

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) | | 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 | | 600 cycles/hour | 600 cycles/hour | 600 cycles/hour |
| | • at rated load | 72000 cycles/hour | 72000 cycles/hour | 72000 cycles/hour |
| | • no load | | | |
| 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 | | | | |
| | • resistive | > 10 ⁶ ; 8 A. 250 V AC | > 0.7 x 10 ⁶ ; 16 A. 250 V AC | > 10 ⁶ ; 12 A. 250 V AC |
| | • cosφ | see Fig. 2.1 | see Fig. 2.2 | see Fig. 2.3 |
| | • DC L/R=40 ms | > 10 ⁶ ; 0.15 A. 220 V DC | > 10 ⁶ ; 0.15 A. 220 V DC | > 10 ⁶ ; 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 |

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RM84



CONNECTION DIAGRAM



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

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Miniature Electromagnetic Relays

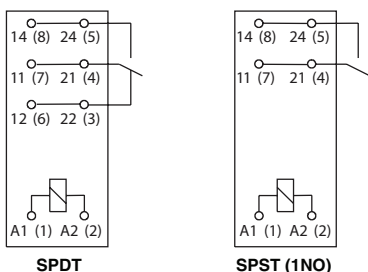


RM85



E105728

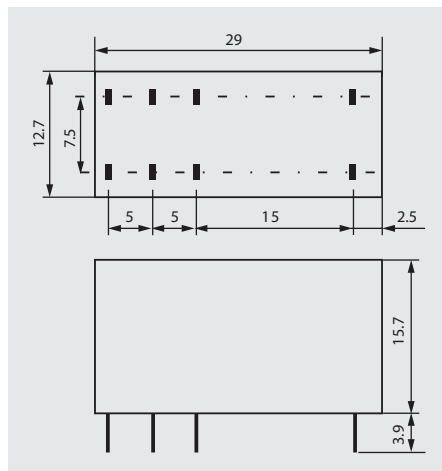
CONNECTION DIAGRAM



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

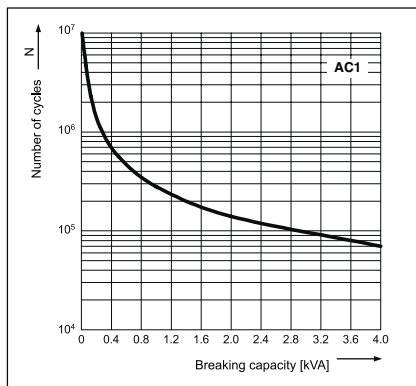
RM85 terminals are doubled for each contact.
Both terminals are to be used while connecting to load.

DIMENSIONS

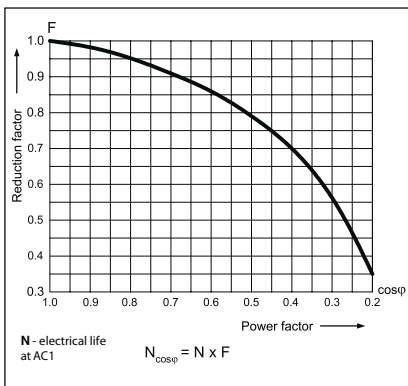


LOAD CHARTS

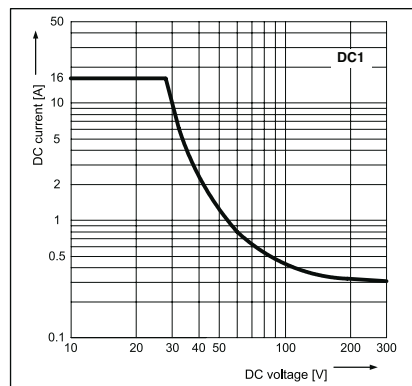
Electrical life at AC resistive load.
Switching frequency: 600 cycles/hour Fig. 1.2



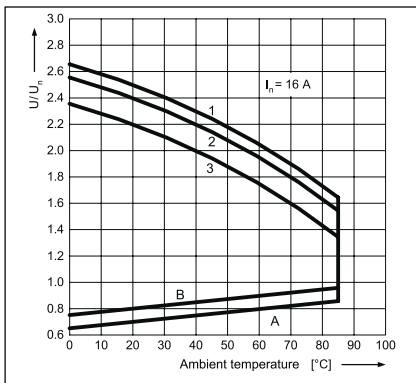
Electrical life reduction factor at AC inductive load Fig. 2.2



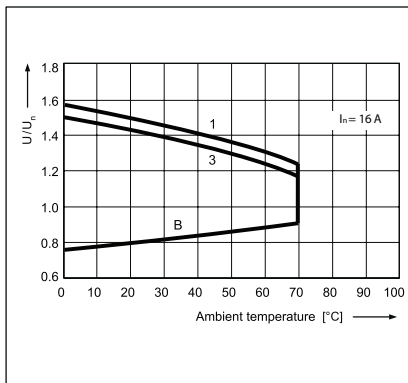
Max. DC resistive load breaking capacity Fig. 3.2



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

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RM87



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 | Ø 1.3 + 0.1 mm | |
| • for sockets | 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

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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

