

# R15 - 2 CO, 3 CO

## industrial relays of small dimensions



R15 - 2 CO



R15 - 3 CO

• Relays of general application • For plug-in sockets: 35 mm rail mount acc. to PN-EN 60715; on panel mounting: solder terminals • Contacts AgNi • Coils AC and DC • WT (mechanical indicator + lockable front test button) - standard features of relays in cover, for plug-in sockets. Relays may be provided with the test buttons (no latching) and plugs - page 6 • **Have obtained LR Type Approval Certificate (Lloyd's Register)** • Recognitions, certifications, directives: RoHS, AUCOTEAM GmbH Berlin - railroad standard,       

### Contact data

|                                |                                                                                                                                                                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number and type of contacts    | 2 CO, 3 CO                                                                                                                                                                                                                                                                |
| Contact material               | <b>AgNi</b> , AgNi/Au 0,2 µm, AgNi/Au 5 µm                                                                                                                                                                                                                                |
| Rated / max. switching voltage | AC 250 V / 440 V                                                                                                                                                                                                                                                          |
| Min. switching voltage         | 10 V AgNi, 10 V AgNi/Au 0,2 µm, 5 V AgNi/Au 5 µm                                                                                                                                                                                                                          |
| Rated load (capacity)          | <div>AC1 10 A / 250 V AC 10 A / 277 V AC UL 508</div> <div>AC15 3 A / 120 V 1,5 A / 240 V (B300)</div> <div>AC3 370 W (single-phase motor; 0,5 HP / 240 V AC UL 508)</div> <div>DC1 10 A / 24 V DC (see Fig. 3)</div> <div>DC13 0,22 A / 120 V 0,1 A / 250 V (R300)</div> |
| Min. switching current         | 5 mA                                                                                                                                                                                                                                                                      |
| Max. inrush current            | 20 A                                                                                                                                                                                                                                                                      |
| Rated current                  | 10 A                                                                                                                                                                                                                                                                      |
| Max. breaking capacity         | AC1 2 500 VA                                                                                                                                                                                                                                                              |
| Min. breaking capacity         | 0,3 W AgNi, 0,3 W AgNi/Au 0,2 µm, 0,05 W AgNi/Au 5 µm                                                                                                                                                                                                                     |
| Contact resistance             | ≤ 100 mΩ                                                                                                                                                                                                                                                                  |
| Max. operating frequency       |                                                                                                                                                                                                                                                                           |
| • at rated load                | AC1 1 200 cycles/hour                                                                                                                                                                                                                                                     |
| • no load                      | 12 000 cycles/hour                                                                                                                                                                                                                                                        |

### Coil data

|                                   |                                                    |
|-----------------------------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC 6 ... 240 V                            |
|                                   | DC 6 ... 220 V                                     |
| Must release voltage              | AC: ≥ 0,15 U <sub>n</sub> DC: ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage | see Tables 1, 2                                    |
| Rated power consumption           | AC: 2,8 VA 50 Hz 2,5 VA 60 Hz DC: 1,5 W            |

### Insulation according to PN-EN 60664-1

|                             |                                                   |
|-----------------------------|---------------------------------------------------|
| Insulation rated voltage    | 250 V AC                                          |
| Rated surge voltage         | 2 500 V 1,2 / 50 µs                               |
| Overvoltage category        | III                                               |
| Insulation pollution degree | 3                                                 |
| Dielectric strength         |                                                   |
| • between coil and contacts | 2 500 V AC type of insulation: basic              |
| • contact clearance         | 1 500 V AC type of clearance: micro-disconnection |
| • pole - pole               | 2 000 V AC type of insulation: basic              |
| Contact - coil distance     |                                                   |
| • clearance                 | ≥ 3 mm                                            |
| • creepage                  | ≥ 4,2 mm                                          |

### General data

|                                           |                                               |
|-------------------------------------------|-----------------------------------------------|
| Operating / release time (typical values) | AC: 12 ms / 10 ms DC: 18 ms / 7 ms            |
| Electrical life                           |                                               |
| • resistive AC1                           | > 2 x 10 <sup>5</sup> 10 A, 250 V AC          |
| • cosφ                                    | see Fig. 2                                    |
| Mechanical life (cycles)                  | > 2 x 10 <sup>7</sup>                         |
| Dimensions (L x W x H)                    | 35 x 35 x 54,4 mm                             |
| Weight                                    | 83 g                                          |
| Ambient temperature                       | • storage -40...+85 °C                        |
|                                           | • operating AC: -40...+55 °C DC: -40...+70 °C |
| Cover protection category                 | IP 40 PN-EN 60529                             |
| Environmental protection                  | RTI PN-EN 116000-3                            |
| Shock resistance                          | 10 g                                          |
| Vibration resistance                      | 5 g 10...150 Hz                               |
| Solder bath temperature                   | max. 270 °C                                   |
| Soldering time                            | max. 5 s                                      |

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

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**Coil data - DC voltage version**

