

R2, R3, R4

Industrial Electromagnetic Relays



- Compact size
- Relays of general application
- Cadmium - free contacts
- AC and DC coils
- For plug-in sockets, 35 mm rail mount or on panel mounting *
- WT (mechanical indicator + lockable front test button) - standard features of relays for plug-in sockets. Relays may be provided with the test buttons (no latching) and plugs (see page 115)
- AUCOTEAM GmbH Berlin - railway standards.

Contact Data

| | R2 | R3 | R4 |
|------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| Number and type of contacts | DPDT | 3PDT | 4PDT |
| Contact material | AgNi** | AgNi** | AgNi** |
| Rated / max. switching voltage AC | 250 V / 440 V | 250 V / 440 V | 250 V / 250 V |
| Min. switching voltage | 10 V | 10 V | 10 V |
| Rated load (capacity) | | | |
| AC1 | 12 A / 250 V AC | 10 A / 250 V AC | 6 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) | 1.5 A / 120 V; 0.75 A / 240 V (C300) |
| AC3 | 370 W (single-phase motor) | 370 W (single-phase motor) | 125 W (single-phase motor) |
| DC1 | 12 A / 24 V DC (see Fig. 3.1) | 10 A / 24 V DC (see Fig. 3.2) | 6 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 | 24 A | 20 A | 12 A |
| Rated current | 12 A | 10 A | 6 A |
| Max. breaking capacity AC1 | 3000 VA | 2500 VA | 1500 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 | 1200 cycles/hour | 1200 cycles/hour | 1200 cycles/hour |
| • no load | 18000 cycles/hour | 18000 cycles/hour | 18000 cycles/hour |

Coil Data

| | | | | |
|-----------------------------------|-------------|---|---|---|
| Rated voltage | 50/60 Hz AC | 6 ... 240 V | 6 ... 240 V | 6 ... 240 V |
| | DC | 5 ... 220 V | 5 ... 220 V | 5 ... 220 V |
| Must release voltage | | AC: ≥ 0.2 U _n ; DC: ≥ 0.1 U _n | AC: ≥ 0.2 U _n ; DC: ≥ 0.1 U _n | AC: ≥ 0.2 U _n ; DC: ≥ 0.1 U _n |
| Operating range of supply voltage | | see page 54 | see page 54 | see page 54 |
| Rated power consumption | AC | 1.6 VA | 1.6 VA | 1.6 VA |
| | DC | 0.9 W | 0.9 W | 0.9 W |

Insulation

| | | | | |
|-----------------------------|--|---|--|---|
| Insulation rated voltage | | 250 V AC | 250 V AC | 250 V AC |
| Rated surge voltage | | 4000 V 1.2 / 50 μs | with AC coils: 2500 V 1.2 / 50 μs with DC coils: 4000 V 1.2 / 50 μs | 2500 V 1.2 / 50 μs |
| Overtoltage category | | III | III | II |
| Insulation pollution degree | | 3 | 3 | 2 |
| Dielectric strength | | | | |
| • between coil and contacts | | 2500 V AC type of insulation: basic | 2500 V AC type of insulation: basic | 2500 V AC type of insulation: basic |
| • contact clearance | | 1500 V AC type of clearance: micro-disco. | 1500 V AC type of clearance: micro-disco. | 1500 V AC type of clearance: micro-disco. |
| • pole - pole | | 2500 V AC type of insulation: basic | 2500 V AC type of insulation: basic | 2500 V AC type of insulation: basic |
| Contact - coil distance | | | | |
| • clearance | | ≥ 2.5 mm | ≥ 2.5 mm | ≥ 1.6 mm |
| • creepage | | ≥ 4 mm | ≥ 4 mm | ≥ 3.2 mm |

