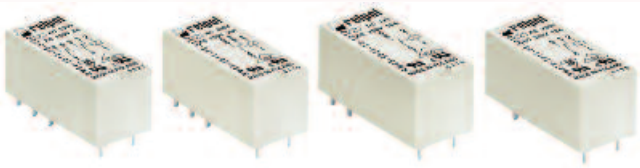
# RM84 / RM85 / RM87
## Miniature Electromagnetic Relays



E105728

- 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

| | | RM84 | RM85 | RM87 |
|---|---|---|---|---|
| **Contact Data** | | | | |
| **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** | | **8A** | **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 | | | | |
| • at rated load | AC1 | 600 cycles/hour | 600 cycles/hour | 600 cycles/hour |
| • no load | | 72000 cycles/hour | 72000 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 | | | | |
| • between coil and contacts | | 5000 V AC type of insulation: reinforced | 5000 V AC type of insulation: reinforced | 5000 V AC type of insulation: reinforced |
| • contact clearance | | 1000 V AC type of clearance: micro-disconnection<br>2000 V AC contacts DPST (2NO).<br>type of clearance: full-disconnect | 1000 V AC type of clearance: micro-disconnection<br>2000 V AC contacts DPST (2NO).<br>type of clearance: full-disconnect | 1000 V AC type of clearance: micro-disconnection<br>2000 V AC contacts SPST (1NO).<br>type of clearance: full-disconnect |
| • pole - pole | | 2500 V AC type of insulation: basic | – | – |
| Contact - coil distance | | | | |
| • clearance | | ≥ 10 mm | ≥ 10 mm | ≥ 10 mm |
| • creepage | | ≥ 10 mm | ≥ 10 mm | ≥ 10 mm |
| **General data** | | | | |
| Operating / release time (typical values) | | 7 ms / 3 ms | 7 ms / 3 ms | 7 ms / 3 ms |
| Electrical life | | | | |
| • resistive | AC1 | > $10^5$; 8 A. 250 V AC | > 0.7 x $10^5$; 16 A. 250 V AC | > $10^5$; 12 A. 250 V AC |
| • cosφ | | see Fig. 2.1 | see Fig. 2.2 | see Fig. 2.3 |
| • DC L/R=40 ms | | > $10^5$; 0.15 A. 220 V DC | > $10^5$; 0.15 A. 220 V DC | > $10^5$; 0.15 A. 220 V DC |
| Mechanical life (cycles) | | > 3 x $10^7$ | > 3 x $10^7$ | > 3 x $10^7$ |
| Dimensions (L x W x H) | | 29 x 12.7 x 15.7 mm | 29 x 12.7 x 15.7 mm | 29 x 12.7 x 15.7 mm |
| Weight | | 14 g | 14 g | 14 g |
| Ambient temperature | | | | |
| • storage | | -40...+85 °C | 40...+85 °C | 40...+85 °C |
| • operating | | AC: -40...+70 °C DC: -40...+85 °C | AC: -40...+70 °C DC: -40...+85 °C | AC: -40...+70 °C DC: -40...+85 °C |
| Cover protection category | | IP 67 PN-EN 60529 | IP 67 PN-EN 60529 | IP 67 PN-EN 60529 |
| Environmental protection | | RTIII PN-EN 116000-3 | RTIII PN-EN 116000-3 | RTIII PN-EN 116000-3 |
| Shock resistance | (NO/NC) | 20 g | 30 g | 30 g |
| Vibration resistance | | 10 g / 5 g 10...150 Hz | 10 g 10...150 Hz | 10 g 10...150 Hz |
| Solder bath temperature | | max. 270 °C | max. 270 °C | max. 270 °C |
| Soldering time | | max. 5 s | max. 5 s | max. 5 s |

