

# 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                                   |
|------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| <b>Number and type of contacts</b> | <b>DPDT</b>                          | <b>3PDT</b>                          | <b>4PDT</b>                          |
| 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                                 |
| <b>Rated current</b>               | <b>12 A</b>                          | <b>10 A</b>                          | <b>6 A</b>                           |
| 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 <sub>n</sub> ; DC: ≥ 0.1 U <sub>n</sub> | AC: ≥ 0.2 U <sub>n</sub> ; DC: ≥ 0.1 U <sub>n</sub> | AC: ≥ 0.2 U <sub>n</sub> ; DC: ≥ 0.1 U <sub>n</sub> |
| 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<br>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 <sup>5</sup> ; 12 A. 250 V AC<br>see Fig. 2.1 | > 10 <sup>5</sup> ; 10 A. 250 V AC<br>see Fig. 2.2 | > 10 <sup>5</sup> ; 6 A. 250 V AC<br>see Fig. 2.3 |
| • cosφ                             |     |  |  |   |
| Mechanical life (cycles)           |     | > 2 x 10 <sup>7</sup>                              | > 2 x 10 <sup>7</sup>                              | > 2 x 10 <sup>7</sup>                             |
| 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)



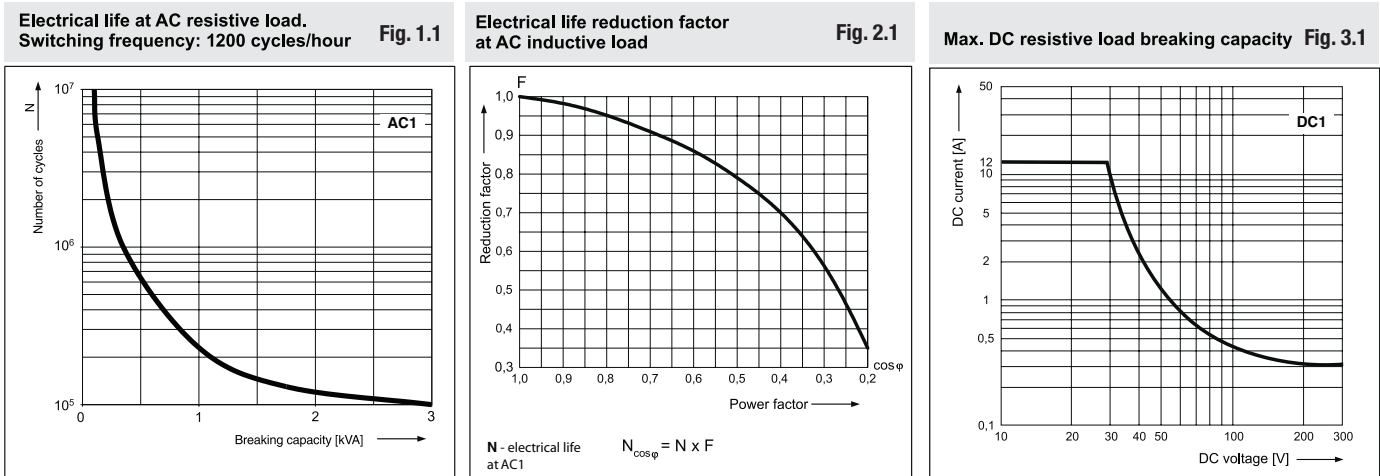
### CONNECTION DIAGRAM



### DIMENSIONS



### LOAD CHARTS



# R2, R3, R4 Industrial Electromagnetic Relays



## R3 (3PDT)



### CONNECTION DIAGRAM



### DIMENSIONS

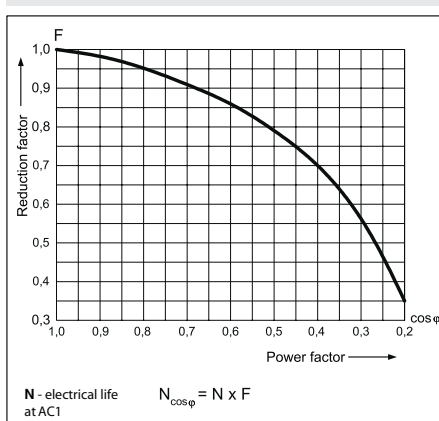


### LOAD CHARTS

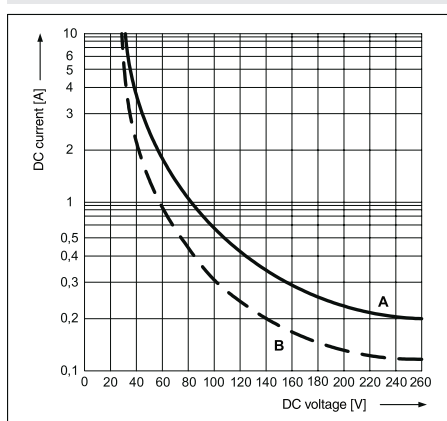
Electrical life at AC resistive load.  
Switching frequency: 1200 cycles/hour **Fig. 1.2**



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



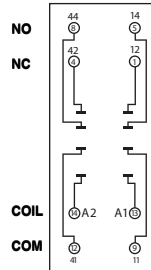
### GZT2 (for R2)

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

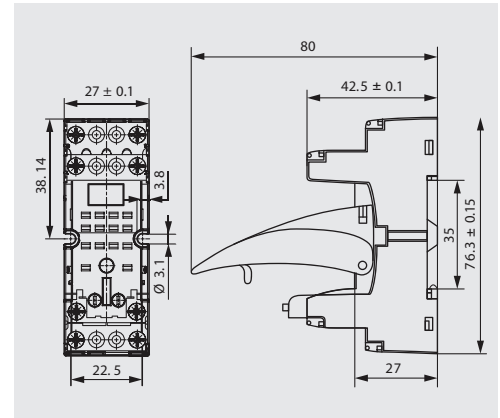


GZT2

### CONNECTION DIAGRAM



### DIMENSIONS



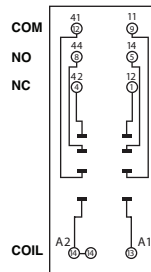
### GZM2 (for R2)