General data

| | | | | |
|------------------------------------|-----|--|--|---|
| Operating / release time (typical) | | AC: 10 ms / 8 ms; DC: 13 ms / 3 ms | AC: 10 ms / 8 ms; DC: 13 ms / 3 ms | AC: 10 ms / 8 ms; DC: 13 ms / 3 ms |
| Electrical life | | | | |
| • resistive | AC1 | > 10 ⁵ ; 12 A. 250 V AC see Fig. 2.1 | > 10 ⁵ ; 10 A. 250 V AC see Fig. 2.2 | > 10 ⁵ ; 6 A. 250 V AC see Fig. 2.3 |
| • cosφ | | | | |
| Mechanical life (cycles) | | > 2 x 10 ⁷ | > 2 x 10 ⁷ | > 2 x 10 ⁷ |
| Dimensions (L x W x H) | | 27.5 x 21.2 x 35.6 mm | 27.5 x 21.2 x 35.6 mm | 27.5 x 21.2 x 35.6 mm |
| Weight | | 35 g | 35 g | 35 g |
| Ambient temperature | | | | |
| • storage | | -40...+85 °C | -40...+85 °C | -40...+85 °C |
| • operating | | AC: -40...+55 °C; DC: -40...+70 °C | AC: -40...+55 °C; DC: -40...+70 °C | AC: -40...+55 °C; DC: -40...+70 °C |
| Cover protection category | | IP 40 PN-EN 60529 | IP 40 PN-EN 60529 | IP 40 PN-EN 60529 |
| Environmental protection | | RTI PN-EN 116000-3 | RTI PN-EN 116000-3 | RTI PN-EN 116000-3 |
| Shock resistance (NO/NC) | | 10 g / 5 g | 10 g / 5 g | 10 g / 5 g |
| Vibration resistance | | 5 g 10...150 Hz | 5 g 10...150 Hz | 5 g 10...150 Hz |
| Solder bath temperature | | max. 270 °C | - | max. 270 °C |
| Soldering time | | max. 5 s | - | max. 5 s |

* PCB or threaded bolt versions contact Altech Corp.

** Other contact materials (eg. gold plated) available, contact Altech Corp.

R2, R3, R4 Industrial Electromagnetic Relays



R2 (DPDT)



CONNECTION DIAGRAM



DIMENSIONS

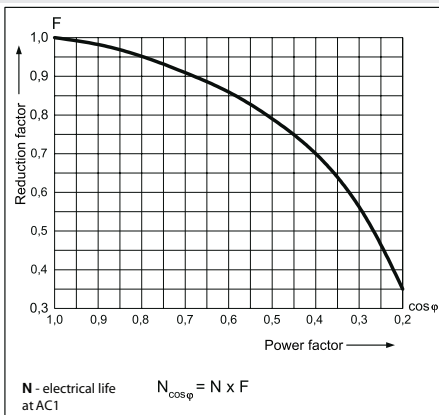


LOAD CHARTS

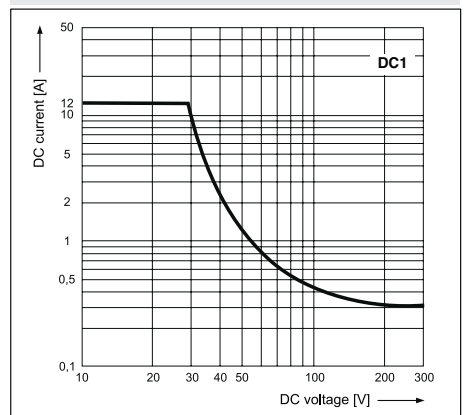
Electrical life at AC resistive load. Switching frequency: 1200 cycles/hour **Fig. 1.1**