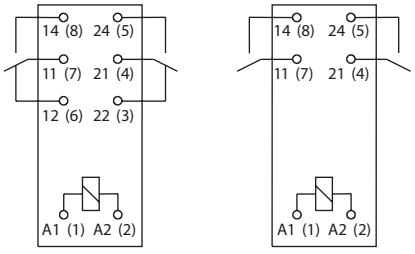


DATA SUBJECT TO CHANGE WITHOUT NOTICE

## RM84

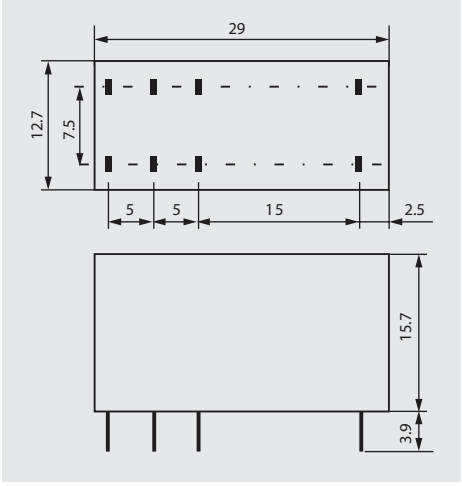
E105728

### CONNECTION DIAGRAM



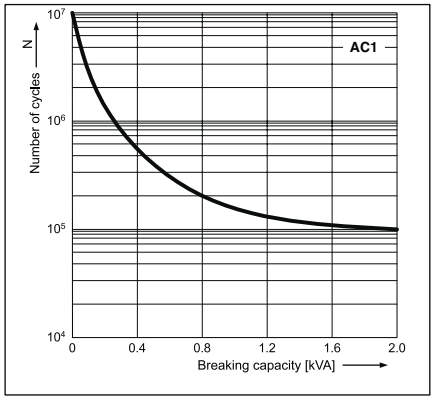

| Terminal (pin) | A1(1); A2(2) | 22(3); 21(4); 24(5); 12(6); 11(7); 14(8) |
|---|---|---|
| [mm] | Ø 0.6 | 0.5 x 0.9 |
| Drilling hole:<br>• for relays<br>• for sockets | <br>Ø 1.3 + 0.1 mm<br>Ø 1.5 + 0.1 mm | |

### DIMENSIONS

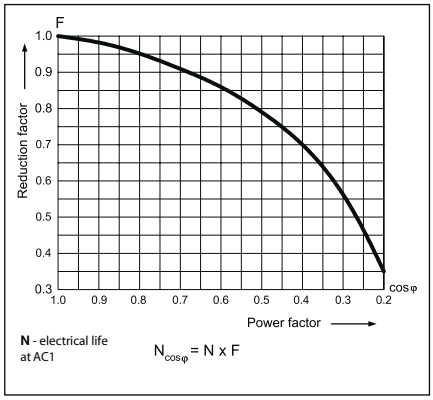



### LOAD CHARTS

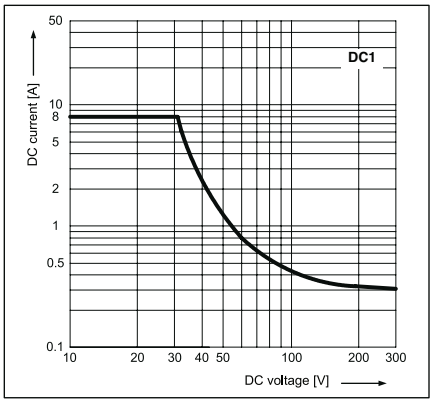
**Electrical life at AC resistive load. Switching frequency: 600 cycles/hour** Fig. 1.1



