

# RM85 inrush

## miniature relays



- **Resistance to inrush current 80 A (20 ms)**
- CTI 250 • 5000 V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- DC coils, insulation class F: 155 °C
- Applications: for motor operation control, lighting, electromagnetic valves, and many other applications
- Compliance with standard EN 60335-1
- Recognitions, certifications, directives: RoHS,   

### Contact data

|                                |                           |                             |
|--------------------------------|---------------------------|-----------------------------|
| Number and type of contacts    |                           | 1 NO                        |
| Contact material               |                           | <b>AgSnO<sub>2</sub></b>    |
| Rated / max. switching voltage | AC                        | 250 V / 400 V               |
| Min. switching voltage         |                           | 10 V                        |
| Rated load (capacity)          | AC1                       | 16 A / 250 V AC             |
|                                | AC15                      | 3 A / 120 V                 |
|                                | DC1                       | 16 A / 24 V DC (see Fig. 2) |
|                                | DC13                      | 0,22 A / 120 V              |
| Motor load                     | acc. to UL 508            | 1 HP                        |
|                                | AC3 acc. to IEC 60947-4-1 | 0,75 kW                     |
| Min. switching current         |                           | 10 mA                       |
| Max. inrush current            |                           | 80 A 20 ms                  |
| Rated current                  |                           | 16 A                        |
| Max. breaking capacity         | AC1                       | 4 000 VA                    |
| Min. breaking capacity         |                           | 1 W                         |
| Contact resistance             |                           | ≤ 100 mΩ                    |
| Max. operating frequency       |                           | 600 cycles/hour             |
| • at rated load                | AC1                       | 72 000 cycles/hour          |
| • no load                      |                           |                             |

### Coil data

|                                   |    |                                                           |
|-----------------------------------|----|-----------------------------------------------------------|
| Rated voltage                     | DC | 3, 5, 6, 9, <b>12</b> , 18, <b>24</b> , 36, 48, 60, 110 V |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub>                                  |
| Operating range of supply voltage |    | see Table 1 and Fig. 3                                    |
| Rated power consumption           | 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 |
| Contact - coil distance     | • clearance | ≥ 10 mm                                           |
|                             | • creepage  | ≥ 10 mm                                           |

### General data

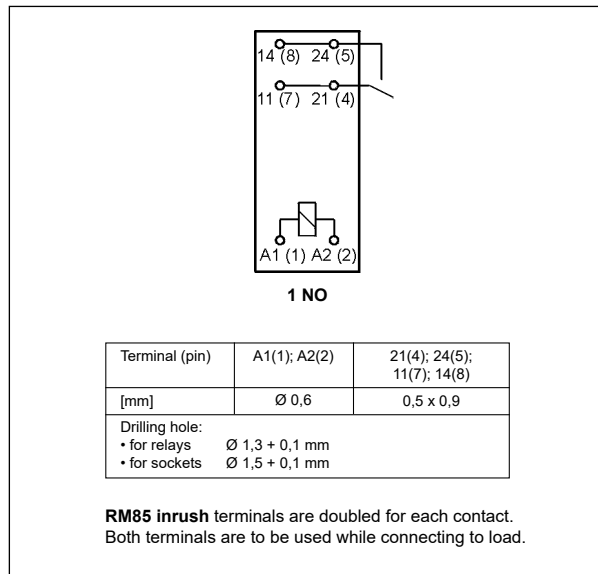
|                                           |                 |                                  |
|-------------------------------------------|-----------------|----------------------------------|
| Operating / release time (typical values) |                 | 8 ms / 3 ms                      |
| Electrical life (number of cycles)        |                 |                                  |
| • resistive AC1                           | 600 cycles/hour | > 10 <sup>5</sup> 16 A, 250 V AC |
| • cosφ                                    |                 | see Fig. 1                       |
| • resistive DC1                           | 600 cycles/hour | > 10 <sup>5</sup> 16 A, 24 V DC  |
| • inductive AC3, I = 3,5 A                |                 | > 2,5 x 10 <sup>5</sup>          |
| • at incandescent lamp load, 1000 W       |                 | > 0,9 x 10 <sup>5</sup>          |
| Mechanical life (cycles)                  |                 | > 3 x 10 <sup>7</sup>            |
| Dimensions (L x W x H)                    |                 | 29 x 12,7 x 15,7 mm              |
| Weight                                    |                 | 14 g                             |
| Ambient temperature                       | • storage       | -40...+85 °C                     |
| (non-condensation and/or icing)           | • operating     | -40...+85 °C                     |
| Cover protection category                 |                 | IP 40 EN 60529                   |
| Environmental protection                  |                 | RTII EN 61810-7                  |
| Shock resistance                          |                 | 30 g                             |
| Vibration resistance                      |                 | 10 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.  For single phase motors for 110-120 V AC do not use motors with higher FLA than given for 240 V AC.