**Table 1**

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V DC |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)              | max. (at 55 °C) |
| 1006        | 6                     | 28                                      | $\pm 10\%$                   | 4,8                          | 6,6             |
| <b>1012</b> | <b>12</b>             | <b>110</b>                              | <b><math>\pm 10\%</math></b> | <b>9,6</b>                   | <b>13,2</b>     |
| <b>1024</b> | <b>24</b>             | <b>430</b>                              | <b><math>\pm 10\%</math></b> | <b>19,2</b>                  | <b>26,4</b>     |
| 1048        | 48                    | 1 750                                   | $\pm 10\%$                   | 38,4                         | 52,8            |
| 1060        | 60                    | 2 700                                   | $\pm 10\%$                   | 48,0                         | 66,0            |
| 1110        | 110                   | 9 200                                   | $\pm 10\%$                   | 88,0                         | 121,0           |
| 1120        | 120                   | 11 000                                  | $\pm 10\%$                   | 96,0                         | 132,0           |
| <b>1220</b> | <b>220</b>            | <b>37 000</b>                           | <b><math>\pm 10\%</math></b> | <b>176,0</b>                 | <b>242,0</b>    |

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

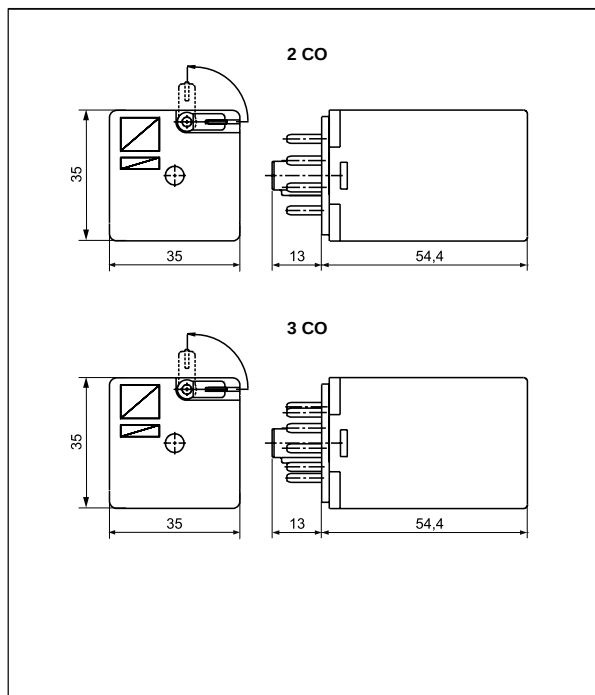
**Coil data - AC 50/60 Hz voltage version**

**Table 2**

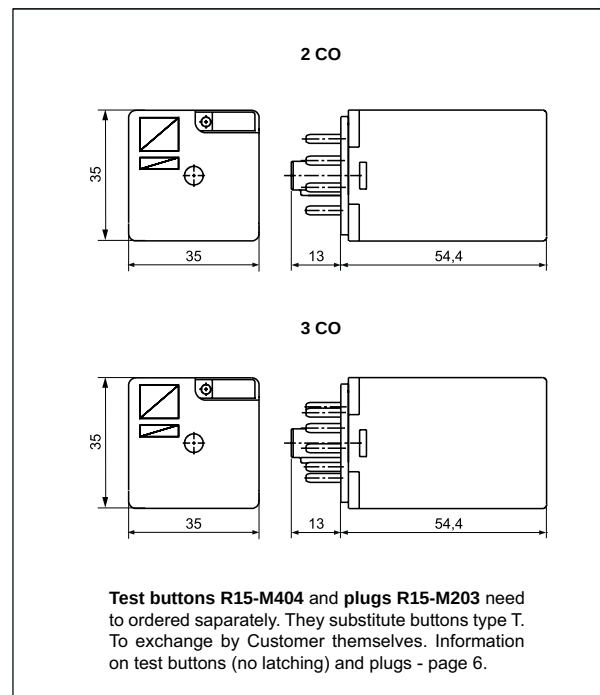
| Coil code   | Rated voltage<br>V AC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V AC |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)              | max. (at 55 °C) |
| 5006        | 6                     | 4,3                                     | $\pm 15\%$                   | 4,8                          | 6,6             |
| 5012        | 12                    | 18,5                                    | $\pm 15\%$                   | 9,6                          | 13,2            |
| <b>5024</b> | <b>24</b>             | <b>75</b>                               | <b><math>\pm 15\%</math></b> | <b>19,2</b>                  | <b>26,4</b>     |
| 5048        | 48                    | 305                                     | $\pm 15\%$                   | 38,4                         | 52,8            |
| 5060        | 60                    | 475                                     | $\pm 15\%$                   | 48,0                         | 66,0            |
| 5115        | 115                   | 1 840                                   | $\pm 15\%$                   | 92,0                         | 126,5           |
| 5120        | 120                   | 1 910                                   | $\pm 15\%$                   | 96,0                         | 132,0           |
| 5220        | 220                   | 6 980                                   | $\pm 15\%$                   | 176,0                        | 242,0           |
| <b>5230</b> | <b>230</b>            | <b>7 080</b>                            | <b><math>\pm 15\%</math></b> | <b>184,0</b>                 | <b>253,0</b>    |
| 5240        | 240                   | 7 760                                   | $\pm 15\%$                   | 192,0                        | 264,0           |