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



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



R2, R3, R4 Industrial Electromagnetic Relays



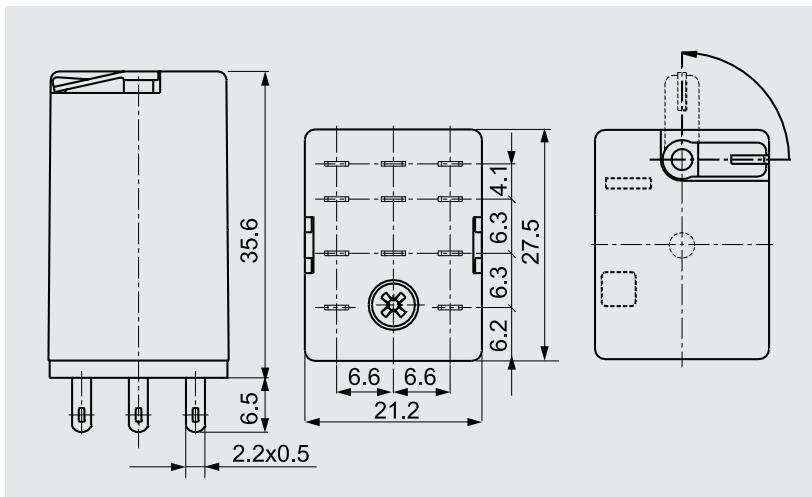
R3 (3PDT)



CONNECTION DIAGRAM



DIMENSIONS

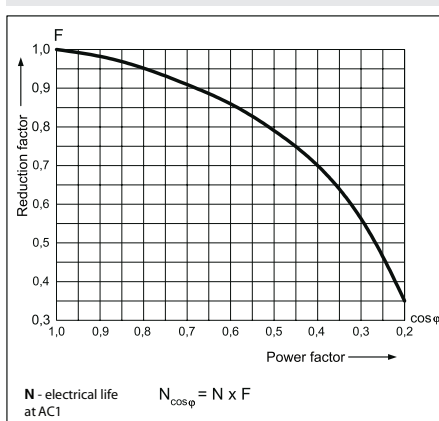


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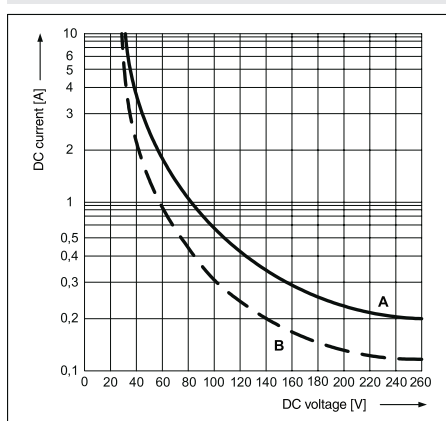
Electrical life at AC resistive load.
Switching frequency: 1200 cycles/hour **Fig. 1.2**



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



Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms **Fig. 3.2**



R2, R3, R4 Industrial Electromagnetic Relays



R4 (4PDT)



CONNECTION DIAGRAM



DIMENSIONS



LOAD CHARTS

Electrical life at AC resistive load.
Switching frequency: 1200 cycles/hour **Fig. 3.1**



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



Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms **Fig. 3.3**



R2, R3, R4

Industrial Electromagnetic Relays

R2 DPDT AC 50/60Hz & DC coil

| Part Number | Coil Voltage (V) | Coil Type | Coil resistance at 20 °C in Ω | Coil operating range | | Options* | |
|------------------------|------------------|------------|-------------------------------|----------------------|----------------|----------|-----|
| | | | | min. (at 20°C) | max. (at 55°C) | WT | WTL |
| R2N-2012-23-1012-WT | 12 | DC | 160 | 9.6 | 13.2 | x | |
| ▶ R2N-2012-23-1012-WTL | 12 | DC | 160 | 9.6 | 13.2 | | x |
| ▶ R2N-2012-23-1024-WT | 24 | DC | 640 | 19.2 | 26.4 | x | |
| ▶ R2N-2012-23-1024-WTL | 24 | DC | 640 | 19.2 | 26.4 | | x |
| R2N-2012-23-1110-WT | 110 | DC | 13600 | 88.0 | 121.0 | x | |
| R2N-2012-23-1110-WTL | 110 | DC | 13600 | 88.0 | 121.0 | | x |
| R2N-2012-23-5024-WT | 24 | AC 50/60Hz | 158.0 | 19.2 | 26.4 | x | |
| ▶ R2N-2012-23-5024-WTL | 24 | AC 50/60Hz | 158.0 | 19.2 | 26.4 | | x |
| ▶ R2N-2012-23-5120-WT | 120 | AC 50/60Hz | 3770 | 96.0 | 132.0 | x | |
| ▶ R2N-2012-23-5120-WTL | 120 | AC 50/60Hz | 3770 | 96.0 | 132.0 | | x |
| R2N-2012-23-5230-WT | 230 | AC 50/60Hz | 16100 | 184.0 | 253.0 | x | |
| ▶ R2N-2012-23-5230-WTL | 230 | AC 50/60Hz | 16100 | 184.0 | 253.0 | | x |

