







# R4N


## miniature industrial relays



7 A / 230 V AC

- Relays of general application • For plug-in sockets: on 35 mm rail mount acc. to EN 60715; on panel mounting; with terminals for soldering
- PCB version available • AC and DC coils, insulation class F: 155 °C
- WT (mechanical indicator + lockable front test button) - standard features of relays. Relays may be provided with the test buttons (no latching) and plugs - page 380
- **Have obtained LR Type Approval Certificate (Lloyd's Register)**
- Recognitions, certifications, directives: RoHS,      

### Contact data

|                                |   |   |
|--------------------------------|---|---|
| Number and type of contacts    |   | 4 CO  |
| Contact material               |   | <b>AgNi</b> , AgNi/Au flash gold plating, AgNi/Au hard gold plating   |
| Rated / max. switching voltage | AC  | 250 V / 250 V   |
| Min. switching voltage         |   | 10 V AgNi, 10 V AgNi/Au flash gold plating<br>5 V AgNi/Au hard gold plating   |
| Rated load (capacity)          | AC1<br>AC15<br>DC1<br>DC13                  | 7 A / 230 V AC (VDE)      6 A / 250 V AC<br>1,5 A / 120 V              0,75 A / 240 V (C300)<br>6 A / 24 V DC (see Fig. 3)<br>0,22 A / 120 V              0,1 A / 250 V (R300)      |
| Motor load                     | acc. to UL 508<br>AC3 acc. to IEC 60947-4-1 | 1/3 HP      240 V AC, 3,6 FLA, single-phase motor <br>0,125 kW      240 V AC, single-phase motor |
| Min. switching current         |   | 5 mA  |
| Max. inrush current            |   | 12 A  |
| Rated current                  |   | 7 A   |
| Max. breaking capacity         | AC1   | 1 500 VA  |
| Min. breaking capacity         |   | 0,3 W AgNi, 0,3 W AgNi/Au flash gold plating<br>0,1 W AgNi/Au hard gold plating   |
| Contact resistance             |   | ≤ 100 mΩ  |
| Max. operating frequency       |   |   |
| • at rated load                | AC1   | 1 200 cycles/hour   |
| • no load                      |   | 18 000 cycles/hour  |

### Coil data


|                                   |                   |  |
|-----------------------------------|-------------------|--|
| Rated voltage                     | 50/60 Hz AC<br>DC | 6, 12, <b>24</b> , 42, 48, 60, 80, 110, 115, 120, 127, 220, <b>230</b> , 240 V<br>5, 6, <b>12</b> , <b>24</b> , 48, 60, 80, 110, 125, <b>220</b> V |
| Must release voltage              |                   | AC: ≥ 0,2 U <sub>n</sub> DC: ≥ 0,1 U <sub>n</sub>  |
| Operating range of supply voltage |                   | see Tables 1, 2  |
| Rated power consumption           | AC<br>DC          | 1,6 VA<br>0,9 W  |

### Insulation according to EN 60664-1

|                             |                           |  |
|-----------------------------|---------------------------|--|
| Insulation rated voltage    |                           | 250 V AC   |
| Rated surge voltage         |                           | 2 500 V    1,2 / 50 μs                                 |
| Overvoltage category        |                           | II   |
| Insulation pollution degree |                           | 2  |
| 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<br>• creepage | ≥ 1,6 mm<br>≥ 3,2 mm                                   |