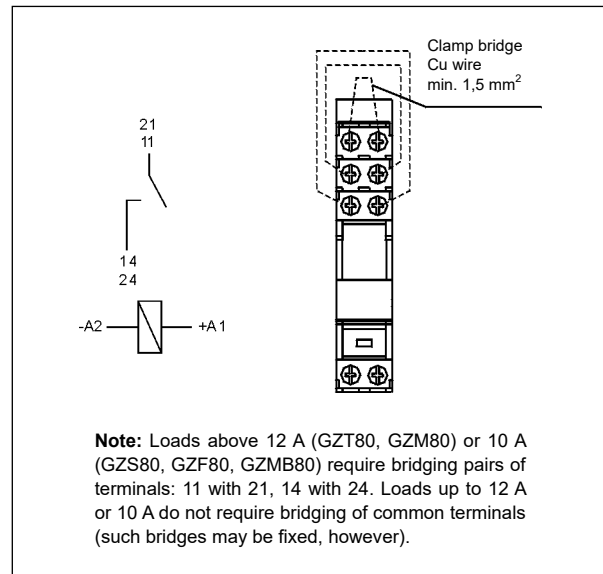
# RM85 inrush

## miniature relays

### Connection diagram (pin side view)



### Connection of GZ.80 sockets



### Mounting, sockets and accessories for relays

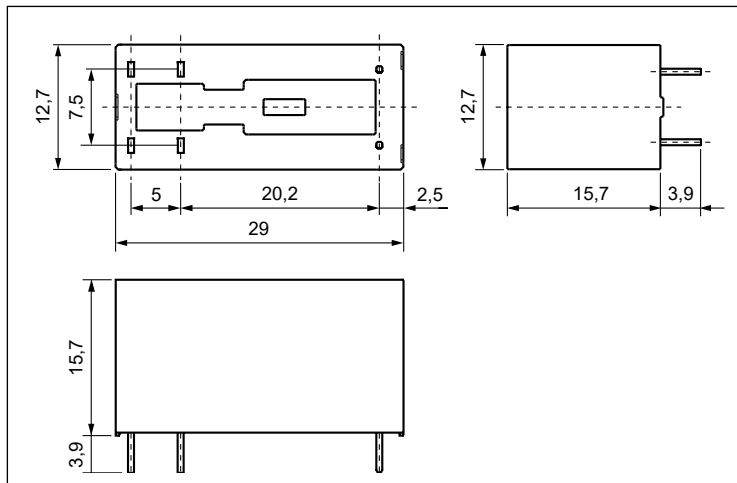
Relays **RM85 inrush** are designed for: • direct PCB mounting • plug-in sockets.

| Sockets<br>for RM85 inrush                                                                       | Accessories                   |                              |                       | Additional<br>features |
|--------------------------------------------------------------------------------------------------|-------------------------------|------------------------------|-----------------------|------------------------|
|                                                                                                  | Retainer<br>/ retractor clips | Spring<br>wire clips         | Description<br>plates |                        |
| Screw terminals sockets, 35 mm rail mount (acc. to EN 60715) or on panel mounting (one M3 screw) |                               |                              |                       |                        |
| GZT80 ②                                                                                          | GZT80-0040                    | GZM80-0041                   | GZT80-0035            | modules ④, strips ⑤    |
| GZM80 ②                                                                                          | GZT80-0040                    | GZM80-0041                   | GZT80-0035            | modules ④, strips ⑤    |
| GZS80 ②                                                                                          | GZS-0040                      | GZM80-0041                   | TR                    | modules ④, strips ⑤    |
| GZF80 ②                                                                                          | —                             | GZM80-0041                   | —                     | —                      |
| Spring terminals sockets, 35 mm rail mount (acc. to EN 60715)                                    |                               |                              |                       |                        |
| GZMB80 ② ⑥                                                                                       | GZMB80-0040                   | GZM80-0041                   | TR                    | modules ④              |
| Sockets for PCB                                                                                  |                               |                              |                       |                        |
| EC 50                                                                                            | —                             | MP16-2 ⑥, MH16-2             | —                     | —                      |
| PW80                                                                                             | —                             | MH16-2                       | —                     | —                      |
| GD50                                                                                             | —                             | MP16-2 ⑥,<br>MH16-2, GD-0016 | —                     | —                      |

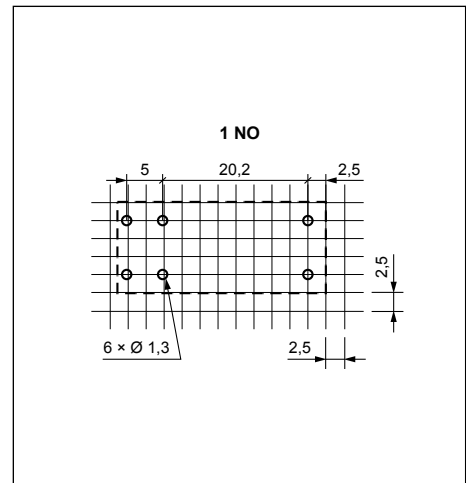
② Sockets GZ.80: load connection - see page 2.      ④ Sockets GZMB80: wire connection - see page 6.      ① Signalling / protecting modules type M... - see page 9.      ⑤ Interconnection strips ZGGZ80 - see page 10.      ⑥ Plastic clips MP16-2.

