
• operating		20 g	30 g	30 g
Cover protection category		10 g / 5 g 10...150 Hz	10 g 10...150 Hz	10 g 10...150 Hz
Environmental protection	(NO/NC)	max. 270 °C	max. 270 °C	max. 270 °C
Shock resistance		max. 5 s	max. 5 s	max. 5 s
Vibration resistance				
Solder bath temperature				
Soldering time				

RM84 / RM85 / RM87

Miniature Electromagnetic Relays

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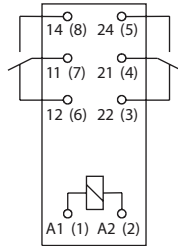
RM84



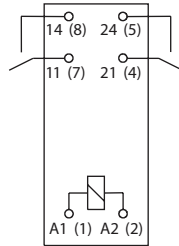
E105728



CONNECTION DIAGRAM



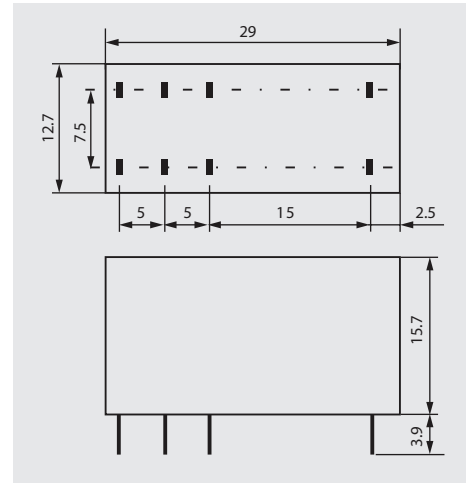
DPDT



DPST (2NO)

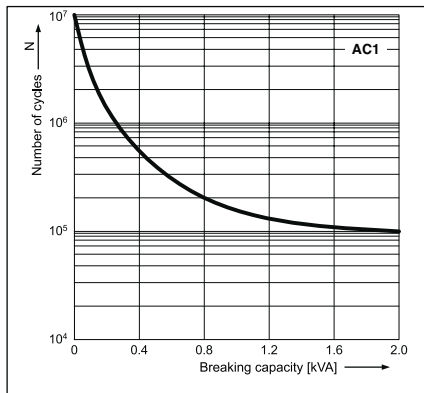
Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0.6	0.5 x 0.9
Drilling hole:		
• for relays	Ø 1.3 + 0.1 mm	
• for sockets	Ø 1.5 + 0.1 mm	

DIMENSIONS

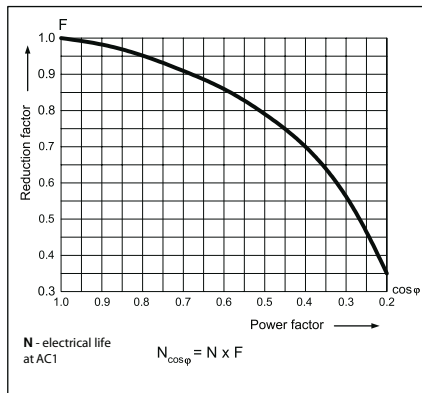


LOAD CHARTS

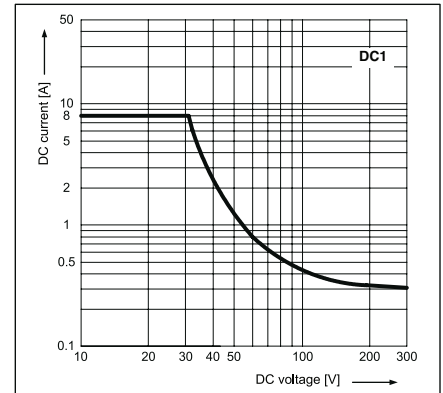
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1.1



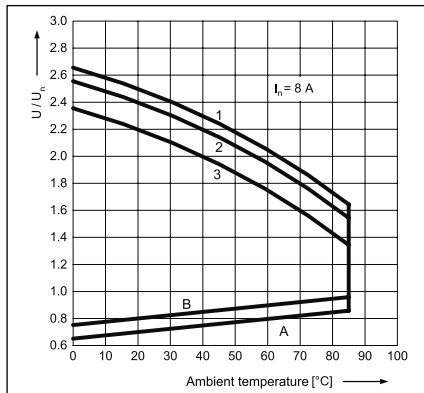
Electrical life reduction factor at AC inductive load Fig. 2.1