### General data

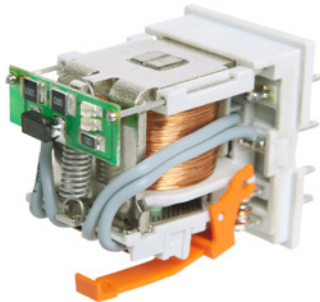
|   |   |  |
|---|---|--|
| Operating / release time (typical values) |   | AC: 10 ms / 8 ms                      DC: 13 ms / 3 ms                                     |
| Electrical life                           | • resistive AC1<br><br>• cosφ                                 | > 5 x 10 <sup>4</sup> 7 A, 230 V AC (VDE)<br>> 10 <sup>5</sup> 6 A, 250 V AC<br>see Fig. 2 |
| Mechanical life (cycles)                  |   | > 2 x 10 <sup>7</sup>  |
| Dimensions (L x W x H)                    |   | 27,4 x 21 x 35,5 mm  |
| Weight                                    |   | 35 g   |
| Ambient temperature                       | • storage<br>(non-condensation and/or icing)      • operating | -40...+85 °C<br>AC: -40...+55 °C                      DC: -40...+70 °C                     |
| Cover protection category                 |   | IP 40      EN 60529  |
| Environmental protection                  |   | RTI      EN 61810-7  |
| Shock resistance                          | (NO/NC)   | 10 g / 5 g   |
| Vibration resistance                      |   | 5 g    10...150 Hz   |

The data in bold type relate to the standard versions of the relays.  For single phase motors for 110-120 V AC do not use motors with higher FLA than given for 240 V AC.

## Design



**Improvement of the functionality of the mechanical indicator (W):** it is mounted on an insulation base of the unit of the movable contacts; the changes provide the appropriate position in the window in the upper side of the housing irrespectively of the number of operations performed by the relay.



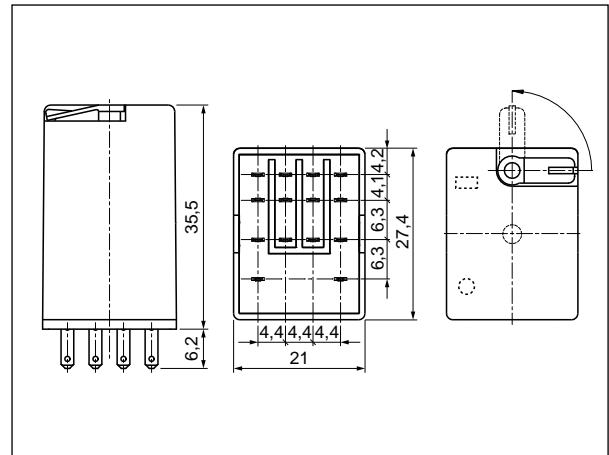
**Application of electronics made in the SMD technology:** additional features L (LED diode) and D (diode) are located on the printed circuit board; the change of the position of the LED diode and optimization of the quality and intensity of its light provide certainty that the relay is in operation status when the LED is on.



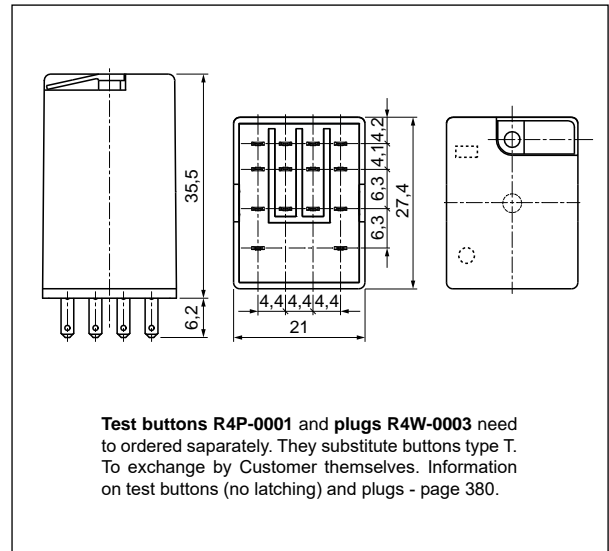
**Improvement of the efficiency of the electromagnet:** an innovational technology of connecting elements has been introduced, which guarantees more reliable operation of the relay.

**Strengthening of the insulation in the area of the contact plate:** polyamide PA66 has been applied; it has very good mechanical and electrical parameters and best thermal properties.

