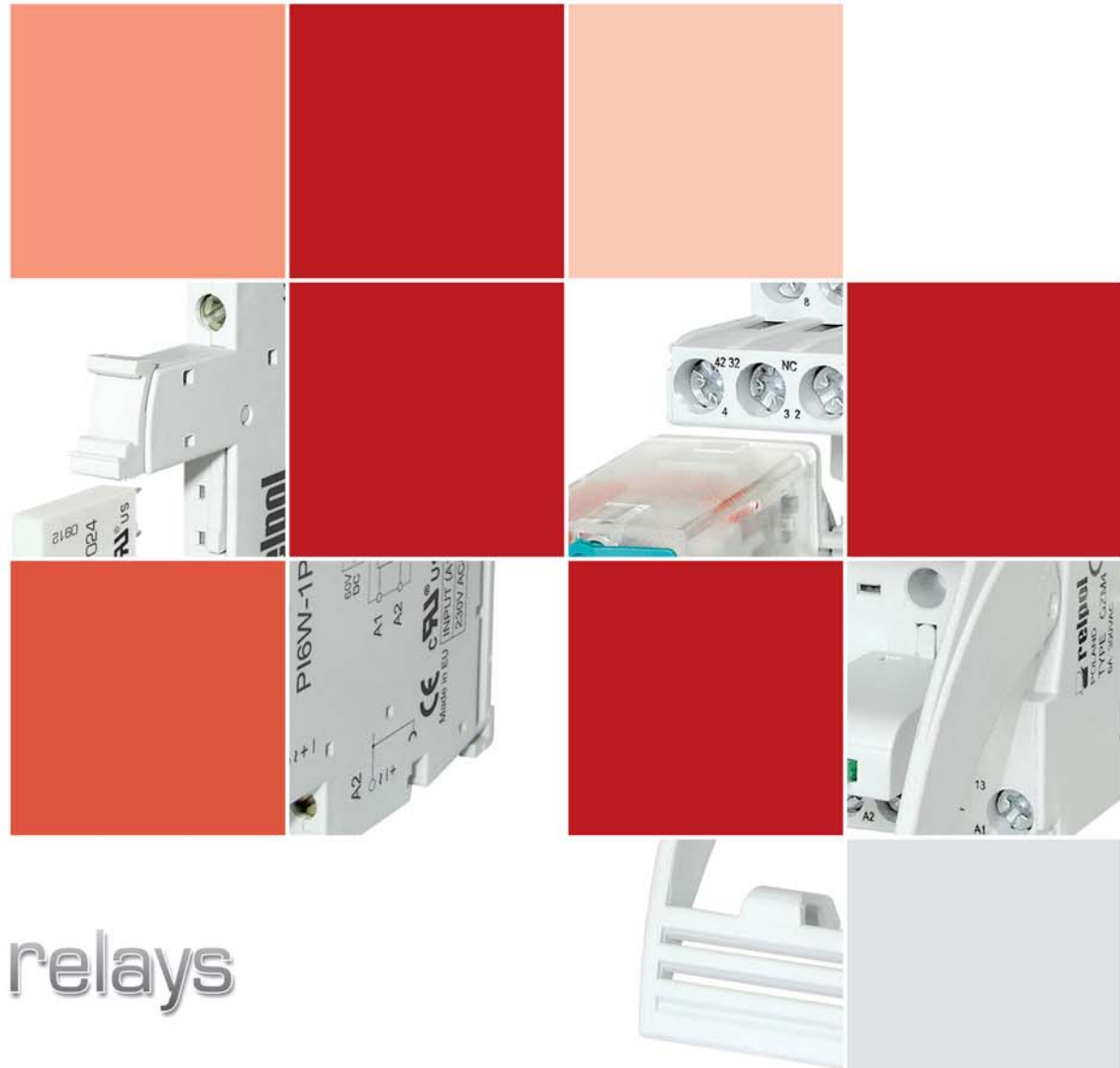


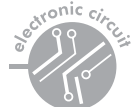


# relays

electromagnetic relays  
 interface relays  
 installation relays  
 time relays  
 plug-in sockets and accessories

2010

[www.relpol.com.pl](http://www.relpol.com.pl)



**relpol** <sup>®</sup> S.A.

# Automation is our passion



**For dozens of years now, Relpol S.A.**

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used in industrial and power automation, power electronics,  
industrial and applied electronics, telecommunication, etc.