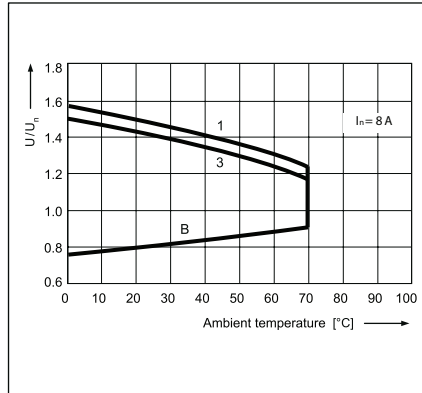
Max. DC resistive load breaking capacity Fig. 3.1



Coil operating range - DC Fig. 4.1



Coil operating range - AC 50 Hz Fig. 5.1



Description of Fig. 4.1 and 5.1

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

RM84 / RM85 / RM87

Miniature Electromagnetic Relays

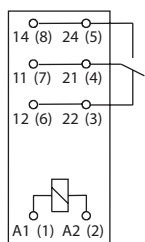


RM85

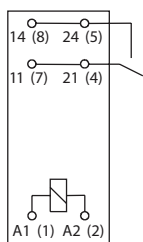


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CONNECTION DIAGRAM



SPDT



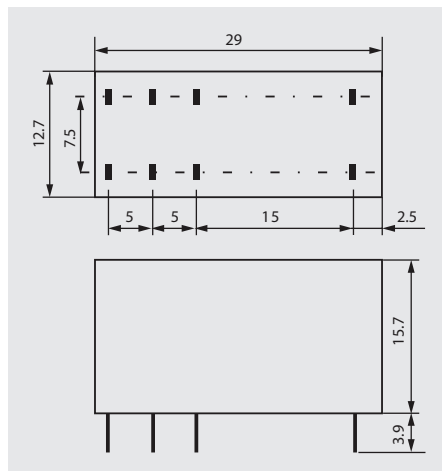
SPST (1NO)

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	Ø 1.3 ± 0.1 mm	
• for sockets	Ø 1.5 ± 0.1 mm	

RM85 terminals are doubled for each contact.

Both terminals are to be used while connecting to load.

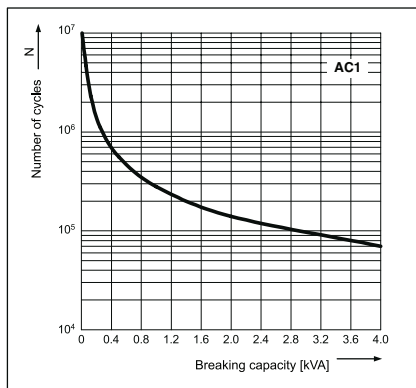
DIMENSIONS



LOAD CHARTS

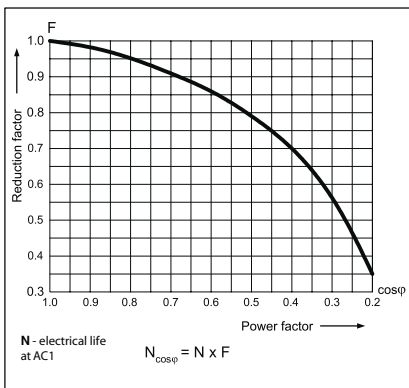
Electrical life at AC resistive load.
Switching frequency: 600 cycles/hour

Fig. 1.2



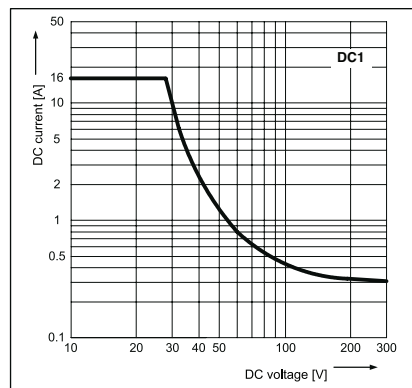
Electrical life reduction factor at AC inductive load

Fig. 2.2



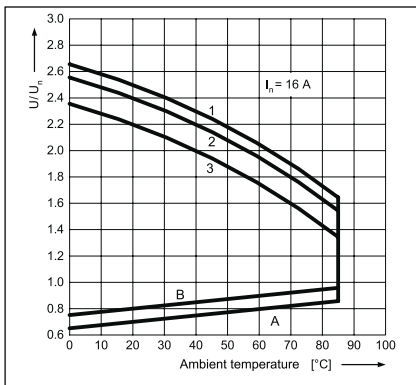
Max. DC resistive load breaking capacity