R3 DPDT AC 50/60Hz & DC coil

| Part Number | Coil Voltage (V) | Coil Type | Coil resistance at 20 °C in Ω | Coil operating range | | Options* | |
|------------------------|------------------|------------|-------------------------------|----------------------|----------------|----------|-----|
| | | | | min. (at 20°C) | max. (at 55°C) | WT | WTL |
| R3N-2013-23-1012-WT | 12 | DC | 160 | 9.6 | 13.2 | x | |
| ▶ R3N-2013-23-1012-WTL | 12 | DC | 160 | 9.6 | 13.2 | | x |
| R3N-2013-23-1024-WT | 24 | DC | 640 | 19.2 | 26.4 | x | |
| ▶ R3N-2013-23-1024-WTL | 24 | DC | 640 | 19.2 | 26.4 | | x |
| R3N-2013-23-1110-WT | 110 | DC | 13600 | 88.0 | 121.0 | x | |
| R3N-2013-23-1110-WTL | 110 | DC | 13600 | 88.0 | 121.0 | | x |
| R3N-2013-23-5024-WT | 24 | AC 50/60Hz | 158.0 | 19.2 | 26.4 | x | |
| R3N-2013-23-5024-WTL | 24 | AC 50/60Hz | 158.0 | 19.2 | 26.4 | | x |
| ▶ R3N-2013-23-5120-WT | 120 | AC 50/60Hz | 3770 | 96.0 | 132.0 | x | |
| ▶ R3N-2013-23-5120-WTL | 120 | AC 50/60Hz | 3770 | 96.0 | 132.0 | | x |
| R3N-2013-23-5230-WT | 230 | AC 50/60Hz | 16100 | 184.0 | 253.0 | x | |
| R3N-2013-23-5230-WTL | 230 | AC 50/60Hz | 16100 | 184.0 | 253.0 | | x |

R4 DPDT AC 50/60Hz & DC coil

| Part Number | Coil Voltage (V) | Coil Type | Coil resistance at 20 °C in Ω | Coil operating range | | Options* | |
|------------------------|------------------|------------|-------------------------------|----------------------|----------------|----------|-----|
| | | | | min. (at 20°C) | max. (at 55°C) | WT | WTL |
| R4N-2014-23-1012-WT | 12 | DC | 160 | 9.6 | 13.2 | x | |
| ▶ R4N-2014-23-1012-WTL | 12 | DC | 160 | 9.6 | 13.2 | | x |
| ▶ R4N-2014-23-1024-WT | 24 | DC | 640 | 19.2 | 26.4 | x | |
| ▶ R4N-2014-23-1024-WTL | 24 | DC | 640 | 19.2 | 26.4 | | x |
| R4N-2014-23-1110-WT | 110 | DC | 13600 | 88.0 | 121.0 | x | |
| ▶ R4N-2014-23-1110-WTL | 110 | DC | 13600 | 88.0 | 121.0 | | x |
| R4N-2014-23-5024-WT | 24 | AC 50/60Hz | 158.0 | 19.2 | 26.4 | x | |
| ▶ R4N-2014-23-5024-WTL | 24 | AC 50/60Hz | 158.0 | 19.2 | 26.4 | | x |
| ▶ R4N-2014-23-5120-WT | 120 | AC 50/60Hz | 3770 | 96.0 | 132.0 | x | |
| ▶ R4N-2014-23-5120-WTL | 120 | AC 50/60Hz | 3770 | 96.0 | 132.0 | | x |
| R4N-2014-23-5230-WT | 230 | AC 50/60Hz | 16100 | 184.0 | 253.0 | x | |
| ▶ R4N-2014-23-5230-WTL | 230 | AC 50/60Hz | 16100 | 184.0 | 253.0 | | x |

WT = with mechanical indicator + lockable front test button

WTL = with mechanical indicator + lockable front test button + light indicator (LED)

* other options available upon request

▶ BOLD - Regular stocked items.