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

**Dimensions - plug-in version (WT),  
with lockable front test button type T**



**Dimensions - plug-in version, with test button  
(no latching) or with plug (no manual operation)**



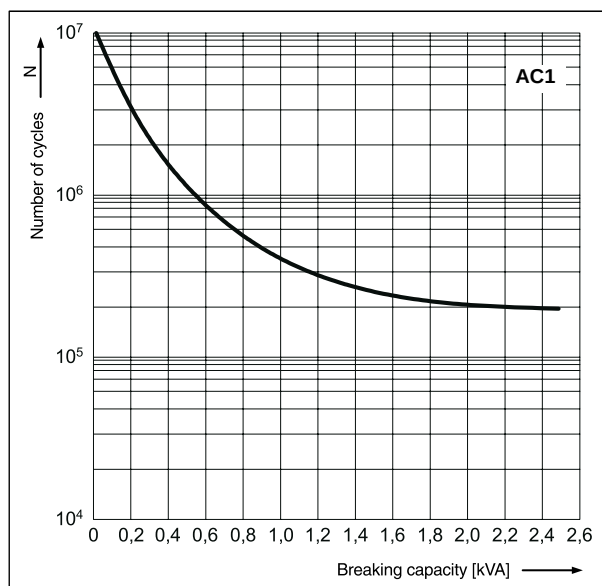
11.05.2013

# R15 - 2 CO, 3 CO

## industrial relays of small dimensions

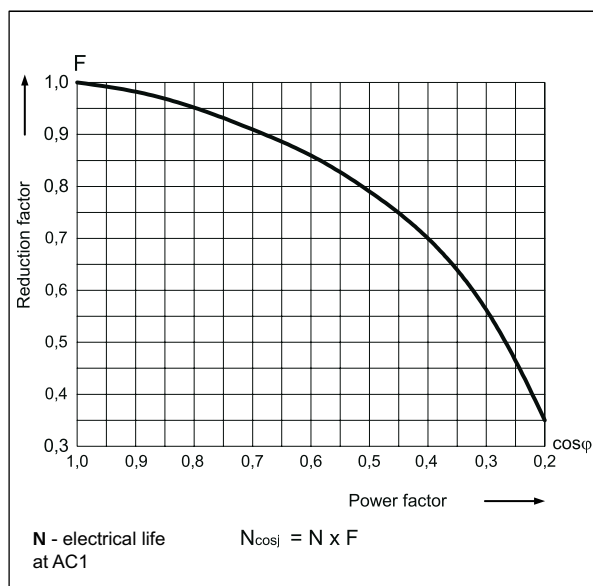
**Electrical life at AC resistive load.**  
Switching frequency: 1 200 cycles/hour

Fig. 1



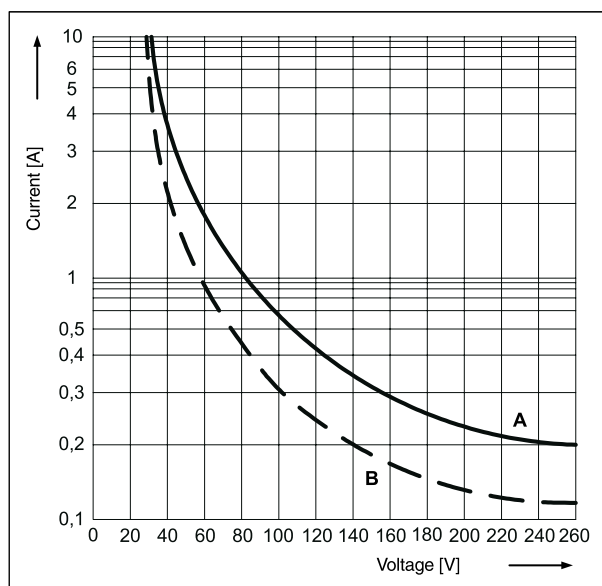
**Electrical life reduction factor at AC inductive load**

Fig. 2

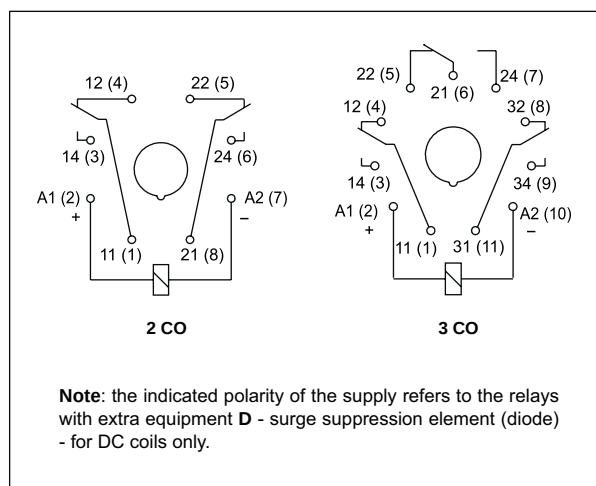


**Max. DC breaking capacity**  
**A - resistive load DC1**  
**B - inductive load L/R = 40 ms**

Fig. 3



**Connection diagrams (pin side view)**



### Mounting

Relays **R15 - 2 CO** are designed for:

- screw terminals plug-in sockets **PZ8** with clip **PZ11 0031**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- screw terminals plug-in sockets **GZU8** with clip **GZU 1052**, 35 mm rail mount acc. to PN-EN 60715
- screw terminals plug-in sockets **GZ8** with clip **GZ 1050**, on panel mounting with two M3 screws
- screw terminals plug-in sockets **GZS8**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- screw terminals plug-in sockets **GZP8** with clip **GZP-0054**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- solder terminals sockets **GOP8** with clip **R159 1051** and spring clamp **R15 5922**
- direct PCB mounting.