Apart from complete delivery of components, Relpol S.A. provides its partners with technical consultancy based upon **extensive knowledge of the application of the components.**

Taking into account **the significant role of the products of Relpol S.A.**, we have made their quality improvement our priority strategic goal.

**You are welcome to review** our catalogs which present a very wide line of products for industrial automation.

**Due to the wide line of products,** orders of non-standard products should be consulted with the manufacturer or distributor.



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of the manufacturer of electromagnetic relays in Europe

provides for Relpol's presence  
in markets worldwide.

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**RELPOL BG** Varna / Bulgaria

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The modern production profile and high quality of the products that comply with the requirements of the European Union are confirmed by the ISO 9001 : 2001, ISO 14001 : 2005 CERTIFICATES.

ISO 9001 : 2001

ISO 14001 : 2005

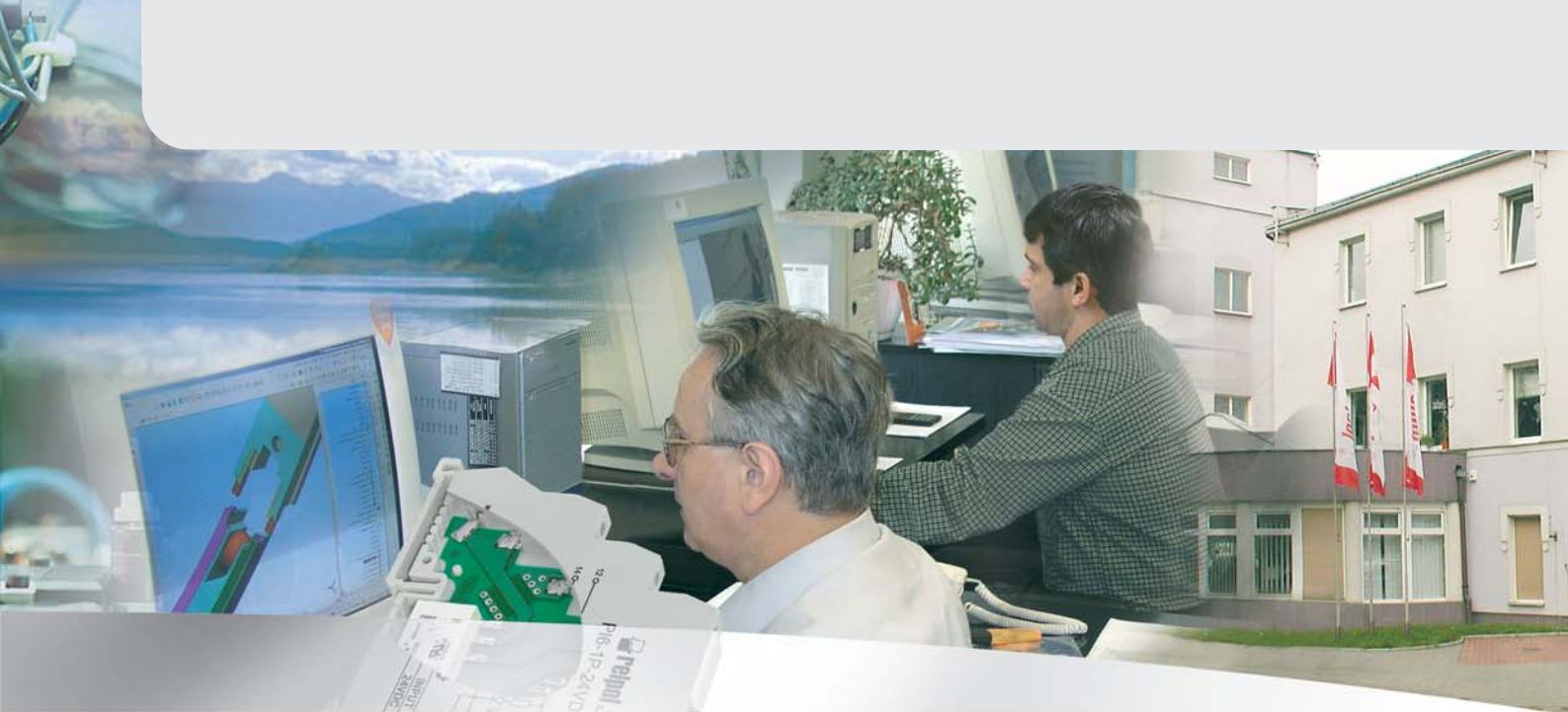
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## Innovative features of our technological solutions