R2, R3, R4

Industrial Electromagnetic Relays - Plug-in Sockets and Accessories



GZT2 (for R2)

Screw terminals
 Max. tightening moment for the terminal: 0.7 Nm
 35 mm rail mount acc. to PN-EN 60715
 or on panel mounting
 76,3 x 27 x 42.5(80) mm*
 Two poles
 12 A, 300 V AC

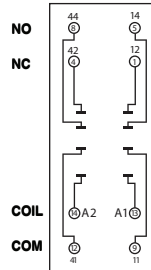


GZT2

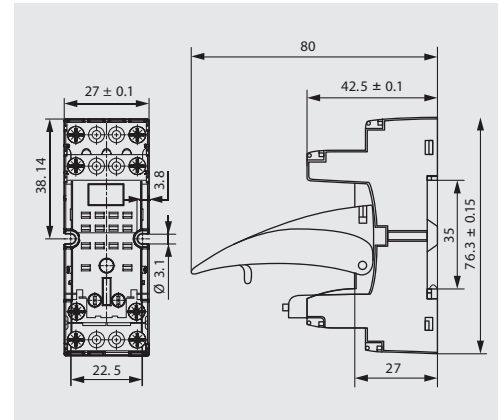
ZGGZ4 (see page 111)

Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



GZM2 (for R2)

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 x 27 x 61(82) mm*
 Two poles
 12 A, 300 V AC

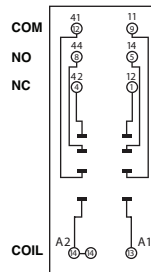


GZM2

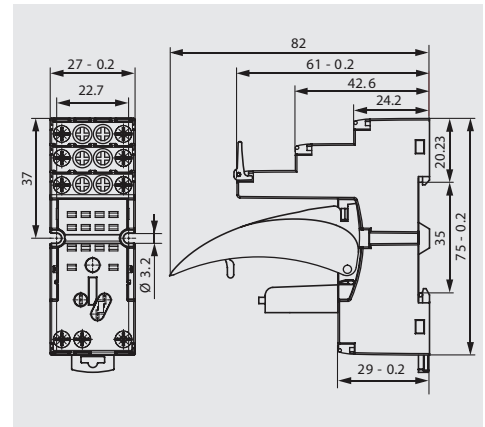
ZGGZ4 (see page 111)

Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



GZT3 (for R3)

Screw terminals
 Max. tightening moment for the terminal: 0.7 Nm
 35 mm rail mount acc. to PN-EN 60715
 or on panel mounting
 76,3 x 27 x 42.5(80) mm*
 Three poles
 10 A, 300 V AC

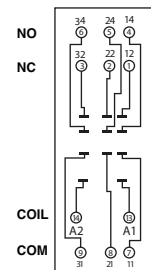


GZT3

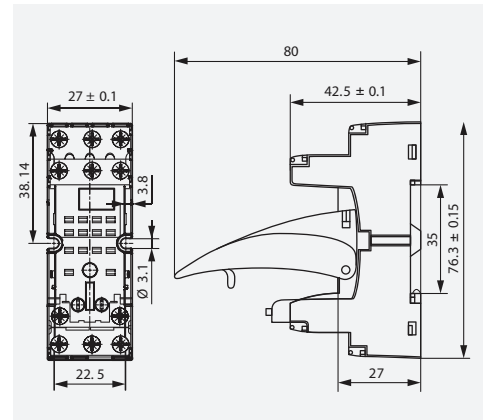
ZGGZ4 (see page 111)

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.