# RM85 inrush miniature relays

## Dimensions

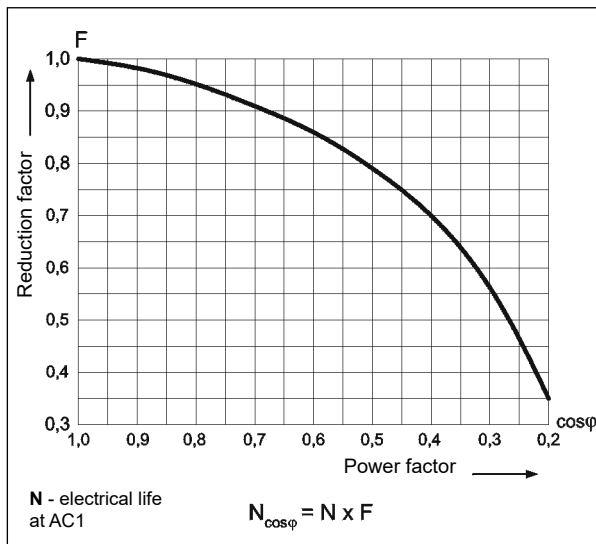


## Pinout (solder side view)



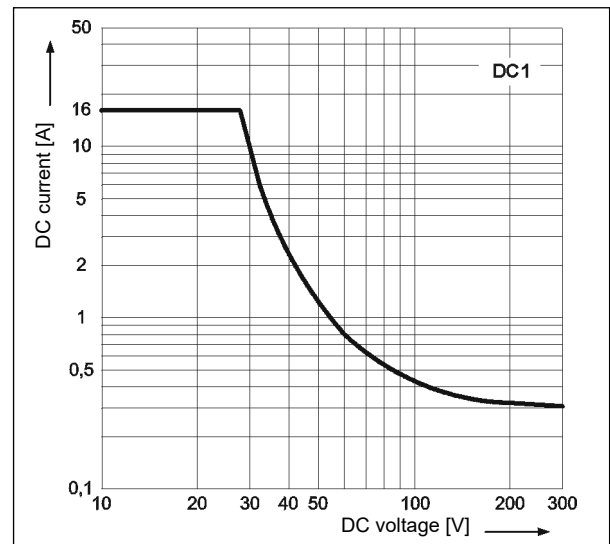
## Electrical life reduction factor at AC inductive load

Fig. 1



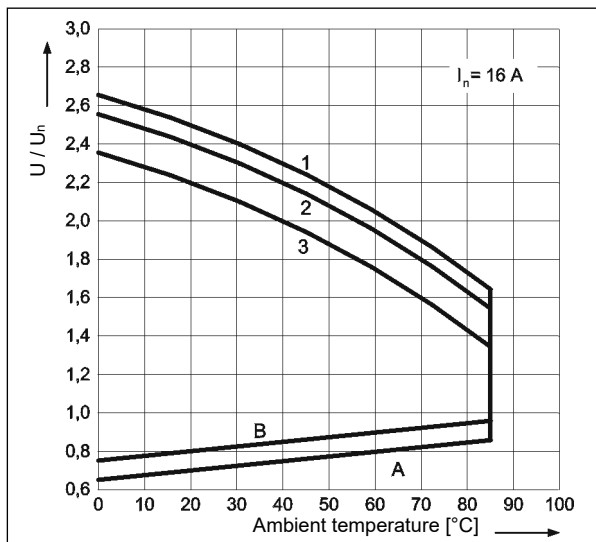
## Max. DC resistive load breaking capacity