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**Our products meet the requirements of the RoHS Directive.**



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NEW  
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# Relay selection table

| Mounting options                                                                                                                  |    |    |       |  |  | Coil |  | Type of relay                                                                          | Number and type of contacts                                    |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------|----|----|-------|--|--|------|--|----------------------------------------------------------------------------------------|----------------------------------------------------------------|------|------|-------|------|------|-------|------|-------|--------|--|--|--|--|--|--|
| direct PCB mounting<br>with plug-in socket<br>PCB mounting<br>panel mounting<br>35 mm rail mount<br>acc. to PN-EN 60715<br>Others | AC | DC | AC/DC |  |  |      |  |                                                                                        | C/O - changeover<br>NO - normally open<br>NC - normally closed |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  |                                                                                        | 1 C/O                                                          | 1 NO | 1 NC | 2 C/O | 2 NO | 2 NC | 3 C/O | 3 NO | 4 C/O | Others |  |  |  |  |  |  |
| Subminiature signal relays                                                                                                        |    |    |       |  |  |      |  |                                                                                        |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RSM822                                                                                 |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RSM954                                                                                 |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RSM957                                                                                 |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
| Miniature relays                                                                                                                  |    |    |       |  |  |      |  |                                                                                        |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM40                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM50                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM699B                                                                                 |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM84                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM84 SMT                                                                               |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM85                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM85  |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM85 inrush                                                                            |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM85 105 °C sensitive                                                                  |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM85 SMT                                                                               |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM85 faston                                                                            |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM87                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM87 sensitive                                                                         |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM87N SMT                                                                              |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM96                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM83                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM92                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RM94                                                                                   |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
| Automotive relays                                                                                                                 |    |    |       |  |  |      |  |                                                                                        |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RA2                                                                                    |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
| Miniature industrial relays                                                                                                       |    |    |       |  |  |      |  |                                                                                        |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | R2                                                                                     |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | R3                                                                                     |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | R4                                                                                     |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | RY2                                                                                    |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |
|                                                                                                                                   |    |    |       |  |  |      |  | R2M                                                                                    |                                                                |      |      |       |      |      |       |      |       |        |  |  |  |  |  |  |

 RM85 with increased contact gap

## How to use the table:

Select the number and type of contacts, please. Then, select a relay depending on its rated current, type of terminals and coil voltage.

The ordering code structure provides for formulation of **numerous variants**. Not all of them are defined as standard ones and, thus, not all of them are included in the product line. However, **deliveries of special versions according to the customer's specification are possible**. Please, contact with Relpol S.A. or our local representatives for details. The data of the devices may be changed with no prior notice.

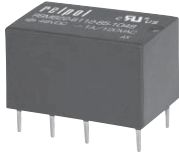
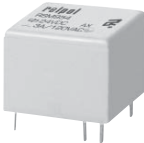
| Type of relay | Rated current |  |  |  |  |  |  |
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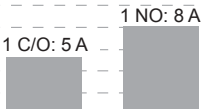
① **R** - operational electromagnetic relay **RM699BV** type for PIR6W.-1PS-...-R.  
**T/C/O** - operational solid state relay **RSR30** type for PIR6W.-1PS-...-T (or C or O) - see catalogue "Solid state relays" and [www.reipol.com.pl](http://www.reipol.com.pl)

Select the number and type of contacts, please. Then, select a relay depending on its rated current, type of terminals and coil voltage.

The ordering code structure provides for formulation of **numerous variants**. Not all of them are defined as standard ones and, thus, not all of them are included in the product line. However, **deliveries of special versions according to the customer's specification are possible**. Please, contact with Relpol S.A. or our local representatives for details. The data of the devices may be changed with no prior notice.