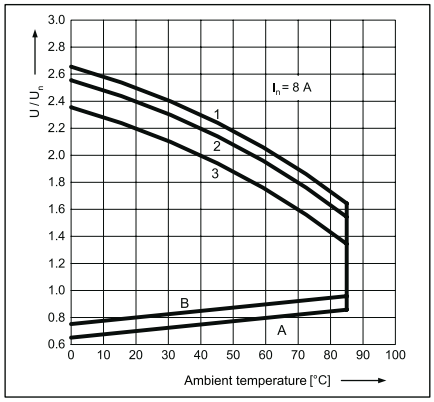

**Electrical life reduction factor at AC inductive load** Fig. 2.1



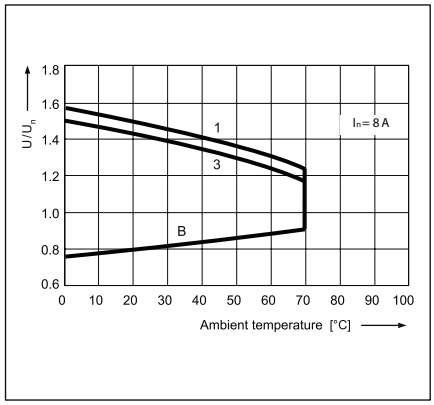

**Max. DC resistive load breaking capacity** Fig. 3.1




**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



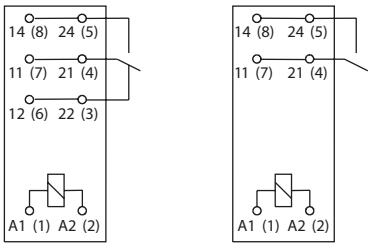

DATA SUBJECT TO CHANGE WITHOUT NOTICE

# RM84 / RM85 / RM87
## Miniature Electromagnetic Relays

## RM85

E105728

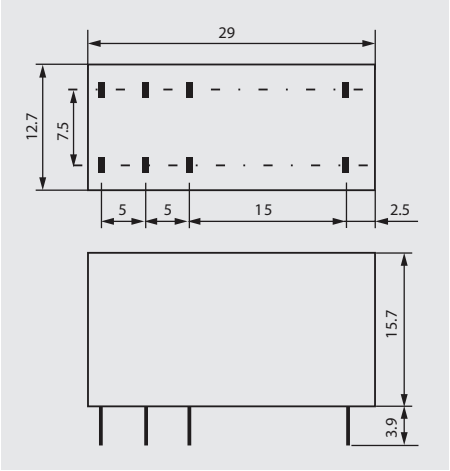
### CONNECTION DIAGRAM




| 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:<br>• for relays<br>• for sockets | Ø 1.3 + 0.1 mm<br>Ø 1.5 + 0.1 mm | |

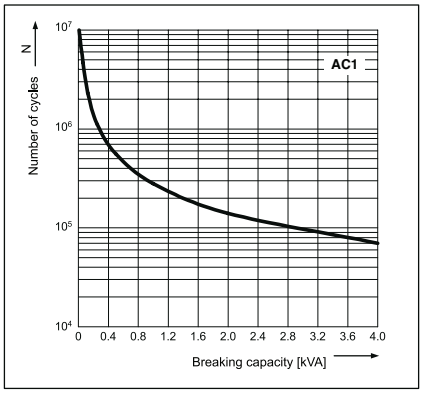
**RM85** terminals are doubled for each contact.
Both terminals are to be used while connecting to load.

### DIMENSIONS

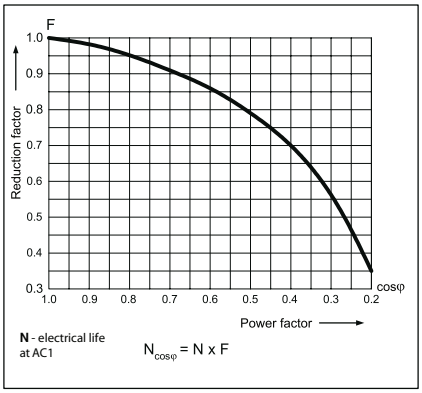



### LOAD CHARTS

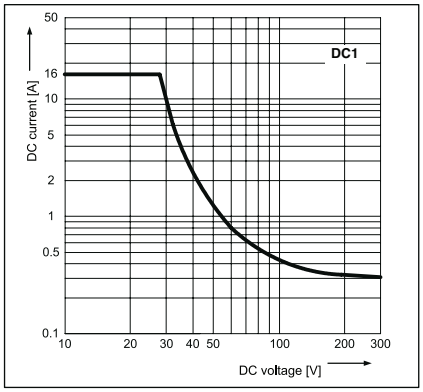
**Electrical life at AC resistive load. Switching frequency: 600 cycles/hour** Fig. 1.2