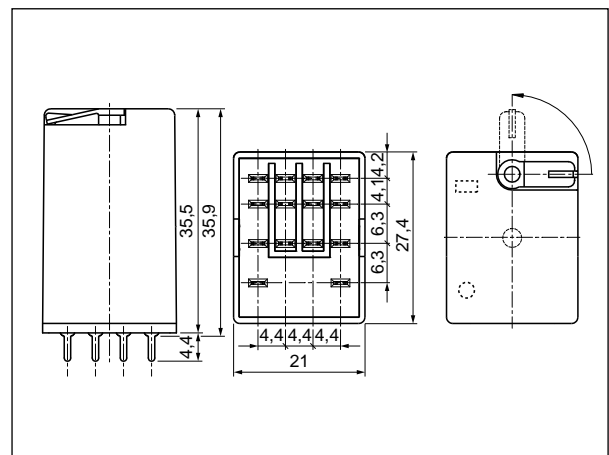
## Dimensions - plug-in version (WT), with lockable front test button type T



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



## Dimensions - PCB version (WT), with lockable front test button type T



## Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au flash gold plating** - Au protects the contact surface during storage,
- **AgNi/Au hard gold plating** - for small resistive loads in control circuits.

## Mounting, sockets and accessories for relays

Relays **R4N** are offered in versions: • for plug-in sockets • for PCB. **With WT features as standard (W - mechanical indicator + T - lockable front test button).** In these relays is **possibility self-exchange of button type T for test button R4P-0001 (no latching) or on plug R4W-0003 (no manual operation).** The buttons **R4P-0001** and the plugs **R4W-0003** need to ordered separately.

| Sockets for R4N  | Accessories                |                   |                    | Additional features |
|--|----------------------------|-------------------|--------------------|---------------------|
|  | Retainer / retractor clips | Spring wire clips | Description plates |                     |
| <b>Screw terminals sockets, 35 mm rail mount (EN 60715) or on panel mounting (two M3 screws)</b> |                            |                   |                    |                     |
| GZT4   | GZT4-0040                  | G4 1052           | GZT4-0035          | modules ②, strips ④ |
| GZM4   | GZT4-0040                  | G4 1052           | GZT4-0035          | modules ②, strips ④ |
| GZ4  | –                          | G4 1052           | –                  | –                   |
| GS4  | –                          | GS4-0036          | GS4-0035           | –                   |
| <b>Spring terminals sockets, 35 mm rail mount (EN 60715)</b>                                     |                            |                   |                    |                     |
| GZMB4 ②  | GZMB4-0040                 | G4 1052           | TR                 | modules ②           |
| <b>Sockets for PCB</b>   |                            |                   |                    |                     |
| SU4D   | –                          | G4 1053           | –                  | –                   |
| <b>Solder terminals sockets</b>  |                            |                   |                    |                     |
| SU4L   | –                          | G4 1053           | –                  | spring clamps ⑤     |
| G4   | –                          | G4 1053           | –                  | –                   |