|                                       | Type of relay                 | Rated current              |   |                       |                   |    |            |            |
|---------------------------------------|-------------------------------|----------------------------|---|-----------------------|-------------------|----|------------|------------|
|                                       |                               | [A]                        |   |                       |                   |    |            |            |
|                                       |                               | 0                          | 5 | 10                    | 15                | 20 | 25         | 30         |
| Industrial relays of small dimensions |                               |                            |   |                       |                   |    |            |            |
|                                       | R15 2 C/O                     |                            |   |                       |                   |    |            |            |
|                                       | R15 3 C/O                     |                            |   |                       |                   |    |            |            |
|                                       | R15 4 C/O                     |                            |   |                       |                   |    |            |            |
|                                       | RUC                           |                            |   |                       |                   |    |            |            |
|                                       | RUC-M                         |                            |   |                       |                   |    |            |            |
|                                       | RG25                          |                            |   |                       |                   |    |            |            |
|                                       | R20                           | 2 NO: 25 A                 |   |                       |                   |    |            | 1 NO: 30 A |
|                                       | R30                           | 1 C/O: 20 A / 10 A (NO/NC) |   |                       |                   |    | 1 NO: 30 A |            |
|                                       | RS35, RS50                    | RS35: 35 A; RS50: 50 A     |   |                       |                   |    |            |            |
| Interface relays                      |                               |                            |   |                       |                   |    |            |            |
|                                       | PI84 with socket GZT80        |                            |   |                       |                   |    |            |            |
|                                       | PI85 with socket GZT80        |                            |   |                       |                   |    |            |            |
|                                       | PI84 with socket GZM80        |                            |   |                       |                   |    |            |            |
|                                       | PI85 with socket GZM80        |                            |   |                       |                   |    |            |            |
|                                       | PIR2 with socket GZM2         |                            |   |                       |                   |    |            |            |
|                                       | PIR3 with socket GZM3         |                            |   |                       |                   |    |            |            |
|                                       | PIR4 with socket GZM4         |                            |   |                       |                   |    |            |            |
|                                       | PIR2M with socket GZ2         |                            |   |                       |                   |    |            |            |
|                                       | PI6-1P                        | AgSnO <sub>2</sub>         |   |                       |                   |    |            |            |
|                                       | PI6-1T                        |                            |   |                       |                   |    |            |            |
|                                       | PI6-OC                        |                            |   |                       |                   |    |            |            |
|                                       | PIR6W-1P-...                  | AgSnO <sub>2</sub>         |   |                       |                   |    |            |            |
|                                       | PIR6W-1PS-...-①               | T,C                        | O | R: AgSnO <sub>2</sub> |                   |    |            |            |
|                                       | PIR6WB-1PS-...-①              | T,C                        | O | R: AgSnO <sub>2</sub> |                   |    |            |            |
| Installation relays                   |                               |                            |   |                       |                   |    |            |            |
|                                       | MT-PI-...                     | 2 C/O, 2 NO: 8 A           |   |                       | 1 C/O, 1 NO: 16 A |    |            |            |
| Time relays                           |                               |                            |   |                       |                   |    |            |            |
|                                       | MT-TUA-...                    |                            |   |                       |                   |    |            |            |
|                                       | MT-TUB-...                    |                            |   |                       |                   |    |            |            |
|                                       | MT-T...-                      |                            |   |                       |                   |    |            |            |
|                                       | MT-TSD-...                    |                            |   |                       |                   |    |            |            |
|                                       | TR4N 4 C/O                    |                            |   |                       |                   |    |            |            |
|                                       | TR4N 1 C/O, 2 C/O             | 2 C/O: 8 A                 |   |                       | 1 C/O: 16 A       |    |            |            |
|                                       | T-R4                          |                            |   |                       |                   |    |            |            |
|                                       | PIR15...T with module T(COM3) |                            |   |                       |                   |    |            |            |