Relays **R15 - 3 CO** are designed for:

- screw terminals plug-in sockets **PS11** and **PZ11** with clip **PZ11 0031**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- screw terminals plug-in sockets **GZU11** with clip **GZU 1052**, 35 mm rail mount acc. to PN-EN 60715
- screw terminals plug-in sockets **GZ11** with clip **GZ 1050**, on panel mounting with two M3 screws
- screw terminals plug-in sockets **GZS11**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- screw terminals plug-in sockets **GZP11** with clip **GZP-0054**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- solder terminals sockets **GOP11** with clip **R159 1051** and spring clamp **R15 5922**
- direct PCB mounting.

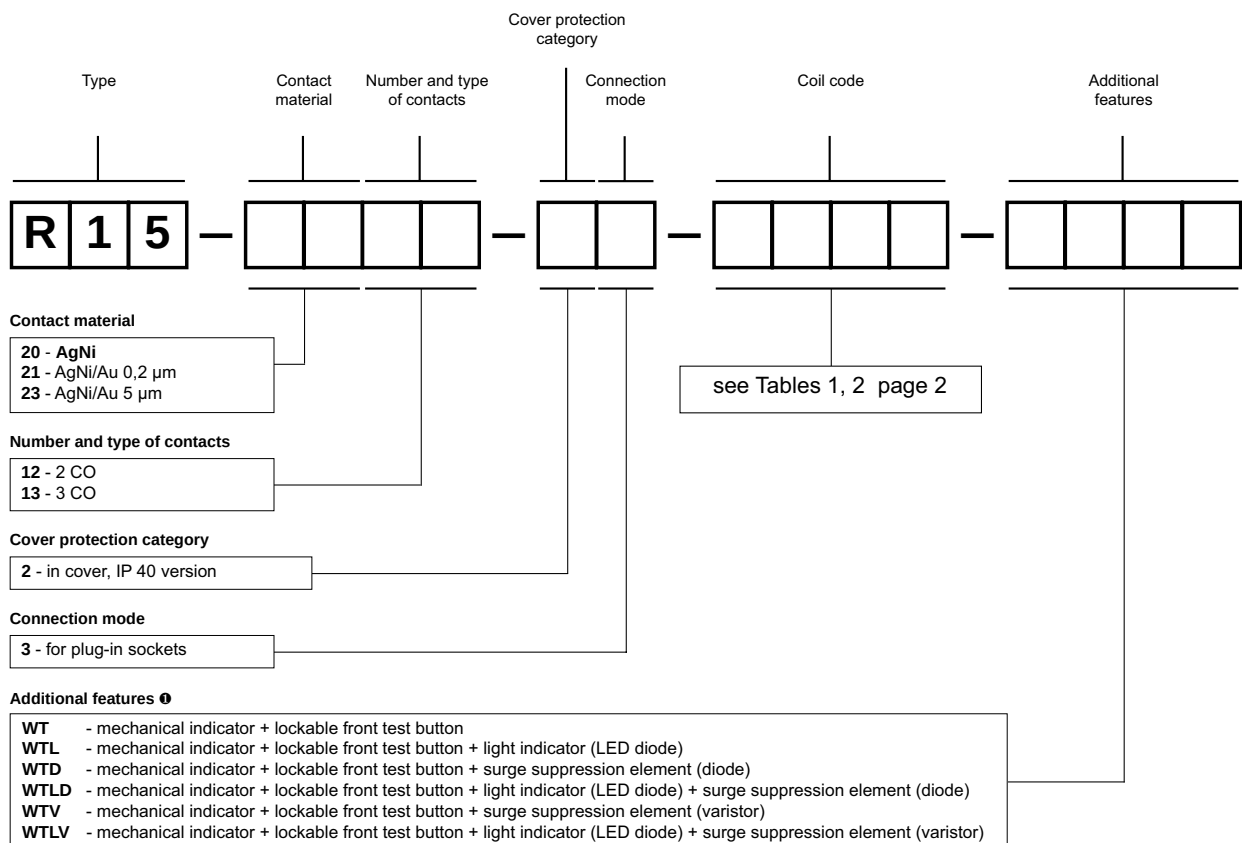
# R15 - 2 CO, 3 CO

## industrial relays of small dimensions

### Mounting

Relays R15 - 2 CO, 3 CO are offered in version: • standard WT (mechanical indicator + lockable front test button), for plug-in sockets. In standard version of relays (WT) is possibility self-exchange of button type T for test button R15-M404 (no latching) or plug R15-M203 (no manual operation). Test buttons (no latching) and plugs need to ordered separately.