Fig. 2



## Coil operating range - DC

Fig. 3



## Description of Fig. 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

# RM85 inrush

## miniature relays

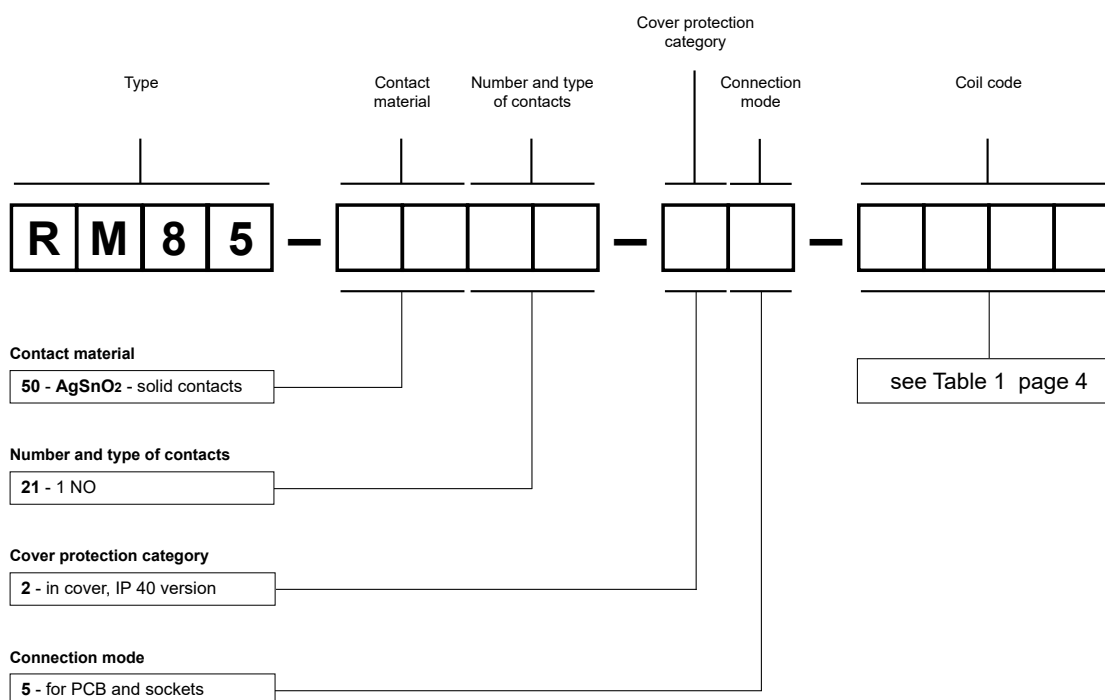
Coil data - DC voltage version

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V DC |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)              | max. (at 20 °C) |
| 1003        | 3                     | 22                                      | $\pm 10\%$                   | 2,1                          | 7,6             |
| 1005        | 5                     | 60                                      | $\pm 10\%$                   | 3,5                          | 12,7            |
| 1006        | 6                     | 90                                      | $\pm 10\%$                   | 4,2                          | 15,3            |
| 1009        | 9                     | 200                                     | $\pm 10\%$                   | 6,3                          | 22,9            |
| <b>1012</b> | <b>12</b>             | <b>360</b>                              | <b><math>\pm 10\%</math></b> | <b>8,4</b>                   | <b>30,6</b>     |
| 1018        | 18                    | 710                                     | $\pm 10\%$                   | 12,6                         | 45,9            |
| <b>1024</b> | <b>24</b>             | <b>1 440</b>                            | <b><math>\pm 10\%</math></b> | <b>16,8</b>                  | <b>61,2</b>     |
| 1036        | 36                    | 3 140                                   | $\pm 10\%$                   | 25,2                         | 91,8            |
| 1048        | 48                    | 5 700                                   | $\pm 10\%$                   | 33,6                         | 122,4           |
| 1060        | 60                    | 7 500                                   | $\pm 10\%$                   | 42,0                         | 153,0           |
| 1110        | 110                   | 25 200                                  | $\pm 10\%$                   | 77,0                         | 280,0           |

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

### Ordering codes



Example of ordering code:

**RM85-5021-25-1012**

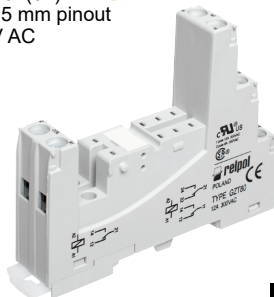
relay **RM85 inrush**, for PCB and sockets, one normally open contact, contact material AgSnO<sub>2</sub> - solid contacts, coil voltage 12 V DC, in cover IP 40

## Plug-in sockets and accessories

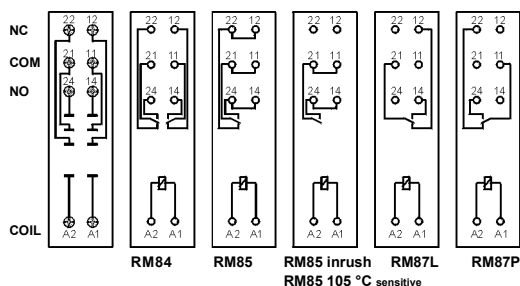
### GZT80

For RM84, RM85,  
RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive

Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
35 mm rail mount  
acc. to EN 60715  
or on panel mounting  
80 x 15,6 x 61(67) mm ②  
Two poles, 5 mm pinout  
12 A, 300 V AC



#### Connection diagrams ⑧

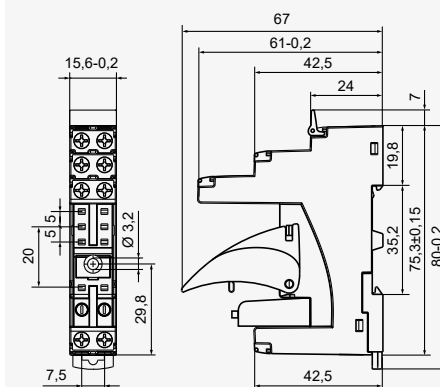


#### Accessories ①

ZGGZ80

GZM80-0041

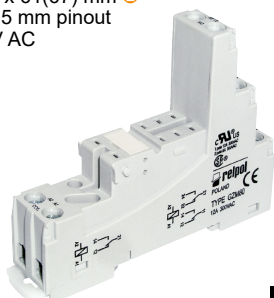
#### Dimensions



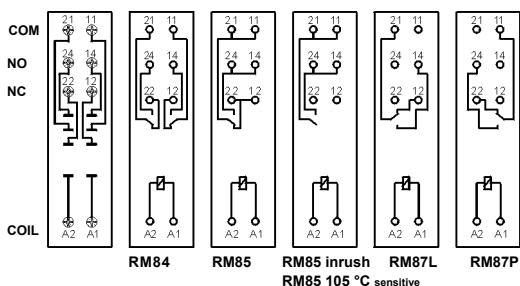
### GZM80

For RM84, RM85,  
RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive

Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
35 mm rail mount  
acc. to EN 60715  
or on panel mounting  
81,6 x 15,9 x 61(67) mm ②  
Two poles, 5 mm pinout  
12 A, 300 V AC