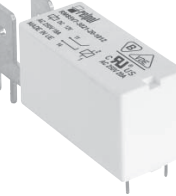
| Type of relay                                                                                                                                                  |       | RSM822                                                                                   | RSM954                                                                                    | RSM957                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <p>❶ The data in bold type pertain to the standard versions of the relays.</p> <p>❷ For 1 NO; for 1 C/O: 250 V / 380 V</p> <p>❸ Contacts AgSnO<sub>2</sub></p> |       |         |         |         |
| Dimensions (L x W x H)                                                                                                                                         | mm    | 21 x 10,1 x 12,1                                                                         | 15,4 x 10,4 x 11,4                                                                        | 12,6 x 7,8 x 10                                                                            |
| Contact data                                                                                                                                                   |       |                                                                                          |                                                                                           |                                                                                            |
| Number and type of contacts                                                                                                                                    |       | 2 C/O                                                                                    | 1 C/O                                                                                     | 1 C/O                                                                                      |
| Rated / max. switching voltage                                                                                                                                 | V AC  | 120 / 120                                                                                | 120 / 120                                                                                 | 120 / 125                                                                                  |
| Rated current                                                                                                                                                  | 25 A  |                                                                                          |                                                                                           |                                                                                            |
|                                                                                                                                                                | 16 A  |                                                                                          |                                                                                           |                                                                                            |
|                                                                                                                                                                | 12 A  |                                                                                          |                                                                                           |                                                                                            |
|                                                                                                                                                                | 8 A   |                                                                                          |                                                                                           |                                                                                            |
|                                                                                                                                                                | 6 A   |                                                                                          |                                                                                           |                                                                                            |
|                                                                                                                                                                | 3 A   |                                                                                          |                                                                                           |                                                                                            |
|                                                                                                                                                                | 1 A   |                                                                                          |                                                                                           |                                                                                            |
| Contact material ❶                                                                                                                                             |       | AgPd/Au 0,2 µm                                                                           | Ag/Au 0,2 µm                                                                              | Ag/Au 0,2 µm                                                                               |
| Coil data                                                                                                                                                      |       |                                                                                          |                                                                                           |                                                                                            |
| Rated voltage                                                                                                                                                  | V DC  | 3 ... 48                                                                                 | 3 ... 24                                                                                  | 3 ... 24                                                                                   |
| Rated power consumption                                                                                                                                        | W DC  | 0,2...0,36                                                                               | 0,36                                                                                      | 0,15...0,2                                                                                 |
| General data                                                                                                                                                   |       |                                                                                          |                                                                                           |                                                                                            |
| Electrical life (cycles)                                                                                                                                       |       | > 10 <sup>5</sup>                                                                        | > 10 <sup>5</sup>                                                                         | > 10 <sup>5</sup>                                                                          |
| Mechanical life (cycles)                                                                                                                                       |       | > 10 <sup>7</sup>                                                                        | > 10 <sup>7</sup>                                                                         | > 10 <sup>7</sup>                                                                          |
| Ambient temperature                                                                                                                                            |       |                                                                                          |                                                                                           |                                                                                            |
| • operating                                                                                                                                                    | °C DC | -30...+80                                                                                | -30...+55                                                                                 | -30...+70                                                                                  |
| Weight                                                                                                                                                         | g     | 4,8                                                                                      | 3,5                                                                                       | 2,2                                                                                        |
| Cover protection category                                                                                                                                      |       | IP 64                                                                                    | IP 64                                                                                     | IP 64                                                                                      |
| Recognitions, certifications, directives                                                                                                                       |       |  RoHS |  RoHS |  RoHS |
| Insulation dielectric strength                                                                                                                                 |       |                                                                                          |                                                                                           |                                                                                            |
| • between coil and contacts                                                                                                                                    | V AC  | 1 000                                                                                    | 500                                                                                       | 1 000                                                                                      |
| Contact - coil distance                                                                                                                                        |       |                                                                                          |                                                                                           |                                                                                            |
| • clearance                                                                                                                                                    | mm    | ≥ 1,3                                                                                    | ≥ 1,2                                                                                     | ≥ 0,6                                                                                      |
| • creepage                                                                                                                                                     | mm    | ≥ 1,5                                                                                    | ≥ 2                                                                                       | ≥ 0,6                                                                                      |
| Operating time                                                                                                                                                 | ms    | versions: sensitive 8, standard 6                                                        | 8                                                                                         | 5                                                                                          |
| Release time                                                                                                                                                   | ms    | 4                                                                                        | 4                                                                                         | 5                                                                                          |
| Detailed informations                                                                                                                                          |       | page 27                                                                                  | page 30                                                                                   | page 33                                                                                    |