Fig. 3.2



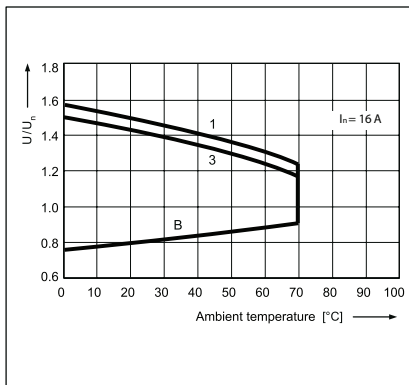
Coil operating range - DC

Fig. 4.2



Coil operating range - AC 50 Hz

Fig. 5.2



Description of Fig. 4.2 and 5.2

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

RM84 / RM85 / RM87

Miniature Electromagnetic Relays

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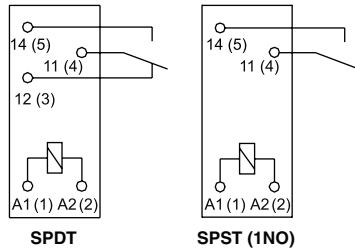


RM87



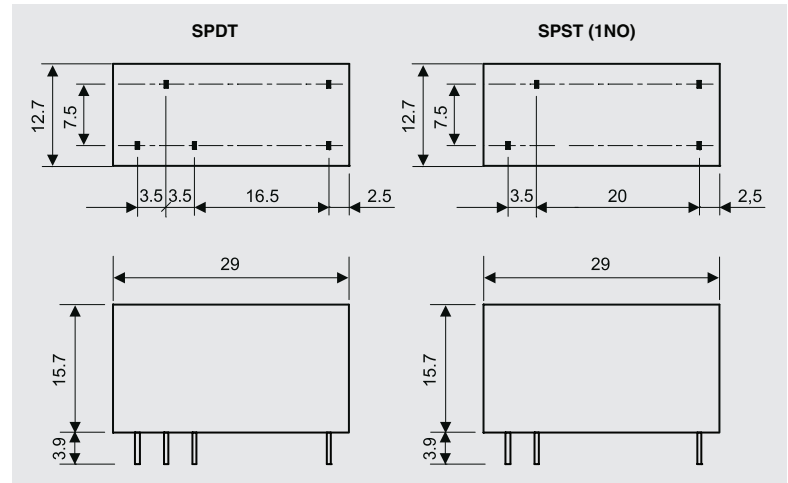
E105728

CONNECTION DIAGRAM



Terminal (pin)	A1(1); A2(2)	12(3); 11(4); 14(5)
[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		

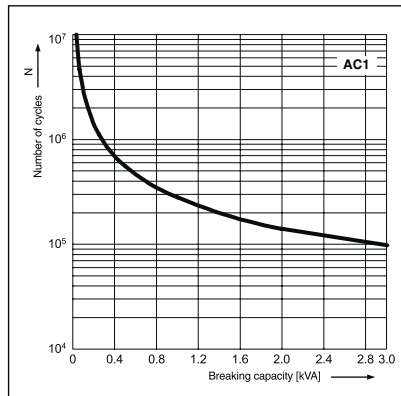
DIMENSIONS



LOAD CHARTS

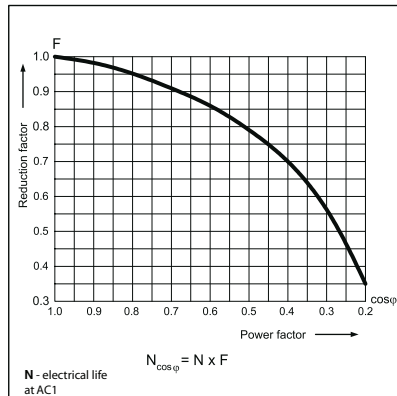
Electrical life at AC resistive load.
Switching frequency: 600 cycles/hour