### Ordering codes



❶ WT - standard features of relays for plug-in sockets. WTD, WTLD - only for DC coils, WTV, WTLV - only for AC coils

**Test buttons (no latching) and plugs** need to ordered separately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 6.

- Button R15-M404-A - orange colour (AC coils)
- Button R15-M404-D - green colour (DC coils)
- Plug R15-M203-A - orange colour (AC coils)
- Plug R15-M203-D - green colour (DC coils)

### Note:

For relays with additional features **D** - surge suppression element (diode) (versions WTD and WTLD) - fixed supply polarity compulsory for the DC load of coils: +A1(2) / -A2(7) for R15 - 2 CO and +A1(2) / -A2(10) for R15 - 3 CO. The polarity is indicated on the relay cover. For other versions of the relays with DC coils any polarity is possible.

Examples of ordering codes:

#### R15-2012-23-1024-WT

relay **R15**, for plug-in sockets, two changeover contacts, contact material AgNi, coil voltage 24 V DC, with mechanical indicator and lockable front test button, in cover IP 40

#### R15-2013-23-5230-WTL

relay **R15**, for plug-in sockets, three changeover contacts, contact material AgNi, coil voltage 230 V AC 50/60 Hz, with mechanical indicator and lockable front test button and light indicator (LED diode), in cover IP 40

## Additional features for industrial relays

**WT** - mechanical indicator + lockable front test button; basic features of standard industrial relays: R2, R3, R4, R15 - 2 CO, 3 CO - for plug-in sockets. **Detailed information** for individual relays: see "Ordering codes - Additional features".

| Type ①   | Description                                                                         | For industrial relays                                    |
|----------|-------------------------------------------------------------------------------------|----------------------------------------------------------|
| <b>W</b> | mechanical indicator                                                                | R2, R3, R4,<br>R15 - 2 CO, 3 CO                          |
| <b>T</b> | lockable front test button,<br>orange colour - AC coils,<br>green colour - DC coils | R2, R3, R4,<br>R15 - 2 CO, 3 CO                          |
| <b>L</b> | light indicator (LED diode),<br>located inside the relay                            | R2, R3, R4, RY2,<br>R15 - 2 CO, 3 CO, 4 CO<br>RUC, RUC-M |
| <b>D</b> | surge suppression element (diode)<br>- only for DC coils                            | R2, R3, R4, RY2,<br>R15 - 2 CO, 3 CO, 4 CO               |
| <b>V</b> | surge suppression element (varistor)<br>- only for AC coils                         | R15 - 2 CO, 3 CO                                         |
| <b>K</b> | test button without block function                                                  | R15 - 4 CO<br>RUC                                        |

① Available combinations:

**WT, WTL, WTD, WTL D** - in relays R2, R3, R4 for plug-in sockets

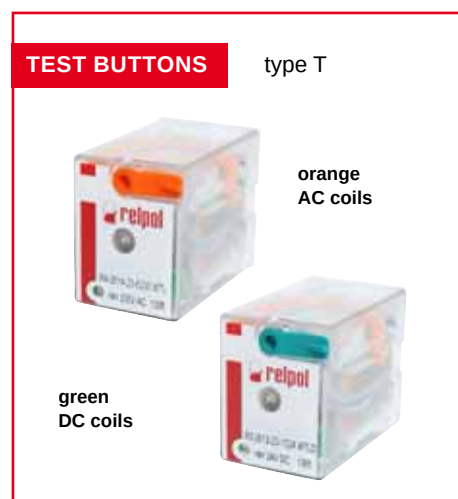
**L, D, LD** - in relays RY2 for plug-in sockets

**WT, WTL, WTD, WTL D, WTV, WTL V** - in relays R15 - 2 CO, 3 CO for plug-in sockets

**K, L, D, KL, KD, LD, KLD** - in relays R15 - 4 CO for plug-in sockets

**K, L, KL** - in relays RUC

**L** - in relays RUC-M



## Test buttons (no latching) and plugs

**Test buttons** are recommended for R2...WT, R3...WT, R4...WT, R15...WT 2 CO, R15...WT 3 CO relays - **for applications that do not allow permanent contact latching**. By manual operation (pressing the button) relay contacts can get switched for as long time as long the button is pressed. Contacts return to initial position as soon as pressure is released from the button. Those operations can be done while the coil is deenergized.

Button **R4P-0001** or **R15-M404** can be easily inserted by the Customer after removal of button type **T** (see Fig. 2). Button type **T** can be removed with screwdriver as shown on Fig. 1.