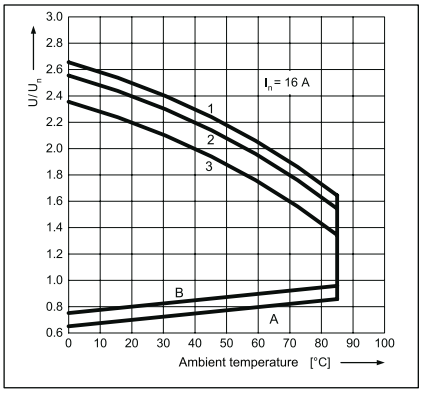

**Electrical life reduction factor at AC inductive load** Fig. 2.2



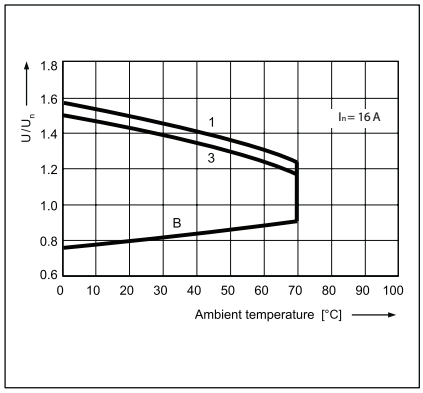

**Max. DC resistive load breaking capacity** Fig. 3.2




**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

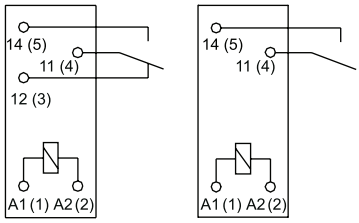


DATA SUBJECT TO CHANGE WITHOUT NOTICE

## RM87

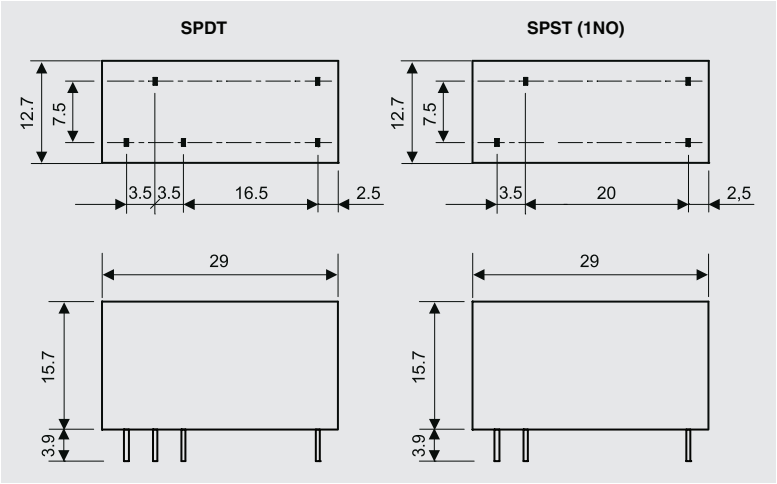
E105728

### CONNECTION DIAGRAM



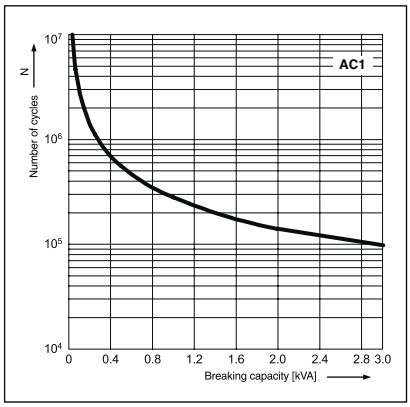

| Terminal (pin) | A1(1); A2(2) | 12(3); 11(4); 14(5) |
|---|---|---|
| [mm] | Ø 0.6 | 0.5 x 0.9 |
| Drilling hole:<br>• for relays<br>• for sockets | Ø 1.3 + 0.1 mm<br>Ø 1.5 + 0.1 mm | |

