

# 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

|                                           |             | 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                             |             | 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<br>72000 cycles/hour                                 | 600 cycles/hour<br>72000 cycles/hour                                 | 600 cycles/hour<br>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 <sub>N</sub> ; DC: ≥ 0.1 U <sub>N</sub>                 | AC: ≥ 0.15 U <sub>N</sub> ; DC: ≥ 0.1 U <sub>N</sub>                 | AC: ≥ 0.15 U <sub>N</sub> ; DC: ≥ 0.1 U <sub>N</sub>                 |
| 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).<br>type of clearance: full-disconnect | 2000 V AC contacts DPST (2NO).<br>type of clearance: full-disconnect | 2000 V AC contacts SPST (1NO).<br>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 <sup>5</sup> ; 8 A. 250 V AC<br>see Fig. 2.1                    | > 0.7 x 10 <sup>5</sup> ; 16 A. 250 V AC<br>see Fig. 2.2             | > 10 <sup>5</sup> ; 12 A. 250 V AC<br>see Fig. 2.3                   |
| • resistive                               |             | > 10 <sup>5</sup> ; 0.15 A. 220 V DC                                 | > 10 <sup>5</sup> ; 0.15 A. 220 V DC                                 | > 10 <sup>5</sup> ; 0.15 A. 220 V DC                                 |
| • cosφ                                    |             | > 3 x 10 <sup>7</sup>                                                | > 3 x 10 <sup>7</sup>                                                | > 3 x 10 <sup>7</sup>                                                |
| • 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

Altech®



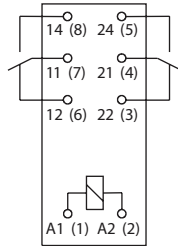
RM84



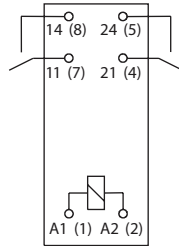
E105728



### CONNECTION DIAGRAM



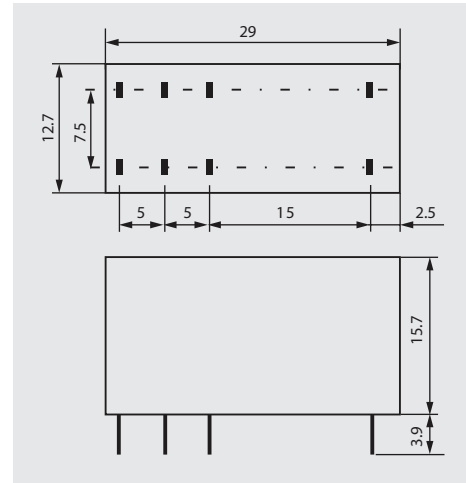
DPDT



DPST (2NO)

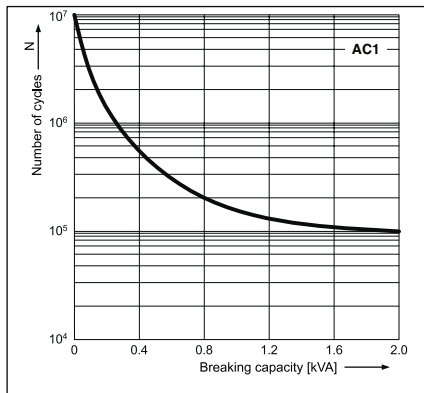
| Terminal (pin) | A1(1); A2(2)   | 22(3); 21(4); 24(5); 12(6); 11(7); 14(8) |
|----------------|----------------|------------------------------------------|
| [mm]           | Ø 0.6          | 0.5 x 0.9                                |
| Drilling hole: |                |                            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