Fig. 1.3



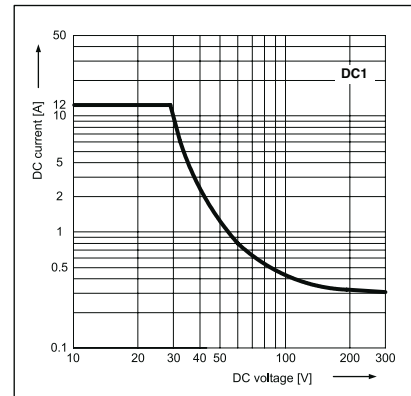
Electrical life reduction factor at AC inductive load

Fig. 2.3



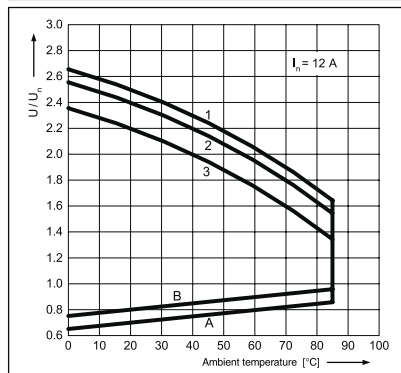
Max. DC resistive load breaking capacity
- standard version

Fig. 3.3



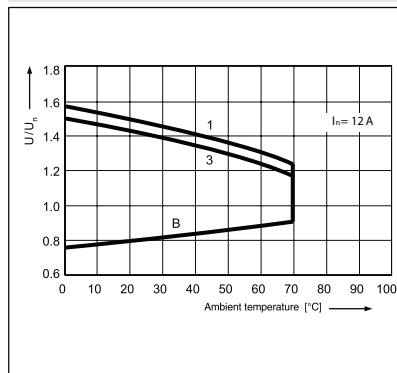
Coil operating range - DC
- standard version

Fig. 4.3



Coil operating range - AC 50 Hz

Fig. 5.3



Description of Fig. 4.3 and 5.3

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

RM84 / RM85 / RM87

Miniature Electromagnetic Relays

R84 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
▶ RM84-2012-35-1012	12	DC	360	8.4	30.6
▶ RM84-2012-35-1024	24	DC	1440	16.8	61.2
▶ RM84-2012-35-1110	110	DC	25200	77.0	280.0
▶ RM84-2012-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM84-2012-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R84 DPST(2NO) AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
▶ RM84-2022-35-1012	12	DC	360	8.4	30.6
▶ RM84-2022-35-1024	24	DC	1440	16.8	61.2
▶ RM84-2022-35-1110	110	DC	25200	77.0	280.0
▶ RM84-2022-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM84-2022-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R85 SPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
▶ RM85-2011-35-1012	12	DC	360	8.4	30.6
▶ RM85-2011-35-1024	24	DC	1440	16.8	61.2
▶ RM85-2011-35-1110	110	DC	25200	77.0	280.0
▶ RM85-2011-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM85-2011-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R85 SPST(1NO) AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
▶ RM85-2021-35-1012	12	DC	360	8.4	30.6
▶ RM85-2021-35-1024	24	DC	1440	16.8	61.2
▶ RM85-2021-35-1110	110	DC	25200	77.0	280.0
▶ RM85-2021-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM85-2021-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R87 SPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
▶ RM87N-2011-35-1012	12	DC	360	8.4	30.6
▶ RM87N-2011-35-1024	24	DC	1440	16.8	61.2
▶ RM87N-2011-35-1110	110	DC	25200	77.0	280.0
▶ RM87N-2011-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM87N-2011-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R87 SPST(1NO) AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
▶ RM87N-2021-35-1012	12	DC	360	8.4	30.6
▶ RM87N-2021-35-1024	24	DC	1440	16.8	61.2
▶ RM87N-2021-35-1110	110	DC	25200	77.0	280.0
▶ RM87N-2021-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM87N-2021-35-5230	230	AC 50/60Hz	38500	184.0	276.0

* waterproof version

▶ **BOLD** - Regular stocked items.