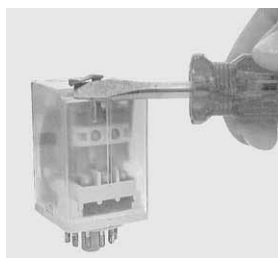


Fig. 1

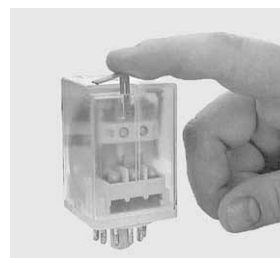
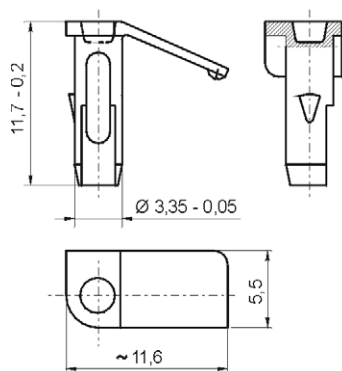


Fig. 2

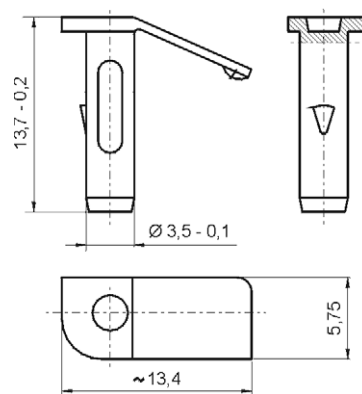
### Dimensions - test button R4P-0001 for relays R2...WT, R3...WT, R4...WT



Types of buttons:

**R4P-0001-A** - orange colour (AC coils)  
**R4P-0001-D** - green colour (DC coils)

### Dimensions - test button R15-M404 for relays R15...WT - 2 CO, 3 CO

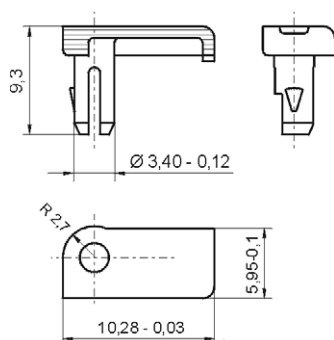


Types of buttons:

**R15-M404-A** - orange colour (AC coils)  
**R15-M404-D** - green colour (DC coils)

**Plugs R4W-0003** or **R15-M203** can substitute button type **T** if **manual operation (latching and testing) is not allowed**. Changing button type **T** for plug can be done by Customer themselves in the same way as changing button type **T** for button (no latching).

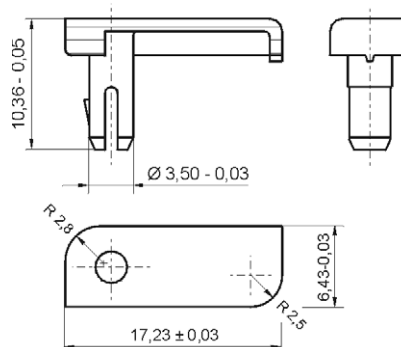
### Dimensions - plug R4W-0003 for relays R2...WT, R3...WT, R4...WT



Types of plugs:

**R4W-0003-A** - orange colour (AC coils)  
**R4W-0003-D** - green colour (DC coils)

### Dimensions - plug R15-M203 for relays R15...WT - 2 CO, 3 CO



Types of plugs:

**R15-M203-A** - orange colour (AC coils)  
**R15-M203-D** - green colour (DC coils)

## Plug-in sockets and accessories

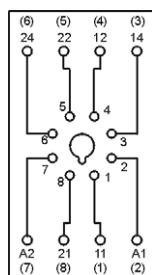
### PZ8 <sup>6</sup>

For R15 - 2 CO

Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
or on panel mounting  
68,2 x 38 x 24,2 mm  
Two poles  
10 A, 250 V AC



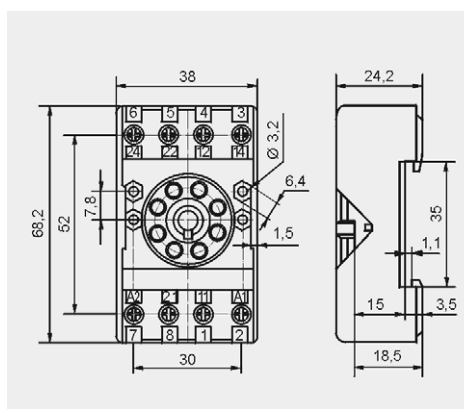
#### Connection diagram



#### Accessories

PZ11 0031

#### Dimensions



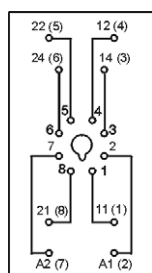
### GZU8

For R15 - 2 CO

Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
82 x 35,5 x 25,7 mm  
Two poles  
10 A, 300 V AC



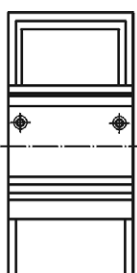
#### Connection diagram



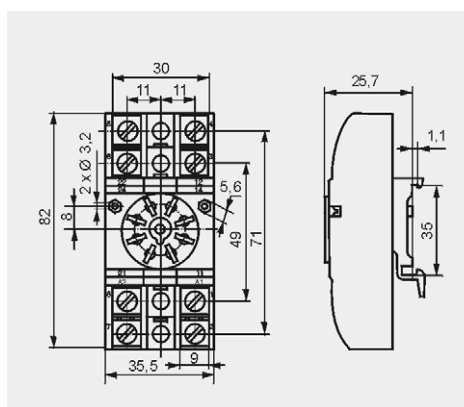
#### Accessories

GZU 1052

#### Adaptor



#### Dimensions



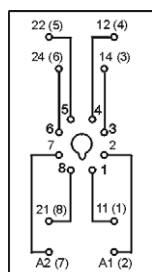
### GZ8

For R15 - 2 CO

Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
On panel mounting  
82,8 x 35,5 x 22,5 mm  
Two poles  
10 A, 300 V AC