### DIMENSIONS

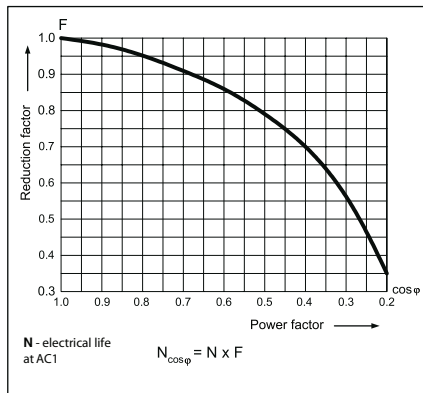


### LOAD CHARTS

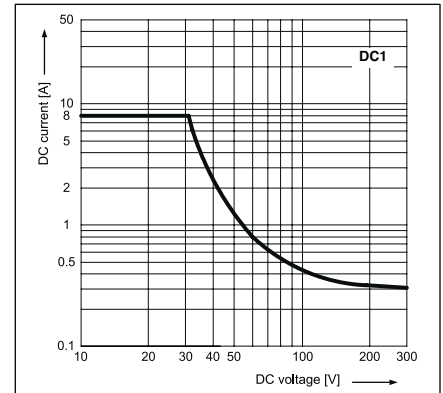
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1.1



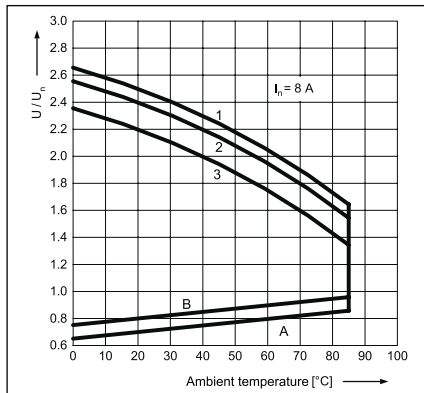
Electrical life reduction factor at AC inductive load Fig. 2.1



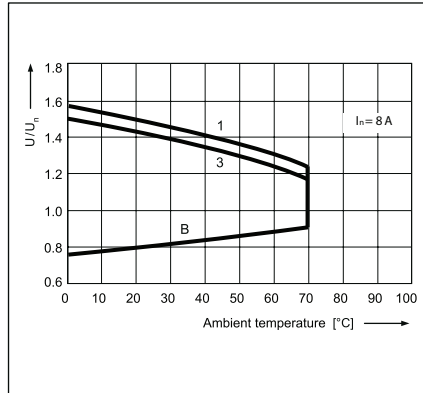
Max. DC resistive load breaking capacity Fig. 3.1



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

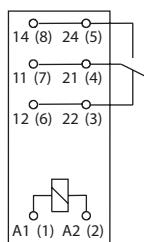


**RM85**

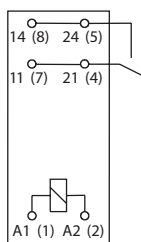


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### CONNECTION DIAGRAM



**SPDT**

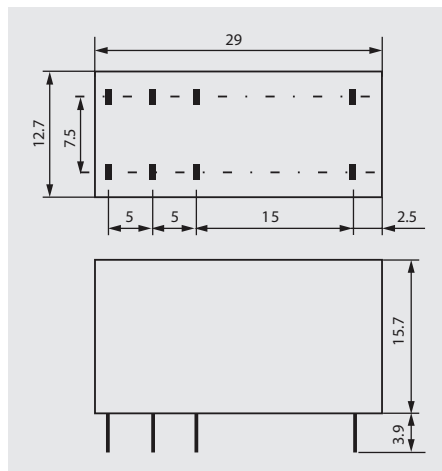


**SPST (1NO)**

| 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.