RM84 / RM85 / RM87

Miniature Electromagnetic Relays - Plug-in Sockets and Accessories **Altech**[®]

GZT80 (for RM84 / RM85)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75.3 x 15.5 x 61(67) mm*
Two poles, 5 mm pinout
12 A, 300 V AC

AL
E22891



GZT80



ZGGZ80 (see page 110)



GZT80-0040



GZM80-0041**

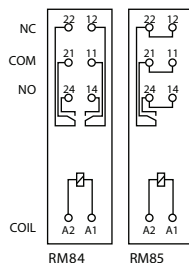


GZT80-0035

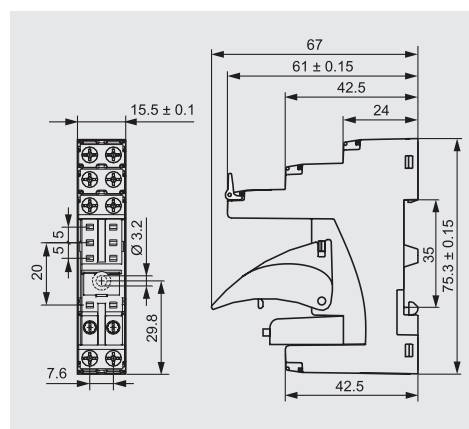


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



GZM80 (for RM84 / RM85)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
78.1 x 15.9 x 61(66.5) mm*
Two poles, 5 mm pinout
12 A, 300 V AC

AL
E22891



GZM80



ZGGZ80 (see page 110)



GZT80-0040



GZM80-0041**

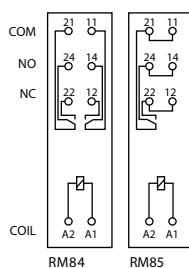


GZT80-0035

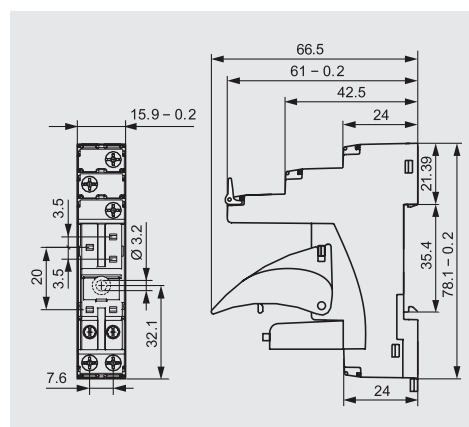


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



* In parenthesis is the height of the socket with plastic retainer clip. ** For lower profile application.

All accessories are sold separately.

RM84 / RM85 / RM87

Miniature Electromagnetic Relays - Plug-in Sockets and Accessories

GZT92 (for RM87)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75.3 x 15.5 x 61(67) mm*
One pole, 3,5 mm
12 A, 300 V AC



GZT92



ZGGZ80 (see page 110)



GZT80-0040



GZM80-0041**

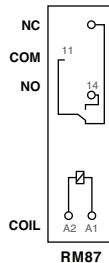


GZT80-0035

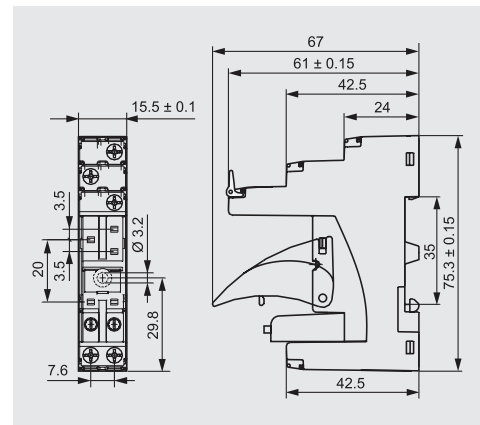


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



GZM92 (for RM87)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
78.1 x 15.9 x 61(66.5) mm*
One pole, 3,5 mm pinout
12 A, 300 V AC



GZM92



ZGGZ80 (see page 110)



GZT80-0040



GZM80-0041**

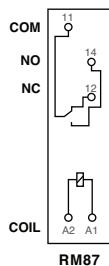


GZT80-0035

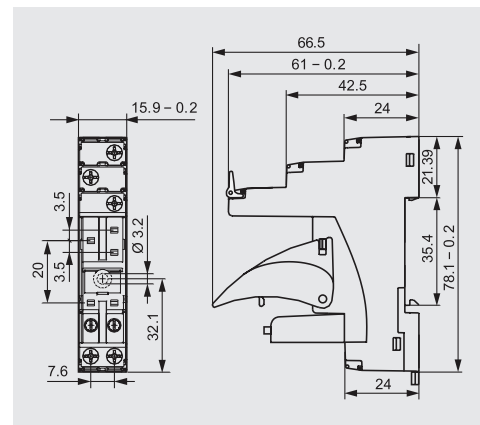


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



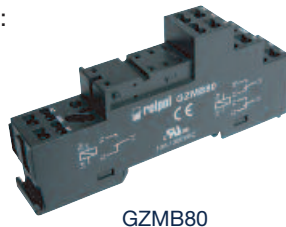
* In parenthesis is the height of the socket with plastic retainer clip. ** For lower profile application.