#### Connection diagrams ⑧

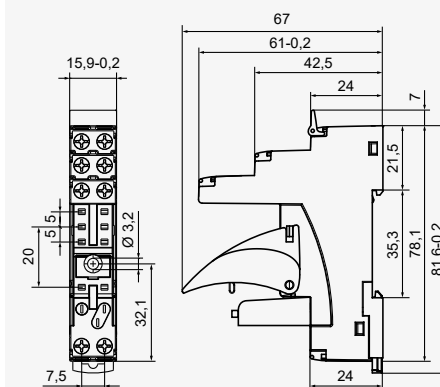


#### Accessories ①

ZGGZ80

GZM80-0041

#### Dimensions



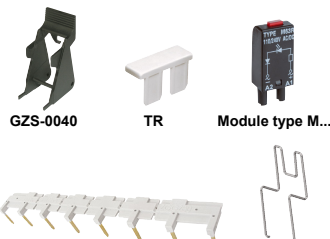
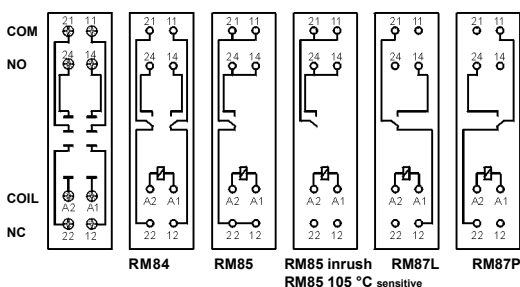
### GZS80

For RM84, RM85,  
RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive

Screw terminals  
Max. tightening moment  
for the terminal: 0,5 Nm  
35 mm rail mount  
acc. to EN 60715  
or on panel mounting  
76,8 x 15,8 x 42,5(57,1) mm ②  
Two poles, 5 mm pinout  
10 A, 300 V AC



#### Connection diagrams ⑧

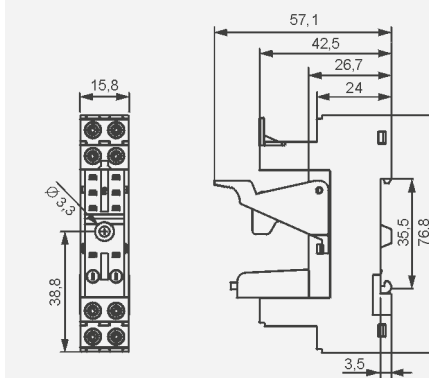


#### Accessories ①

ZGGZ80

GZM80-0041

#### Dimensions



① Mounting and sub-assemblies of accessories in the socket - see page 7. Signalling / protecting modules type M... - see page 9. ② In the bracket the height of socket with retainer / retractor clip is shown. ⑧ For RM85..., RMP85: loads above 12 A (GZT80, GZM80) or 10 A (GZS80, GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24 - see catalog "Relays" and [www.repol.com.pl](http://www.repol.com.pl)

# Plug-in sockets and accessories

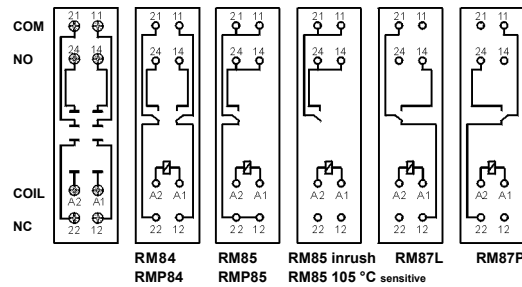
## GZF80

For RM84, RM85,  
RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive,  
RMP84, RMP85

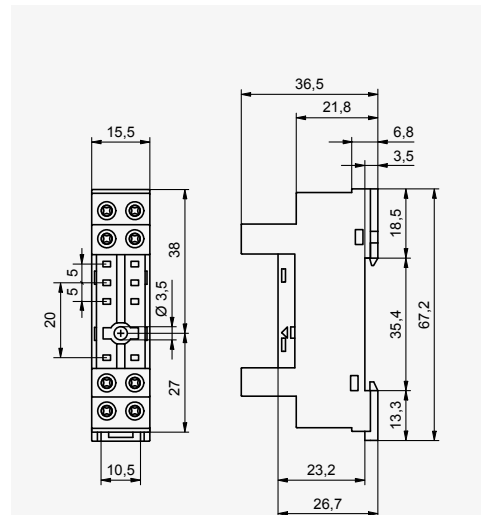
Screw terminals  
Max. tightening moment  
for the terminal: 0,5 Nm  
35 mm rail mount  
acc. to EN 60715  
or on panel mounting  
67,2 x 15,5 x 36,5 mm  
Two poles, 5 mm pinout  
10 A, 250 V AC