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

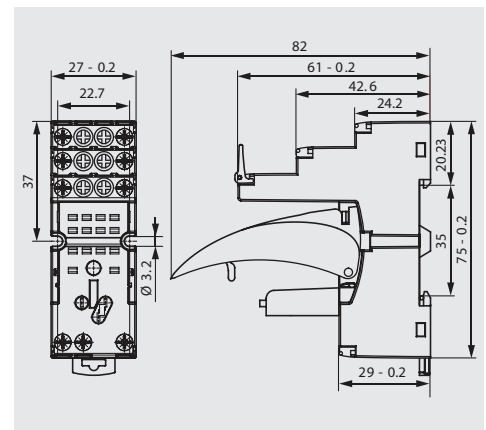


GZM2

### CONNECTION DIAGRAM



### DIMENSIONS



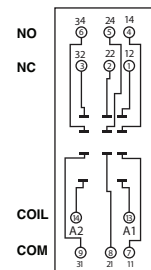
### GZT3 (for R3)

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

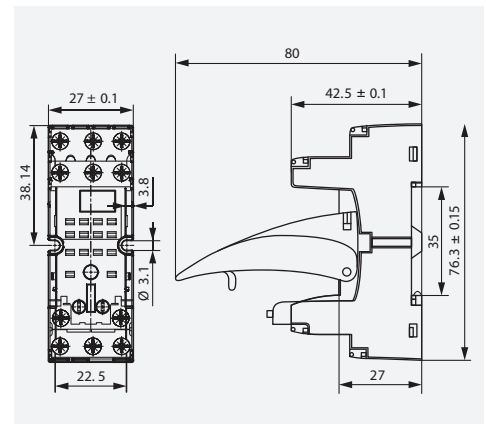


GZT3

### 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)

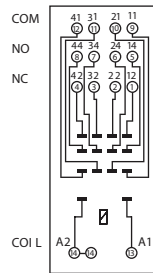


GZT4-0035

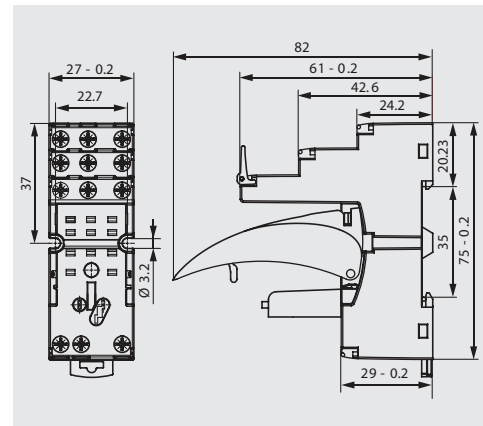


Module type M... (see page 113)

### 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)

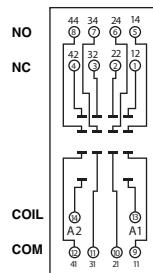


GZT4-0035

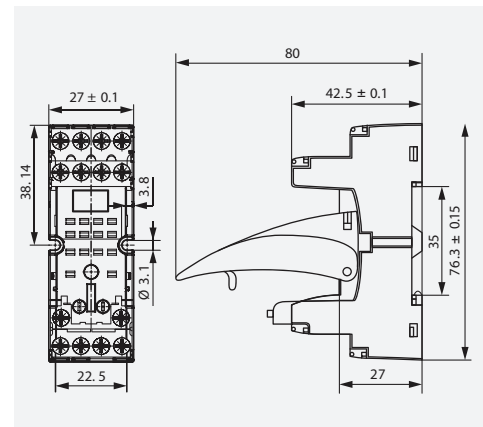


Module type M... (see page 113)

### 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)

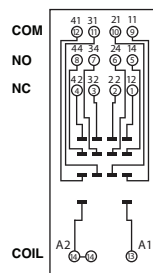


GZT4-0035

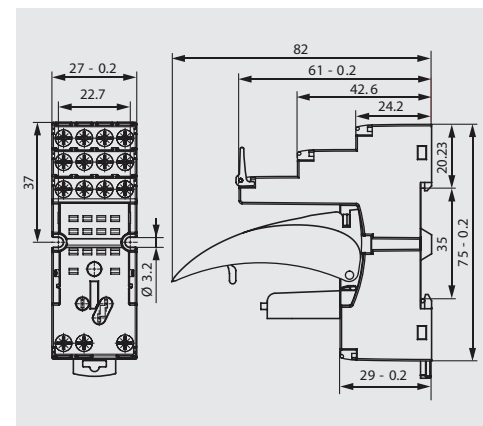


Module type M... (see page 113)

### 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**<sup>®</sup>

### GZMB2 (for R2)

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 deinsulation: 9...11 mm

35 mm rail mount

acc. to PN-EN 60715

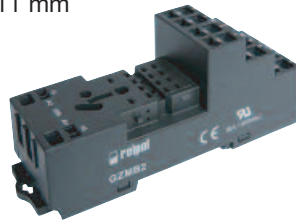
95 x 31 x 42.5(80) mm\*

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 mm<sup>2</sup>

(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



E22891



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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- Оперативные сроки поставки под заказ (от 5 рабочих дней);
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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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## JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: [ocean@oceanchips.ru](mailto:ocean@oceanchips.ru)

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А