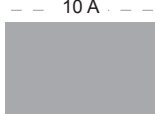
| RM40                                                                                                                                                                            | RM50                                                                                        | RM699B                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                |            |  <b>NEW product</b>                                                                            |
| 20 x 10 x 10,5                                                                                                                                                                  | 19 x 15,4 x 15,5                                                                            | 28 x 5 x 15                                                                                                                                                                     |
| 1 C/O, 1 NO                                                                                                                                                                     | 1 C/O, 1 NO                                                                                 | 1 C/O                                                                                                                                                                           |
| 250 / 440                                                                                      | 240 / 277                                                                                   | 250 / 400                                                                                      |
|                                                                                                |            |                                                                             |
| 1 C/O: <b>AgNi</b><br>1 C/O: AgNi/Au 3 µm<br>1 NO: <b>AgSnO<sub>2</sub></b>                                                                                                     | <b>AgSnO<sub>2</sub></b>                                                                    | <b>AgSnO<sub>2</sub></b><br>AgSnO <sub>2</sub> /Au 3 µm                                                                                                                         |
| 3 ... 48                                                                                                                                                                        | 3 ... 48                                                                                    | 5 ... 60                                                                                                                                                                        |
| 0,2                                                                                                                                                                             | 0,36...0,45                                                                                 | 0,17...0,217                                                                                                                                                                    |
| > 10 <sup>5</sup>                                                                                                                                                               | > 10 <sup>5</sup>                                                                           | > 3 x 10 <sup>4</sup>                                                                                                                                                           |
| > 10 <sup>7</sup>                                                                                                                                                               | > 10 <sup>7</sup>                                                                           | > 10 <sup>7</sup>                                                                                                                                                               |
| -40...+85                                                                                                                                                                       | -30...+55                                                                                   | -40...+85                                                                                                                                                                       |
| 6                                                                                                                                                                               | 11                                                                                          | 6                                                                                                                                                                               |
| IP 64                                                                                                                                                                           | IP 64                                                                                       | IP 64                                                                                                                                                                           |
|  <br>RoHS | <br>RoHS |  <br>RoHS |
| 4 000                                                                                                                                                                           | 1 000                                                                                       | 4 000                                                                                                                                                                           |
| ≥ 5                                                                                                                                                                             | ≥ 1,9                                                                                       | ≥ 6                                                                                                                                                                             |
| ≥ 5                                                                                                                                                                             | ≥ 1.9                                                                                       | ≥ 8                                                                                                                                                                             |
| 8                                                                                                                                                                               | 10                                                                                          | 8                                                                                                                                                                               |
| 4                                                                                                                                                                               | 5                                                                                           | 4                                                                                                                                                                               |
| page 36                                                                                                                                                                         | page 39                                                                                     | page 42                                                                                                                                                                         |

Plug-in sockets and accessories availability index - see pages 252, 253.