### Connection diagrams ③



### Dimensions



### Accessories ①

GZM80-0041 GZ80-1001

## GZMB80

For RM84, RM85,  
RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive,  
RMP84, RMP85

Spring terminals  
Max. cross section  
of the cables:  
1 x 0,2...1,5 mm<sup>2</sup>  
(1 x 24...16 AWG)  
Stripping length: 9...11 mm

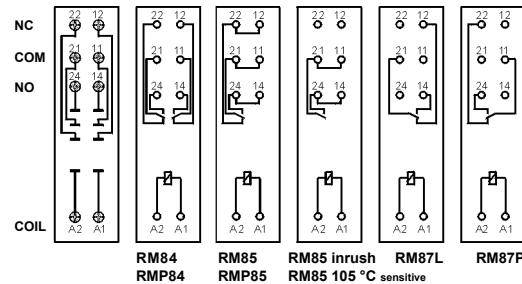
35 mm rail mount  
acc. to EN 60715  
97 x 16 x 45,2(69/78) mm ②  
Two poles, 5 mm pinout  
10 A, 300 V AC



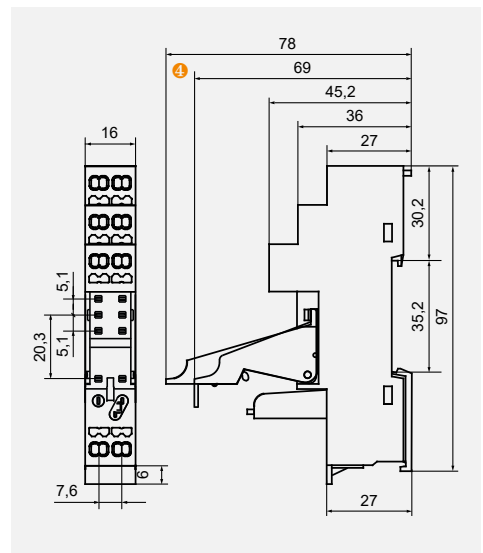
Module type M...



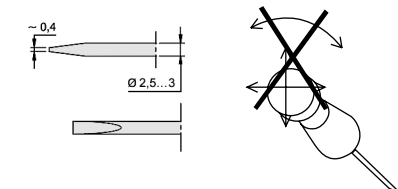
### Connection diagrams ③



### Dimensions



The drawings present the sequence of operations in course of inserting wires to the spring terminal, and the recommended screwdriver to be used for opening of case springs, comply with the DIN 5264 FORM "A".