### DIMENSIONS

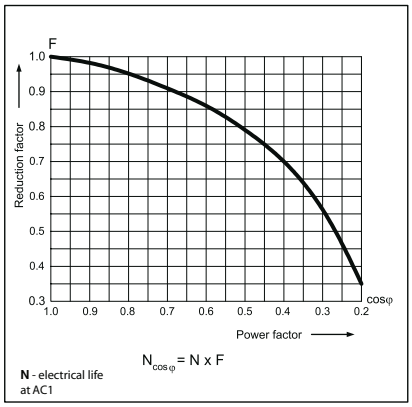



### LOAD CHARTS

**Electrical life at AC resistive load. Switching frequency: 600 cycles/hour** Fig. 1.3

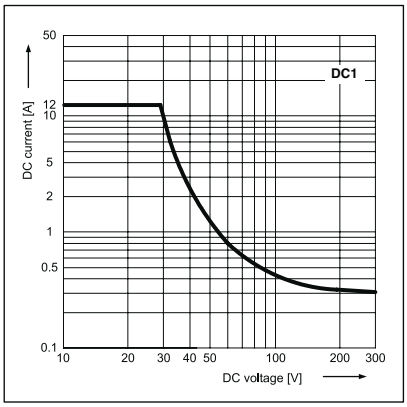



**Electrical life reduction factor at AC inductive load** Fig. 2.3

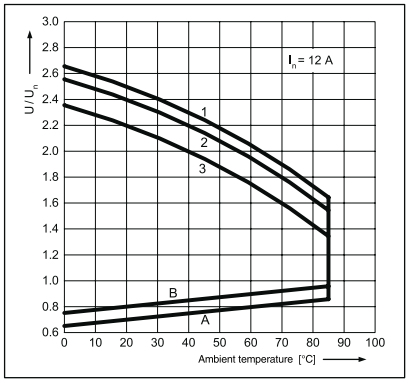



$N_{\cos\varphi} = N \times F$

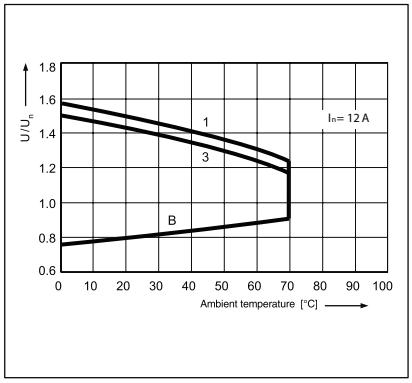
**Max. DC resistive load breaking capacity - standard version** Fig. 3.3




**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) | Coil operating range 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) | Coil operating range 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) | Coil operating range 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) | Coil operating range 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) | Coil operating range 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) | Coil operating range 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.**



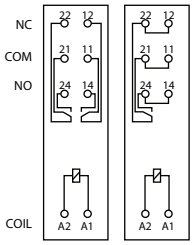
DATA SUBJECT TO CHANGE WITHOUT NOTICE

### GZT80 (for RM84 / RM85)

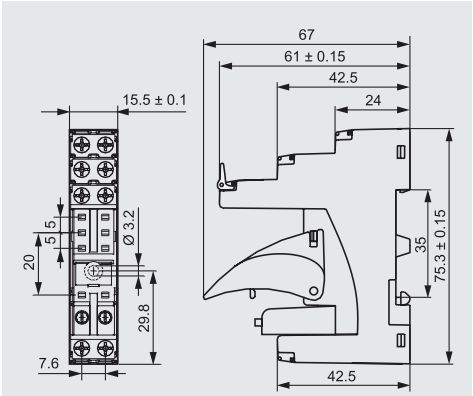
Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75.3 x 15.5 x 61(67) mm*
Two poles, 5 mm pinout
12 A, 300 V AC