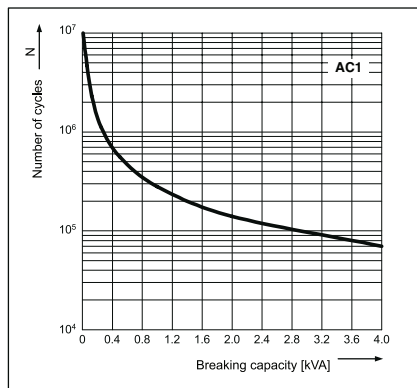
### DIMENSIONS



### LOAD CHARTS

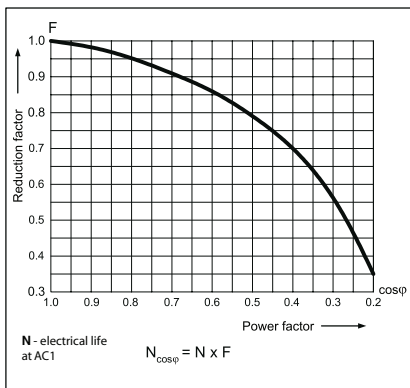
**Electrical life at AC resistive load.**  
Switching frequency: 600 cycles/hour

Fig. 1.2



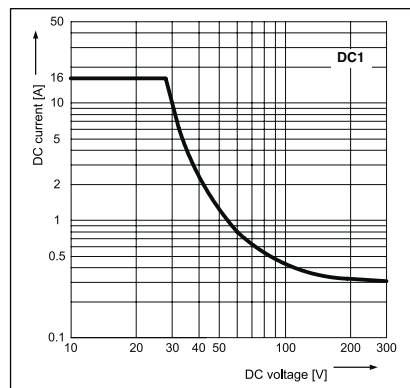
**Electrical life reduction factor at AC inductive load**

Fig. 2.2



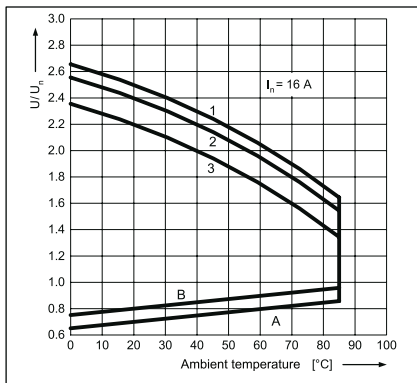
**Max. DC resistive load breaking capacity**