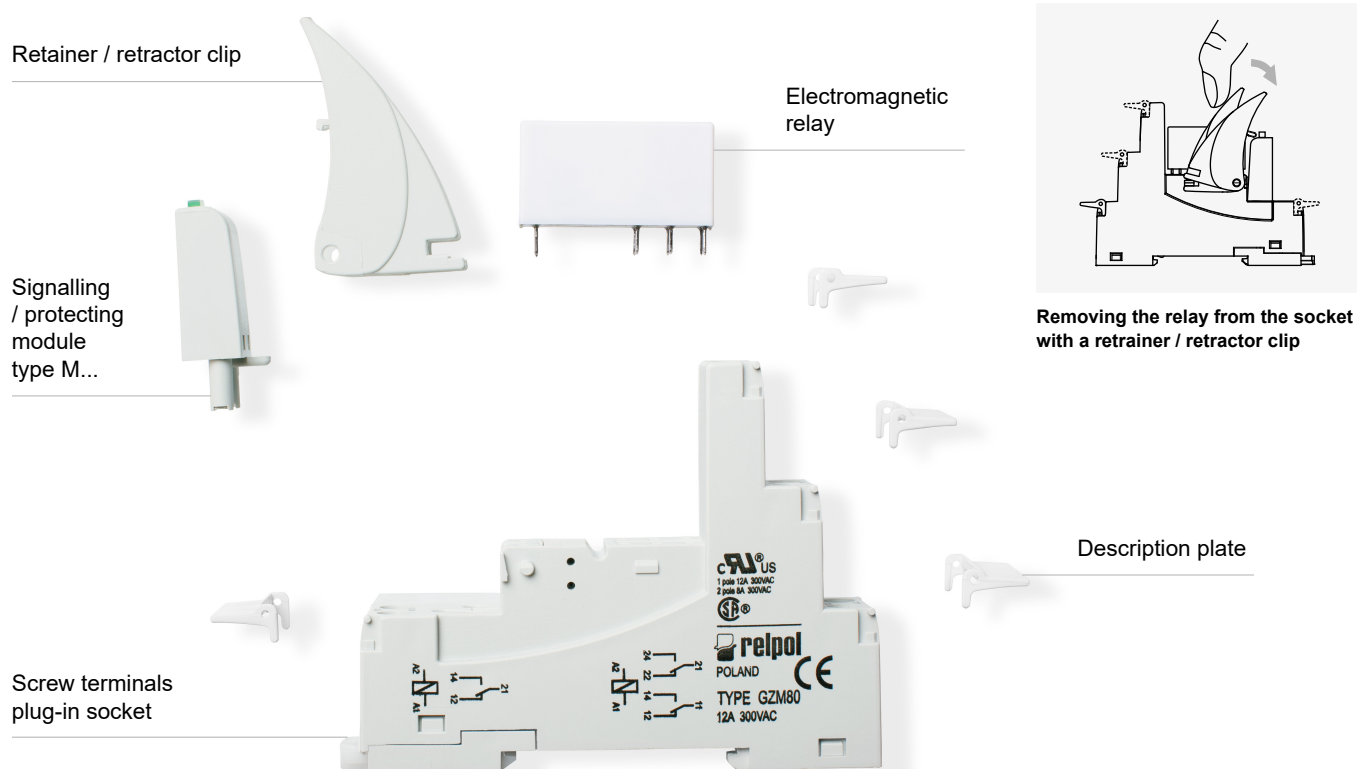


### Accessories ① ④

### Wire connection

① Mounting and sub-assemblies of accessories in the socket - see page 7. Signalling / protecting modules type M... - see page 9. ② In the bracket the height of socket with retainer / retractor clip is shown. ③ For RM85..., RMP85: loads above 12 A (GZT80, GZM80) or 10 A (GZS80, GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24 - see catalog "Relays" and [www.repol.com.pl](http://www.repol.com.pl) ④ Height of set: 69 mm (GZMB80-0040) or 78 mm (GZMB80-0025).

### Mounting and sub-assemblies of the relay and accessories in the socket



#### PRECAUTIONS:

1. Ensure that the parameters of the product described in its specification provide a safety margin for the appropriate operation of the device or system and never use the product in circumstances which exceed the parameters of the product. 2. Never touch any live parts of the device. 3. Ensure that the product has been connected correctly. An incorrect connection may cause malfunction, excessive heating or risk of fire. 4. In case of any risk of any serious material loss or death or injuries of humans or animals, the devices or systems shall be designed so to equip them with double safety system to guarantee their reliable operation.

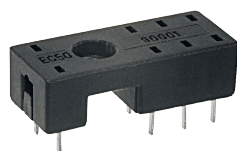
## Plug-in sockets and accessories

### EC 50

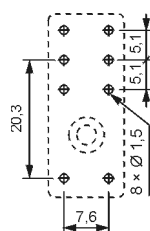
For RM84, RM85, RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive,  
RM83, RMP84, RMP85

For PCB

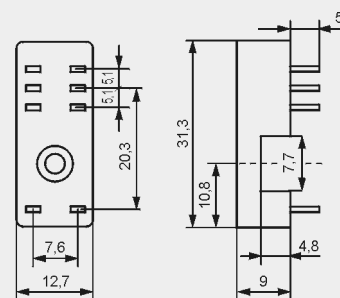
31,3 x 12,7 x 9 mm  
Two poles, 5 mm pinout  
12 A, 250 V AC



#### Pinout



#### Dimensions



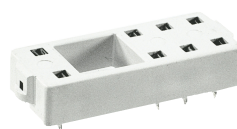
#### Accessories

### PW80

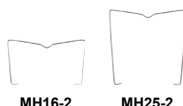
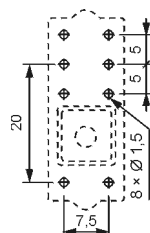
For RM84, RM85, RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive,  
RM83

For PCB

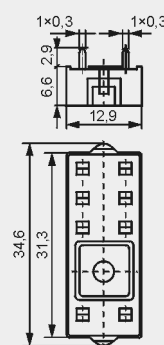
34,6 x 12,9 x 6,6 mm  
Two poles, 5 mm pinout  
12 A, 250 V AC



#### Pinout



#### Dimensions



#### Accessories

### GD50

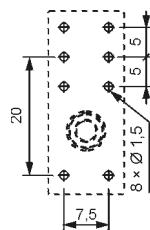
For RM84, RM85, RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive,  
RM83, RMP84, RMP85

For PCB

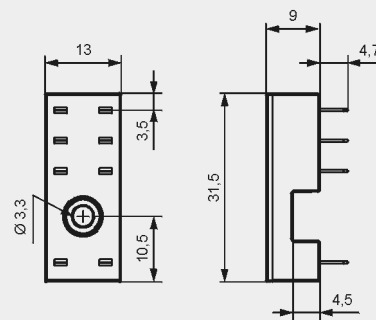
31,5 x 13 x 9 mm  
Two poles, 5 mm pinout  
8 A, 300 V AC



#### Pinout



#### Dimensions



#### Accessories

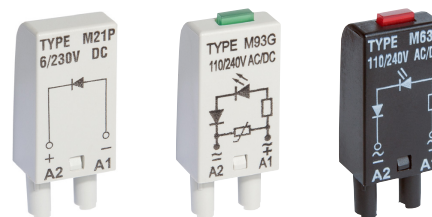
## Signalling / protecting modules type M...