E22891

**CONNECTION DIAGRAM**




**DIMENSIONS**



**ZGGZ80** *(see page 110)*



**GZT80-0040**

**GZM80-0041****



**GZT80-0035**

**Module type M...** *(see page 113)*

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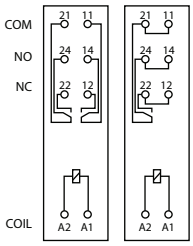
### GZM80 (for RM84 / RM85)

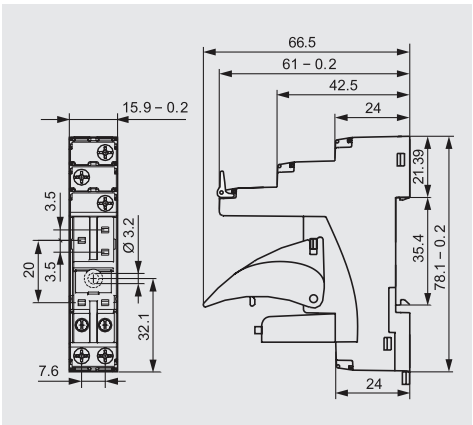
Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
78.1 x 15.9 x 61(66.5) mm*
Two poles, 5 mm pinout
12 A, 300 V AC

E22891

**CONNECTION DIAGRAM**




**DIMENSIONS**



**ZGGZ80** *(see page 110)*



**GZT80-0040**

**GZM80-0041****

**GZT80-0035**

**Module type M...** *(see page 113)*

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

All accessories are sold separately.




DATA SUBJECT TO CHANGE WITHOUT NOTICE

### GZT92 (for RM87)

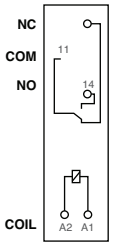
Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75.3 x 15.5 x 61(67) mm*
One pole, 3,5 mm
12 A, 300 V AC

E22891

GZT92

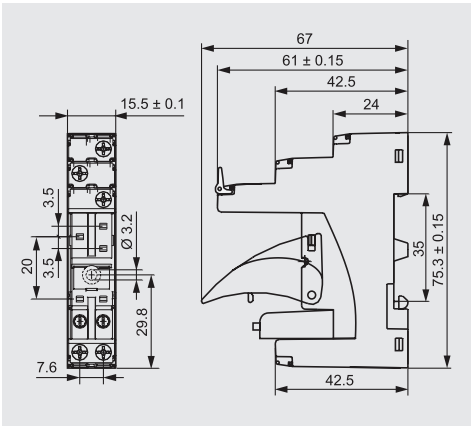
**ZGGZ80** *(see page 110)*

**CONNECTION DIAGRAM**




**RM87**

**DIMENSIONS**






**GZT80-0040**

**GZM80-0041****



**GZT80-0035**

**Module type M...** *(see page 113)*

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### GZM92 (for RM87)

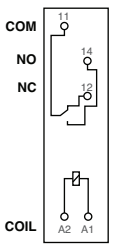
Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
78.1 x 15.9 x 61(66.5) mm*
One pole, 3,5 mm pinout
12 A, 300 V AC