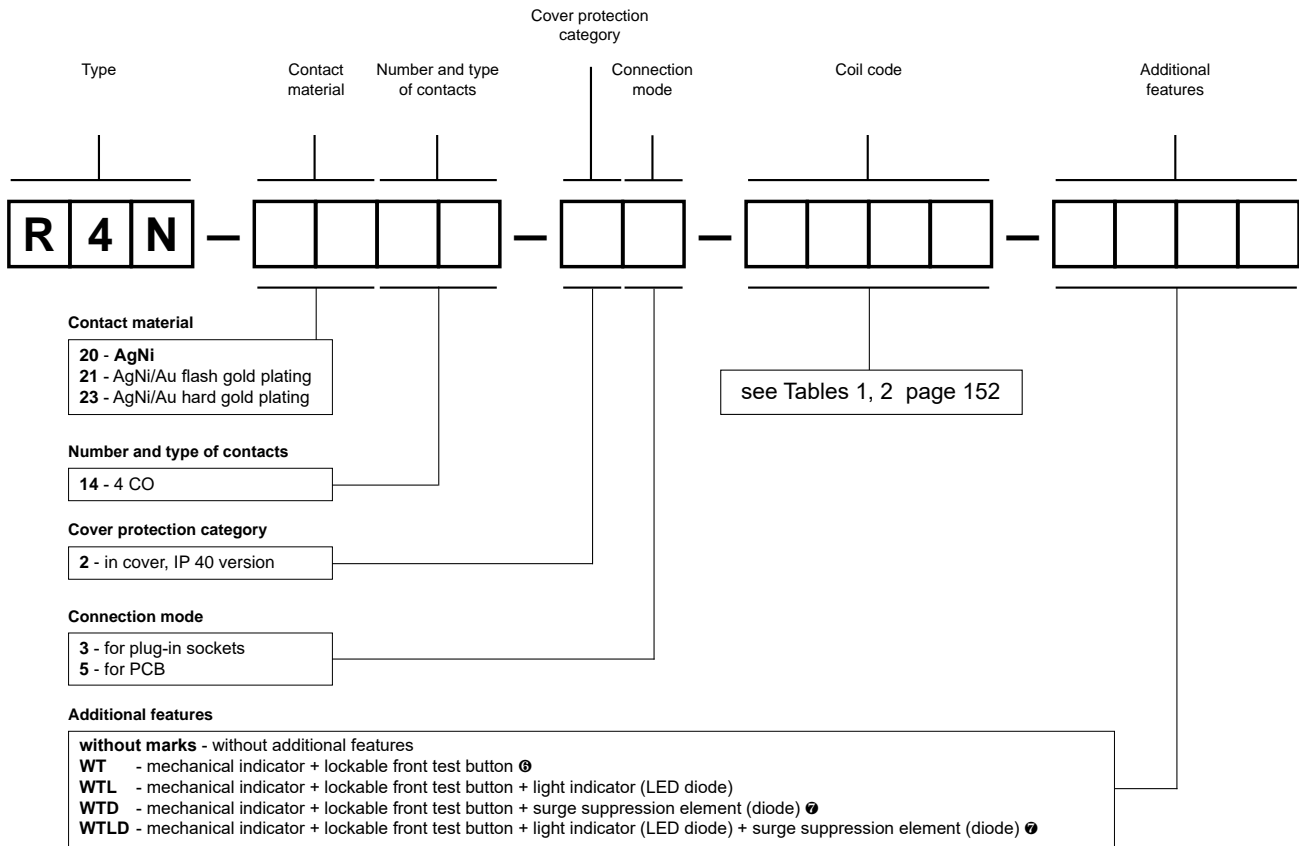
② Sockets GZMB4: wire connection - see page 367. ③ Signalling / protecting modules type M... - see page 376. ④ Interconnection strips ZGGZ4 - see page 378. ⑤ Spring clamps G4 1040 for spring wire clips.

## NEW TECHNOLOGY

The new R2N, R3N, R4N relays are modernized versions of the R2, R3, R4 relays. The modernization covered the design of the relays and the manufacturing process.



## Ordering codes



⑥ WT - standard features of relays

⑦ WTD, WTLD - available only in relays with DC coils

**Test buttons (no latching) and plugs** need to be ordered separately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 380.

- Button R4P-0001-A - orange colour (AC coils)
- Button R4P-0001-D - green colour (DC coils)
- Plug R4W-0003-A - orange colour (AC coils)
- Plug R4W-0003-D - green colour (DC coils)

### Note:

While the relay operates, the test button of the **T** type becomes heated. In order to push the test button manually, you should first turn the supply voltage off, and wait some time until the button becomes colder (or push the button immediately using a protective glove or an insulated tool). The button shall be pushed smoothly and quickly. The normally open contacts are closed with the button for the time during which the button is pushed. Releasing the button opens the normally open contacts. Normally open contacts may be closed with the blocking function of the button (it shall be turned by 90°). When the button is turned back, the normally open contacts are opened.

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(13) / -A2(14). 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:

**R4N-2014-23-5230-WTL** relay **R4N**, for plug-in sockets, four 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

**R4N-2014-25-1024-WT** relay **R4N**, for PCB, four changeover contacts, contact material AgNi, coil voltage 24 V DC, with mechanical indicator and lockable front test button, in cover IP 40