### For sockets type:

GZT80, GZM80, GZS80, GZMB80, GZT92, GZM92, GZS92, ES 32, GZT2, GZM2, GZMB2, GZT3, GZM3, GZT4, GZM4, GZMB4

Modules type M... are parallely connected with relay coil.

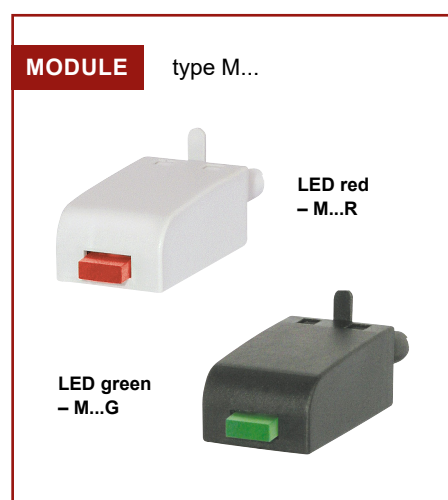
Polarity P: -A1/+A2. Polarity N: +A1/-A2.



| Modules type M...                                                                                                         | Layout | Voltage                                          | Type of module ① ②                     |
|---------------------------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------|----------------------------------------|
| <b>Module D (polarization P)</b><br>It limits overvoltage on DC coils.                                                    |        | 6/230 V DC                                       | M21P                                   |
| <b>Module D (polarization N)</b><br>It limits overvoltage on DC coils.                                                    |        | 6/230 V DC                                       | M21N                                   |
| <b>Module LD (polarization P)</b><br>It limits overvoltage on DC coils.<br>Coil energizing indication.                    |        | 6/24 V DC<br>24/60 V DC<br>110/230 V DC          | M31R, M31G<br>M32R, M32G<br>M33R, M33G |
| <b>Module LD (polarization N)</b><br>It limits overvoltage on DC coils.<br>Coil energizing indication.                    |        | 6/24 V DC<br>24/60 V DC<br>110/230 V DC          | M41R, M41G<br>M42R, M42G<br>M43R, M43G |
| <b>Module RC</b><br>It protects against EMC disturbance.<br>It limits overvoltage.                                        |        | 6/24 V AC/DC<br>24/60 V AC/DC<br>110/240 V AC/DC | M51<br>M52<br>M53                      |
| <b>Module L</b><br>Coil energizing indication.                                                                            |        | 6/24 V AC/DC<br>24/60 V AC/DC<br>110/240 V AC/DC | M61R, M61G<br>M62R, M62G<br>M63R, M63G |
| <b>Module LV</b><br>It limits overvoltage on AC and DC coils.<br>Coil energizing indication.                              |        | 6/24 V AC/DC<br>24/60 V AC/DC<br>110/240 V AC/DC | M91R, M91G<br>M92R, M92G<br>M93R, M93G |
| <b>Module V</b><br>It limits overvoltage on AC coils.<br>No indication.                                                   |        | 6/24 V AC<br>110/130 V AC<br>220/240 V AC        | M71<br>M72<br>M73                      |
| <b>Module R</b><br>It limits harmful voltage on AC coils induced in long lines which causes unwanted making of the relay. |        | 110/240 V AC                                     | M103                                   |

① M...R - LED red, M...G - LED green

② When ordering modules indicate their color: gray or black.



## Interconnection strips ZGGZ80



PI85-...-MS-...  
(RM85 + GZM80)

ZGGZ80

### ■ ZGGZ80 for:

| Plug-in sockets | Relays for plug-in sockets                                                         | Interface relays ③             |
|-----------------|------------------------------------------------------------------------------------|--------------------------------|
| GZT80           | RM84, RM85, RM85 inrush,<br>RM85 105 °C sensitive,<br>RM87L ④, RM87P ④,<br>RM87N ④ | PI84-...-TS-... (RM84 + GZT80) |
| GZM80           |                                                                                    | PI84-...-MS-... (RM84 + GZM80) |
| GZS80           |                                                                                    | PI85-...-TS-... (RM85 + GZT80) |
| GZT92           |                                                                                    | (RM85 inrush + GZT80)          |
| GZM92           |                                                                                    | PI85-...-MS-... (RM85 + GZM80) |
| GZS92           | RM96 1 CO                                                                          |                                |
| ES 32           |                                                                                    |                                |

③ Interface relay **PI84** (**PI85**) is offered as a **set**: plug-in socket **GZT80** or **GZM80** + miniature relay **RM84** (**RM85**) + signalling / protecting module **type M...** + retainer / retractor clip **GZT80-0040** + description plate **GZT80-0035**. ④ Also versions RM87. sensitive

### ■ Interconnection strip ZGGZ80

- designed for the co-operation with plug-in sockets of miniature relays and with interface relays PI84 and PI85, 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) or output signals - see photo at the top,
- maximum permissible current is 10 A / 250 V AC,
- possibility of connection of 8 sockets or relays,
- colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black.