E22891

GZM92

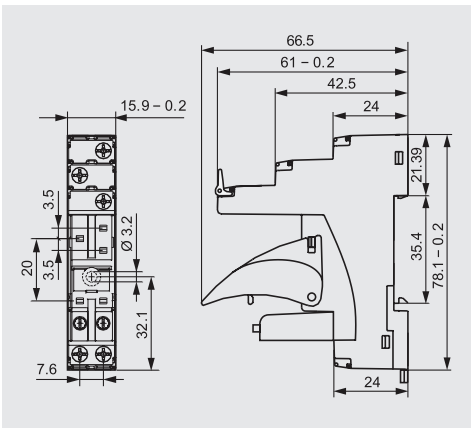
**ZGGZ80** *(see page 110)*

**CONNECTION DIAGRAM**




**RM87**

**DIMENSIONS**






**GZT80-0040**

**GZM80-0041****



**GZT80-0035**

**Module type M...** *(see page 113)*

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

All accessories are sold separately.

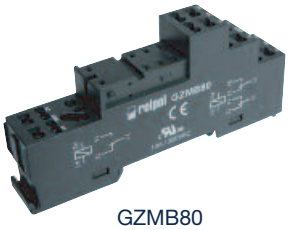



DATA SUBJECT TO CHANGE WITHOUT NOTICE

## GZMB80 (for RM84, RM85)

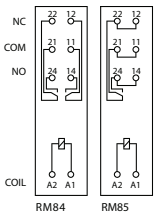
Spring terminals
Max. cross section of the cables:
1 x 0.2...1.5 mm2
(1 x 24...16 AWG)
Stripping length deinsulation:
9...11 mm
35 mm rail mount
acc. to PN-EN 60715
97 x 16 x 45.2(69) mm*
Two poles, 5 mm pinout
10 A, 300 V AC

E22891

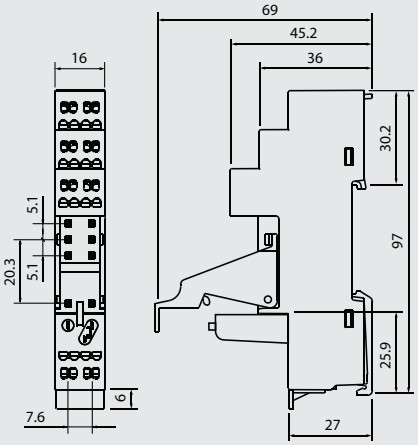


GZMB80

**CONNECTION DIAGRAM**




**DIMENSIONS**



GZMB80-0040

GZM80-0041**

TR

Module type M... *(see page 113)*

## GD50 (for RM84, RM85)

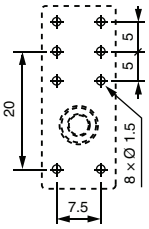
For RM84, RM85

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

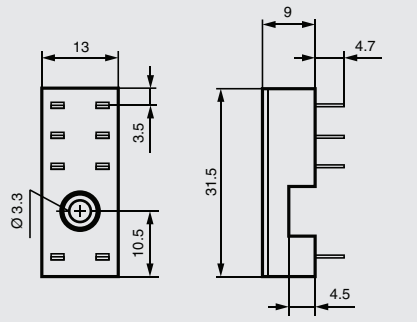
E22891

GD50

**CONNECTION DIAGRAM**




**DIMENSIONS**



MH16-2

## GD35 (for RM87N)

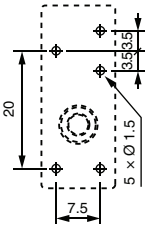
For RM87

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

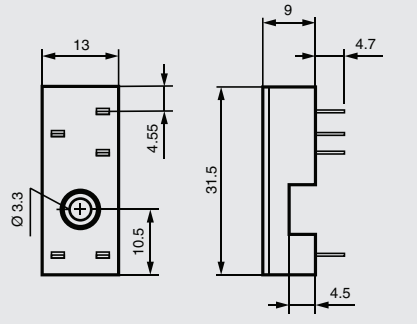
E22891

GD35

**CONNECTION DIAGRAM**




**DIMENSIONS**



MH16-2

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

All accessories are sold separately.

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Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

**Данный компонент на территории Российской Федерации**

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Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

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Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

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