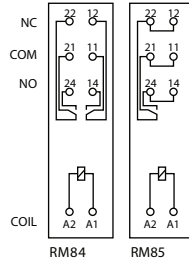
Miniature Electromagnetic Relays - Plug-in Sockets and Accessories

GZT80 (for RM84 / RM85)

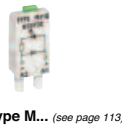
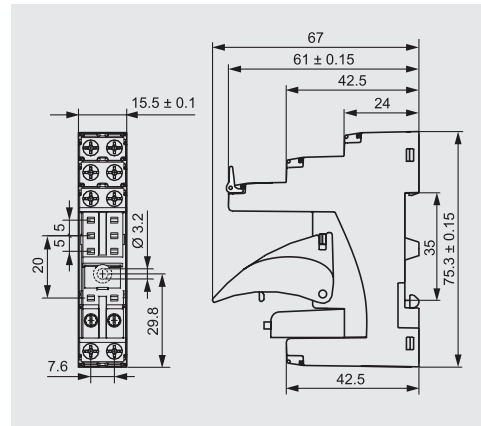
Screw terminals
 Max. tightening moment
 for the terminal: 0.7 Nm
 35 mm rail mount
 acc. to PN-EN 60715
 or on panel mounting
 75.3 x 15.5 x 61(67) mm*
 Two poles, 5 mm pinout
 12 A, 300 V AC



CONNECTION DIAGRAM



DIMENSIONS

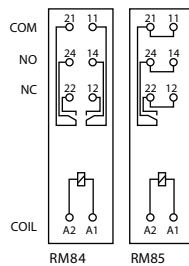


GZM80 (for RM84 / RM85)

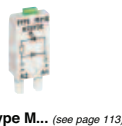
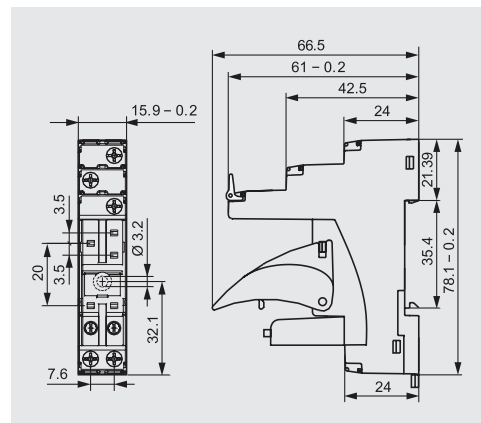
Screw terminals
 Max. tightening moment
 for the terminal: 0.7 Nm
 35 mm rail mount
 acc. to PN-EN 60715
 or on panel mounting
 78.1 x 15.9 x 61(66.5) mm*
 Two poles, 5 mm pinout
 12 A, 300 V AC



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



E22891

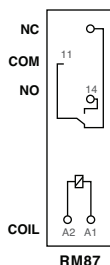


GZT92



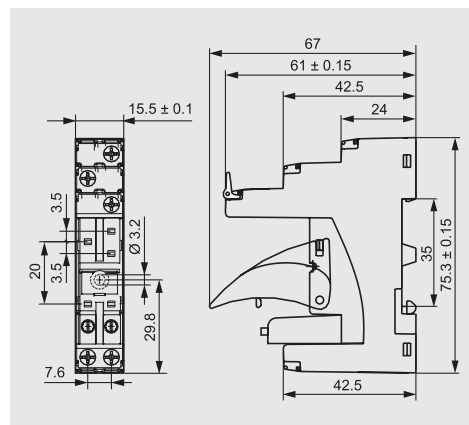
ZGGZ80 (see page 110)

CONNECTION DIAGRAM



RM87

DIMENSIONS



GZT80-0040



GZM80-0041**



GZT80-0035



Module type M... (see page 113)

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

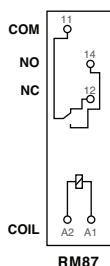


GZM92



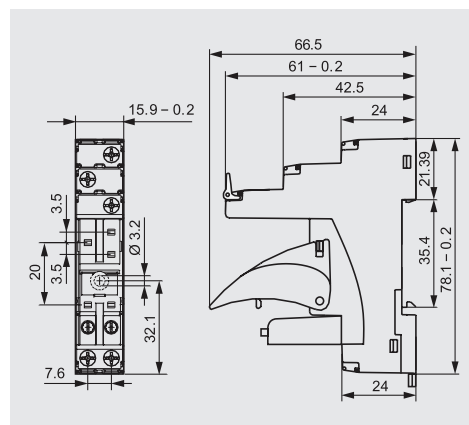
ZGGZ80 (see page 110)

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.

RM84 / RM85 / RM87

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

CONNECTION DIAGRAM



DIMENSIONS



GZMB80-0040



GZMB80-0041**



TR



Module type M... (see page 113)

GD50 (for RM84, RM85)

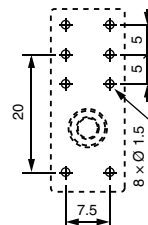
For RM84, RM85

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



GD50

CONNECTION DIAGRAM



DIMENSIONS



MH16-2

GD35 (for RM87N)

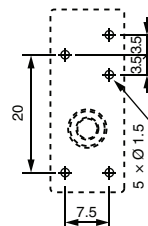
For RM87

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



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.

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

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.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

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.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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