Fig. 3.2



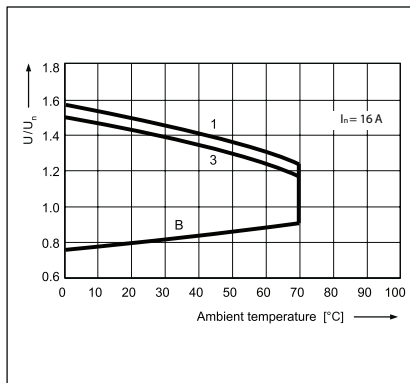
**Coil operating range - DC**

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

Altech®



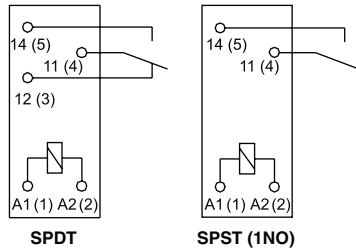
**RM87**



E105728

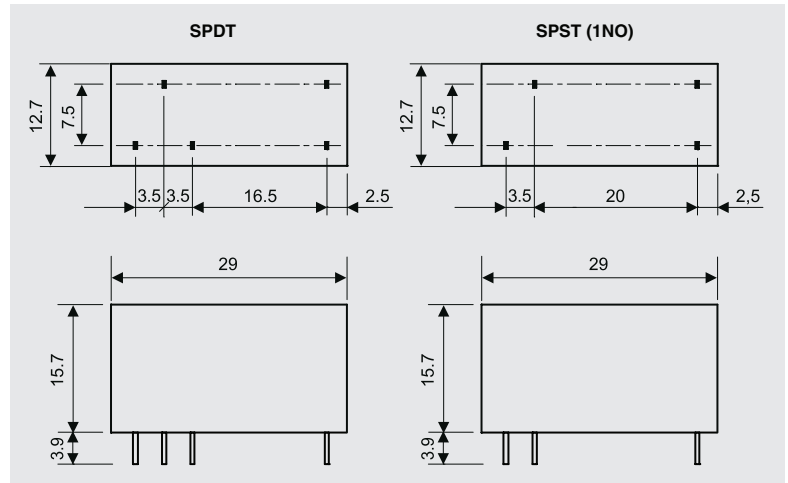


### CONNECTION DIAGRAM



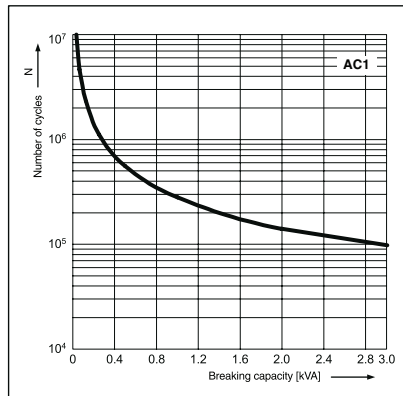
| Terminal (pin) | A1(1); A2(2) | 12(3); 11(4); 14(5) |
|----------------|--------------|---------------------|
| [mm]           | Ø 0.6        | 0.5 x 0.9           |
| Drilling hole: |              |                     |
| • for relays   |              |                     |
| • for sockets  |  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

### DIMENSIONS

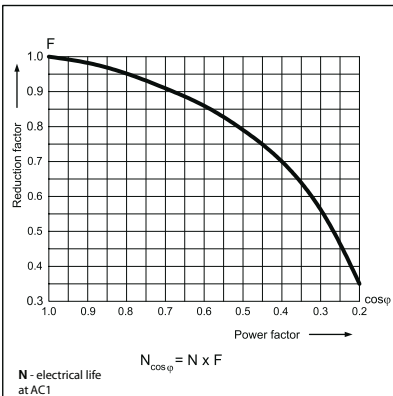


### LOAD CHARTS

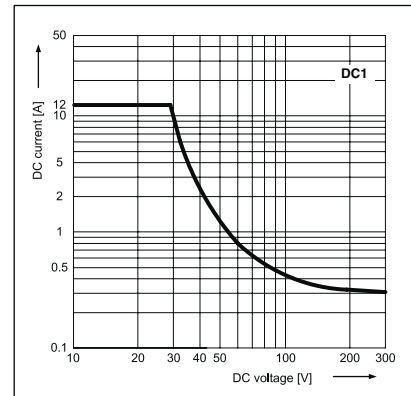
**Electrical life at AC resistive load.** Fig. 1.3  
Switching frequency: 600 cycles/hour



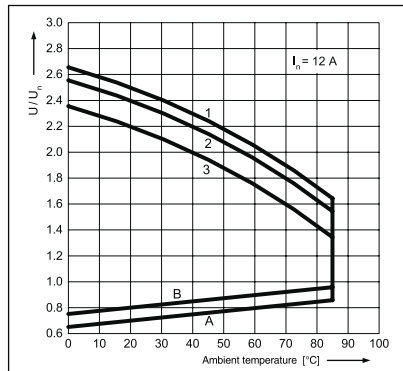
**Electrical life reduction factor at AC inductive load** Fig. 2.3



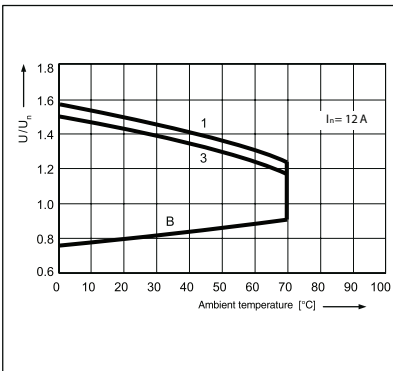
**Max. DC resistive load breaking capacity** Fig. 3.3  
- standard version