All accessories are sold separately.

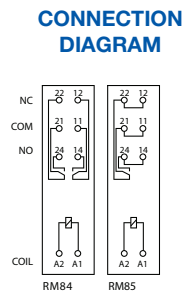
Miniature Electromagnetic Relays - Plug-in Sockets and Accessories **Altech®**

GZMB80 (for RM84, RM85)

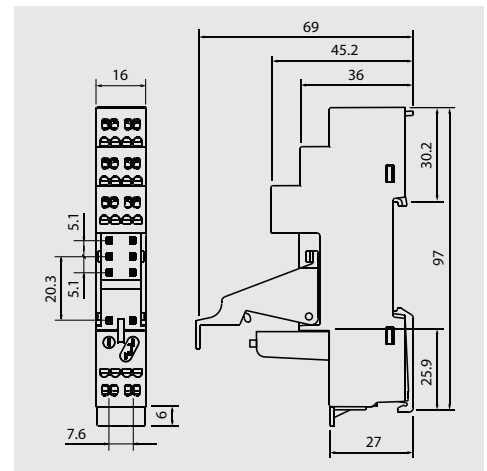
Spring terminals
Max. cross section of the cables:
1 x 0.2...1.5 mm²
(1 x 24...16 AWG)
Stripping length deinsulation:
9...11 mm
35 mm rail mount
acc. to PN-EN 60715
97 x 16 x 45.2(69) mm*
Two poles, 5 mm pinout
10 A, 300 V AC



GZMB80



DIMENSIONS



UL
E22891



GZMB80-0040



GZM80-0041**



TR



Module type M... (see page 113)

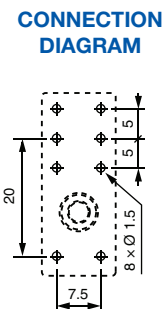
GD50 (for RM84, RM85)

For RM84, RM85

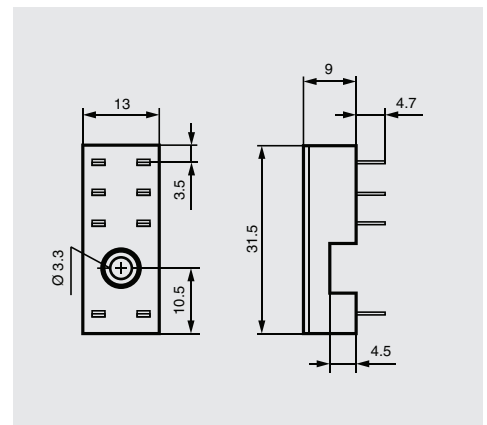
For PCB
31.5 x 13 x 9 mm
Two poles, 5 mm pinout
8 A, 300 V AC



GD50



DIMENSIONS



UL
E22891

MH16-2

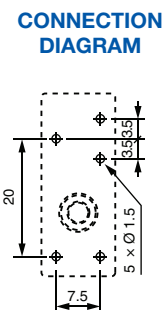
GD35 (for RM87N)

For RM87

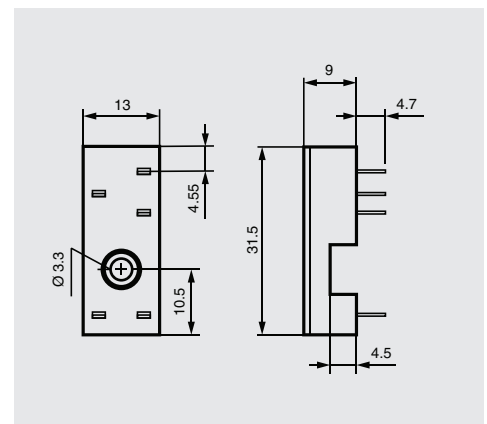
For PCB
31.5 x 13 x 9 mm
One pole, 3.5 mm pinout
12 A, 300 V AC



GD35



DIMENSIONS



RA[®]
E22891



MH16-2

* In parenthesis is the height of the socket with plastic retainer clip. ** For lower profile application.

All accessories are sold separately.