R2, R3, R4

Industrial Electromagnetic Relays - Plug-in Sockets and Accessories

GZM3 (for R3)

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 x 27 x 61(82) mm*
 Three poles
 10 A, 300 V AC



E22891



GZT2



GZT4-0040



G4 1052**



ZGGZ4 (see page 111)



GZT4-0035

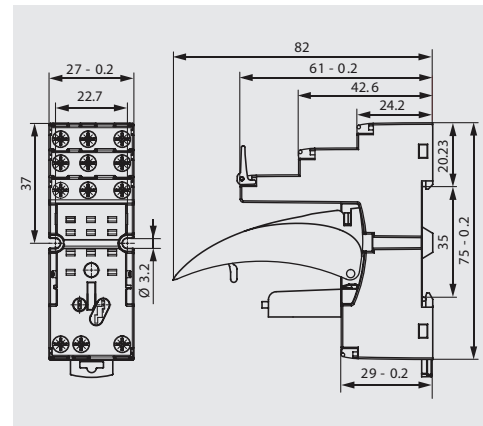


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



GZT4 (for R4)

Screw terminals
 Max. tightening moment
 for the terminal: 0.7 Nm
 35 mm rail mount
 acc. to PN-EN 60715
 or on panel mounting
 76,3 x 27 x 42.5(80) mm *
 Four poles
 6 A, 300 V AC



E22891



GZM2



GZT4-0040



G4 1052**



ZGGZ4 (see page 111)



GZT4-0035

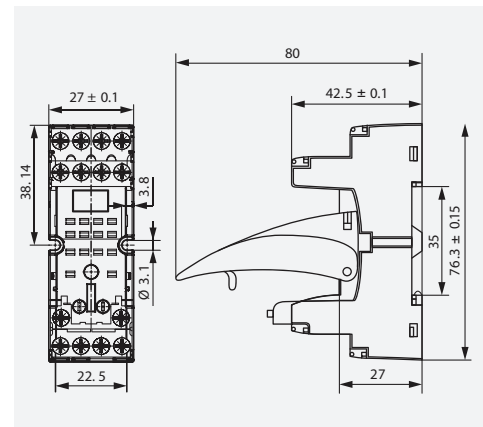


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



GZM4 (for R4)

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 x 27 x 61(82) mm*
 Four poles
 6 A, 300 V AC



E22891



GZT3



GZT4-0040



G4 1052**



ZGGZ4 (see page 111)

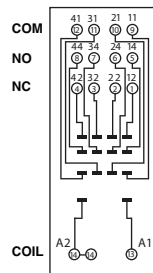


GZT4-0035



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.

R2, R3, R4

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

GZMB2 (for R2)

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

95 x 31 x 42.5(80) mm*

Two poles

10 A, 300 V AC



E22891



GZMB2

CONNECTION DIAGRAM



DIMENSIONS



GZMB4-0040



G4 1052**



TR



Module type M... (see page 113)

GZMB4 (for R4)

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

95 x 31 x 42.5(80) mm*

Four poles

10 A, 300 V AC



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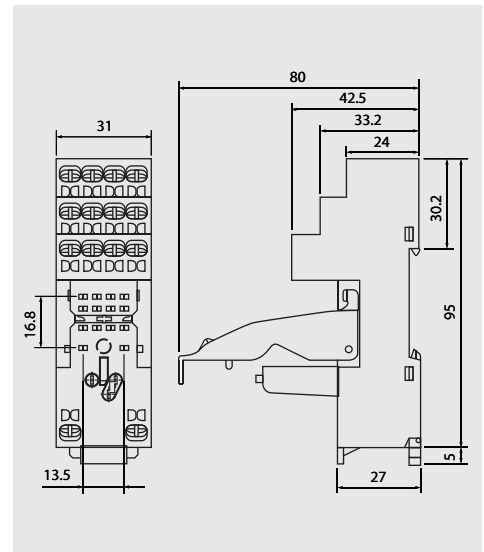


GZMB4

CONNECTION DIAGRAM



DIMENSIONS



GZMB4-0040



G4 1052**



TR



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.

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