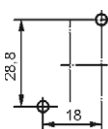
#### Connection diagram



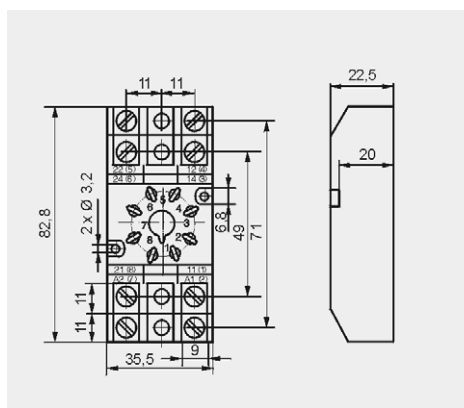
#### Accessories

GZ 1050

#### Mounting dimensions



#### Dimensions



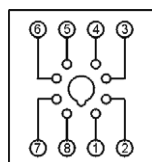
### GZS8

For R15 - 2 CO

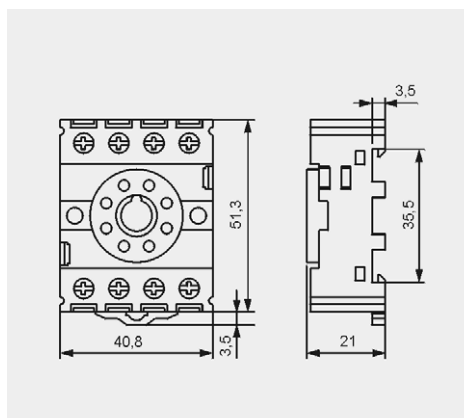
Screw terminals  
Max. tightening moment  
for the terminal: 1,0 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
or on panel mounting  
51,3 x 40,8 x 21 mm  
Two poles  
10 A, 300 V AC



#### Connection diagram



#### Dimensions



<sup>6</sup> Have obtained LR Type Approval Certificate (Lloyd's Register).



## Plug-in sockets and accessories

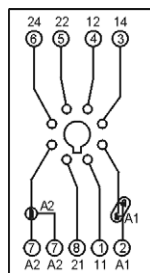
### GZP8

For R15 - 2 CO

Screw terminals  
Max. tightening moment  
for the terminal: 0,5 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
or on panel mounting  
73 x 38,2 x 27,2 mm  
Two poles  
12 A, 300 V AC



#### Connection diagram



GZP-0054



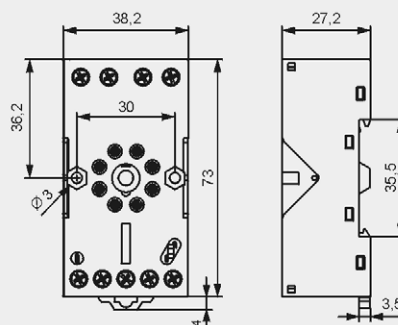
Time module T(COM3)



GZP-0035

#### Accessories

#### Dimensions



### GOP8

For R15 - 2 CO

Solder terminals  
47,2 x 32 x 22 mm  
Two poles  
10 A, 250 V AC



#### Accessories

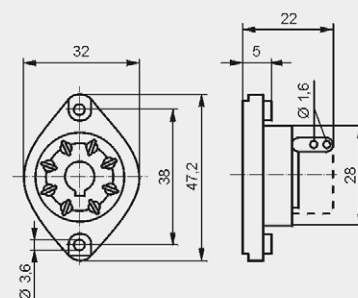


R159 1051



R15 5922

#### Dimensions



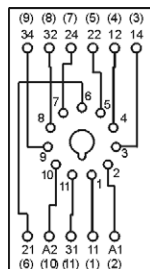
### PS11 6

For R15 - 3 CO

Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
or on panel mounting  
68,2 x 38 x 24,2 mm  
Three poles  
10 A, 250 V AC



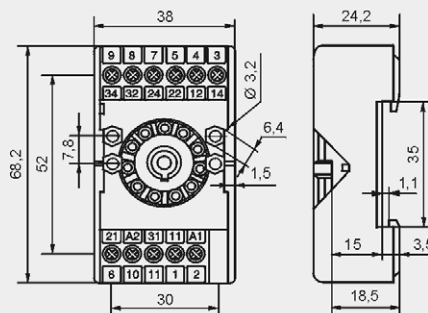
#### Connection diagram



PZ11 0031

#### Accessories

#### Dimensions



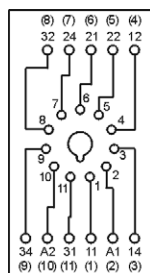
### PZ11 6

For R15 - 3 CO

Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
or on panel mounting  
68,2 x 38 x 24,2 mm  
Three poles  
10 A, 250 V AC