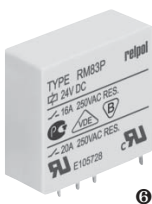
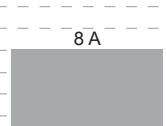
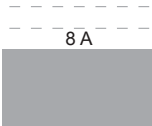
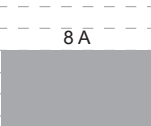
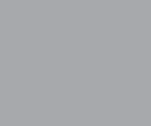
| Type of relay                                                                                                                                                                                                                                     |       | RM84                                                                                | RM84 SMT                                                                             | RM85                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <p>❶ The data in bold type pertain to the standard versions of the relays.</p> <p>❷ Available special version with NO contacts: relays with increased contact gap</p> <p>❸ For vertical version (V).<br/>For horizontal version (H) L=44,5 mm</p> |       |    |    |    |
| Dimensions (L x W x H)                                                                                                                                                                                                                            | mm    | 29 x 12,7 x 15,7                                                                    | 29 x 12,7 x 15,7 (17,7)                                                              | 29 x 12,7 x 15,7                                                                      |
| Contact data                                                                                                                                                                                                                                      |       |                                                                                     |                                                                                      |                                                                                       |
| Number and type of contacts                                                                                                                                                                                                                       |       | 2 C/O, 2 NO ❷                                                                       | 2 C/O                                                                                | 1 C/O, 1 NO ❷                                                                         |
| Rated / max. switching voltage                                                                                                                                                                                                                    | V AC  | 250 / 440                                                                           | 250 / 440                                                                            | 250 / 440                                                                             |
| Rated current                                                                                                                                                                                                                                     | 25 A  |                                                                                     |                                                                                      | 16 A                                                                                  |
|                                                                                                                                                                                                                                                   | 16 A  |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                   | 12 A  |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                   | 8 A   | 8 A                                                                                 | 8 A                                                                                  |                                                                                       |
|                                                                                                                                                                                                                                                   | 6 A   |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                   | 3 A   |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                   | 1 A   |                                                                                     |                                                                                      |                                                                                       |
| Contact material ❶                                                                                                                                                                                                                                |       | AgNi<br>AgNi/Au 5 µm<br>AgSnO <sub>2</sub>                                          | AgNi<br>AgNi/Au 5 µm<br>AgSnO <sub>2</sub>                                           | AgNi<br>AgNi/Au 5 µm<br>AgSnO <sub>2</sub>                                            |
| Coil data                                                                                                                                                                                                                                         |       |                                                                                     |                                                                                      |                                                                                       |
| Rated voltage                                                                                                                                                                                                                                     | V AC  | 12 ... 240 50/60 Hz                                                                 | 12 ... 240 50/60 Hz                                                                  | 12 ... 240 50/60 Hz                                                                   |
|                                                                                                                                                                                                                                                   | V DC  | 3 ... 110                                                                           | 3 ... 110                                                                            | 3 ... 110                                                                             |
| Rated power consumption                                                                                                                                                                                                                           | VA AC | 0,75                                                                                | 0,75                                                                                 | 0,75                                                                                  |
|                                                                                                                                                                                                                                                   | W DC  | 0,4...0,48                                                                          | 0,4...0,48                                                                           | 0,4...0,48                                                                            |
| General data                                                                                                                                                                                                                                      |       |                                                                                     |                                                                                      |                                                                                       |
| Electrical life (cycles)                                                                                                                                                                                                                          |       | > 10 <sup>5</sup>                                                                   | > 10 <sup>5</sup>                                                                    | > 0,7 x 10 <sup>5</sup>                                                               |
| Mechanical life (cycles)                                                                                                                                                                                                                          |       | > 3 x 10 <sup>7</sup>                                                               | > 3 x 10 <sup>7</sup>                                                                | > 3 x 10 <sup>7</sup>                                                                 |
| Ambient temperature                                                                                                                                                                                                                               | °C AC | -40...+70                                                                           | -40...+70                                                                            | -40...+70                                                                             |
|                                                                                                                                                                                                                                                   | °C DC | -40...+85                                                                           | -40...+85                                                                            | -40...+85                                                                             |
| • operating                                                                                                                                                                                                                                       |       |                                                                                     |                                                                                      |                                                                                       |
| Weight                                                                                                                                                                                                                                            | g     | 14                                                                                  | 14                                                                                   | 14                                                                                    |
| Cover protection category ❶                                                                                                                                                                                                                       |       | IP 40 or IP 67                                                                      | IP 40                                                                                | IP 40 or IP 67                                                                        |
| Recognitions, certifications, directives                                                                                                                                                                                                          |       |  |  |  |
| Insulation dielectric strength                                                                                                                                                                                                                    |       |                                                                                     |                                                                                      |                                                                                       |
| • between coil and contacts                                                                                                                                                                                                                       | V AC  | 5 000                                                                               | 5 000                                                                                | 5 000                                                                                 |
| Contact - coil distance                                                                                                                                                                                                                           |       |                                                                                     |                                                                                      |                                                                                       |
| • clearance                                                                                                                                                                                                                                       | mm    | ≥ 10                                                                                | ≥ 10                                                                                 | ≥ 10                                                                                  |
| • creepage                                                                                                                                                                                                                                        | mm    | ≥ 10                                                                                | ≥ 10                                                                                 | ≥ 10                                                                                  |
| Operating time                                                                                                                                                                                                                                    | ms    | 7                                                                                   | 7                                                                                    | 7                                                                                     |
| Release time                                                                                                                                                                                                                                      | ms    | 3                                                                                   | 3                                                                                    | 3                                                                                     |
| Detailed informations                                                                                                                                                                                                                             |       | page 46                                                                             | page 50                                                                              | page 54                                                                               |