**Coil operating range - DC** Fig. 4.3  
- standard version



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

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

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

### R85 SPDT AC 50/60Hz & DC coil

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

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

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

### R87 SPDT AC 50/60Hz & DC coil

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

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

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

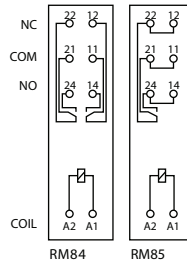


GZT80-0035

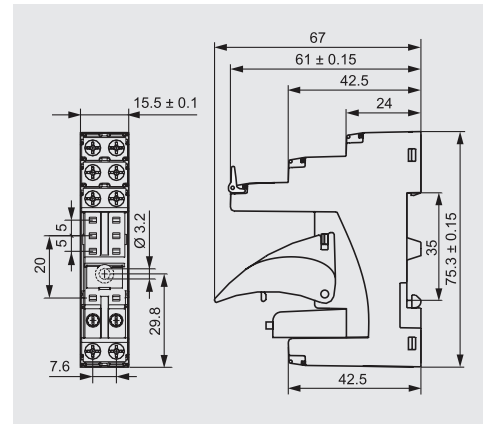


Module type M... (see page 113)

### 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\*\*

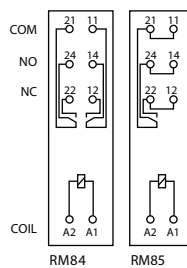


GZT80-0035

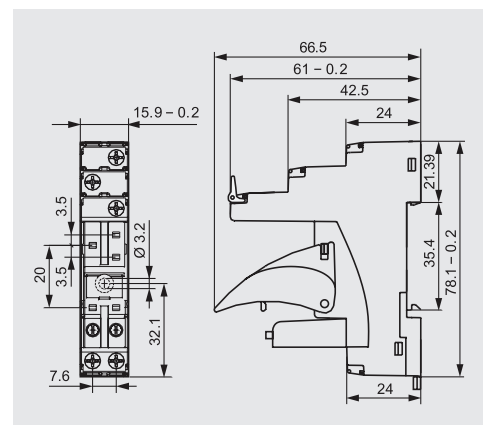


Module type M... (see page 113)

### 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\*\*

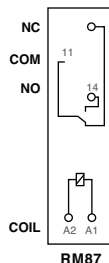


GZT80-0035

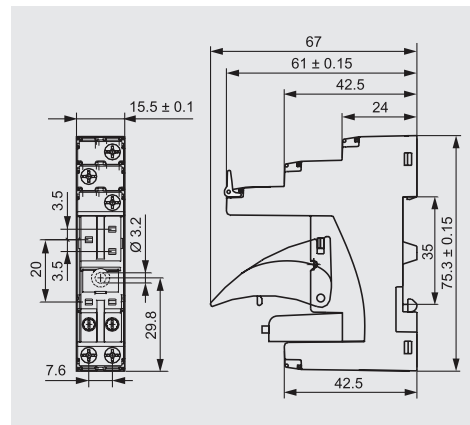


Module type M... (see page 113)

#### 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\*\*

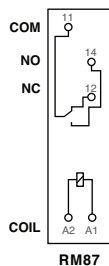


GZT80-0035

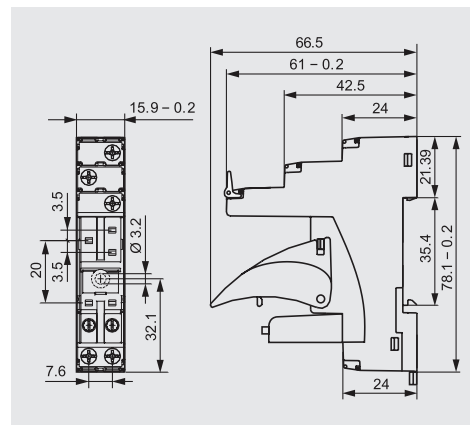


Module type M... (see page 113)

#### CONNECTION DIAGRAM



#### DIMENSIONS



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

All accessories are sold separately.