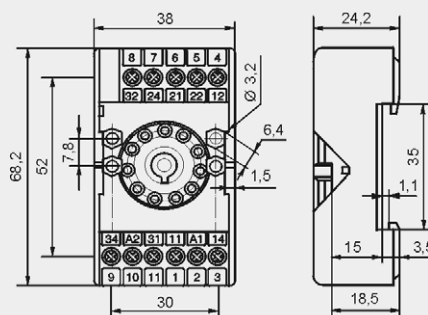
#### Connection diagram



PZ11 0031

#### Accessories

#### Dimensions



6 Have obtained LR Type Approval Certificate (Lloyd's Register).



## Plug-in sockets and accessories

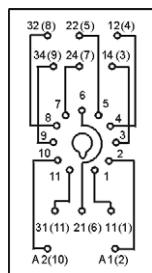
### GZU11

For R15 - 3 CO

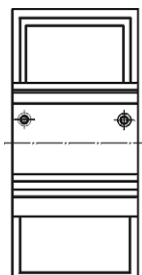
Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
82 x 35,5 x 25,7 mm  
Three poles  
10 A, 250 V AC



#### Connection diagram

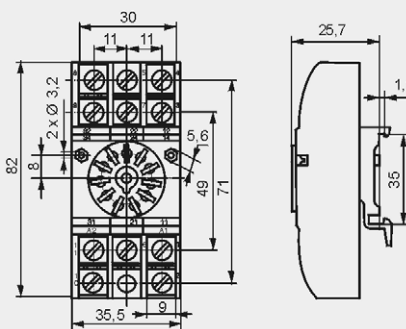


#### Adaptor



GZU 1052

#### Dimensions



#### Accessories

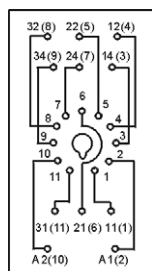
### GZ11

For R15 - 3 CO

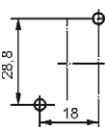
Screw terminals  
Max. tightening moment  
for the terminal: 0,7 Nm  
On panel mounting  
82,8 x 35,5 x 22,5 mm  
Three poles  
10 A, 250 V AC



#### Connection diagram

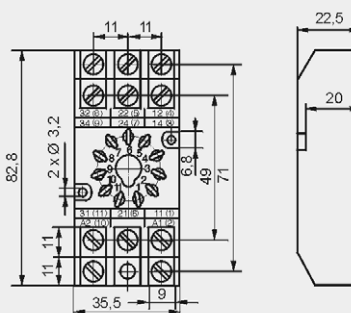


#### Mounting dimensions



GZ 1050

#### Dimensions



#### Accessories

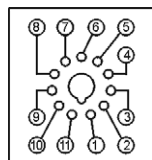
### GZS11

For R15 - 3 CO

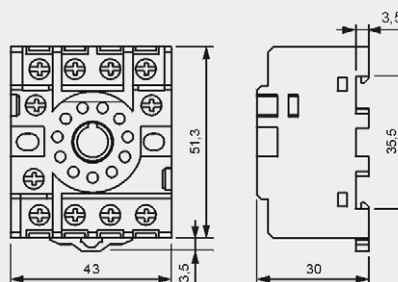
Screw terminals  
Max. tightening moment  
for the terminal: 1,0 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
or on panel mounting  
51,3 x 43 x 30 mm  
Three poles  
10 A, 300 V AC



#### Connection diagram



#### Dimensions



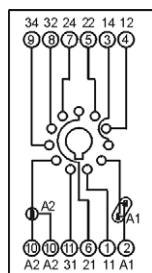
### GZP11

For R15 - 3 CO

Screw terminals  
Max. tightening moment  
for the terminal: 0,5 Nm  
35 mm rail mount  
acc. to PN-EN 60715  
or on panel mounting  
73 x 38,2 x 27,2 mm  
Three poles  
12 A, 300 V AC



#### Connection diagram



Time module T(COM3)

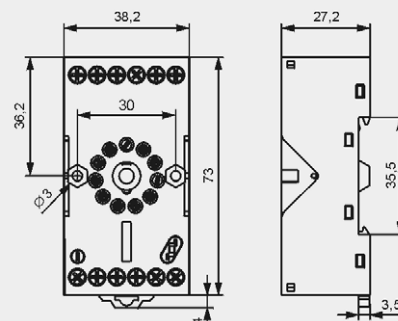


GZP-0054



GZP-0035

#### Dimensions



#### Accessories

11.05.2013

### GOP11

For R15 - 3 CO

Solder terminals  
47,2 x 32 x 22 mm  
Three poles  
10 A, 250 V AC



#### Accessories

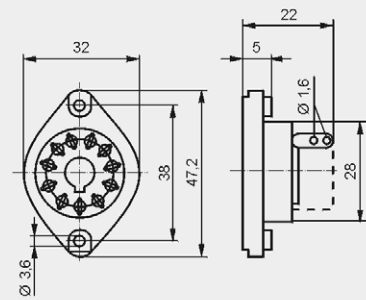


R159 1051



R15 5922

#### Dimensions



#### PRECAUTIONS:

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

11.05.2013