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| RM85 with increased contact gap                                                     | RM85 inrush                                                                         | RM85 105 °C sensitive                                                               | RM85 SMT                                                                             | RM85 faston                                                                           |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |   |    |
| 29 x 12,7 x 15,7                                                                    | 29 x 12,7 x 15,7                                                                    | 29 x 12,7 x 15,7                                                                    | 29 x 12,7 x 15,7 (17,7)                                                              | 40,5 x 12,7 x 15,7 ①                                                                  |
| 1 NO                                                                                | 1 NO                                                                                | 1 NO                                                                                | 1 C/O                                                                                | 1 NO                                                                                  |
| 250 / 480                                                                           | 250 / 440                                                                           | 250 / 440                                                                           | 250 / 440                                                                            | 250 / 440                                                                             |
| 16 A / 250 V AC                                                                     | 16 A                                                                                | 16 A                                                                                | 16 A                                                                                 | 20 A                                                                                  |
| AgSnO <sub>2</sub>                                                                  | AgSnO <sub>2</sub>                                                                  | AgNi<br>AgNi/Au 5 µm<br>AgSnO <sub>2</sub>                                          | AgNi<br>AgNi/Au 5 µm<br>AgSnO <sub>2</sub>                                           | AgSnO <sub>2</sub>                                                                    |
| 3 ... 110                                                                           | 5 ... 110                                                                           | 5 ... 48                                                                            | 12 ... 240 50/60 Hz<br>3 ... 110                                                     | 5 ... 48                                                                              |
| 0,4...0,48                                                                          | 0,4...0,48                                                                          | 0,25                                                                                | 0,75<br>0,4...0,48                                                                   | 0,25                                                                                  |
| > 4 x 10 <sup>4</sup>                                                               | > 10 <sup>5</sup>                                                                   | > 2 x 10 <sup>4</sup>                                                               | > 0,7 x 10 <sup>5</sup>                                                              | > 2 x 10 <sup>4</sup>                                                                 |
| > 3 x 10 <sup>7</sup>                                                               | > 3 x 10 <sup>7</sup>                                                               | > 3 x 10 <sup>7</sup>                                                               | > 3 x 10 <sup>7</sup>                                                                | > 3 x 10 <sup>7</sup>                                                                 |
| -40...+85                                                                           | -40...+85                                                                           | -40...+105                                                                          | -40...+70<br>-40...+85                                                               | -40...+105                                                                            |
| 14                                                                                  | 14                                                                                  | 14                                                                                  | 14                                                                                   | 16                                                                                    |
| IP 40 or IP 67                                                                      | IP 40                                                                               | IP 40                                                                               | IP 40                                                                                | IP 40                                                                                 |
|  |  |  |  |  |
| 5 000                                                                               | 5 000                                                                               | 5 000                                                                               | 5 000                                                                                | 5 000                                                                                 |
| ≥ 10                                                                                | ≥ 10                                                                                | ≥ 10                                                                                | ≥ 10                                                                                 | ≥ 10                                                                                  |
| ≥ 10                                                                                | ≥ 10                                                                                | ≥ 10                                                                                | ≥ 10                                                                                 | ≥ 10                                                                                  |
| 7                                                                                   | 8                                                                                   | 8                                                                                   | 7                                                                                    | 8                                                                                     |
| 3                                                                                   | 3                                                                                   | 3                                                                                   | 3                                                                                    | 3                                                                                     |
| page 58                                                                             | page 61                                                                             | page 65                                                                             | page 69                                                                              | page 73                                                                               |

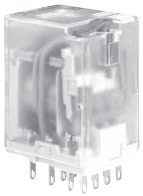
| Type of relay                                                                                                                                                                                                                                                                         |       | RM87                                                                                | RM87 sensitive                                                                       | RM87N SMT                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <p>❶ The data in bold type pertain to the standard versions of the relays.</p> <p>❷ Available special version with NO contacts: relays with increased contact gap</p> <p>❸ For 1 C/O; for 1 NO, 1 NC: 28 x 10 x 16,2 mm</p> <p>❹ For IP 67 H=25,6 mm</p> <p>❺ For IP 67 H=26,5 mm</p> |       |    |    |    |
| Dimensions (L x W x H)                                                                                                                                                                                                                                                                | mm    | 29 x 12,7 x 15,7                                                                    | 29 x 12,7 x 15,7                                                                     | 29 x 12,7 x 15,7 (17,7)                                                               |
| Contact data                                                                                                                                                                                                                                                                          |       |                                                                                     |                                                                                      |                                                                                       |
| Number and type of contacts                                                                                                                                                                                                                                                           |       | 1 C/O, 1 NO ❷                                                                       | 1 C/O, 1 NO                                                                          | 1 C/O                                                                                 |
| Rated / max. switching voltage                                                                                                                                                                                                                                                        | V AC  | 250 / 440                                                                           | 250 / 440                                                                            | 250 / 440                                                                             |
| Rated current                                                                                                                                                                                                                                                                         | 25 A  |    |    |    |
|                                                                                                                                                                                                                                                                                       | 16 A  |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                                                       | 12 A  |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                                                       | 8 A   |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                                                       | 6 A   |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                                                       | 3 A   |                                                                                     |                                                                                      |                                                                                       |
|                                                                                                                                                                                                                                                                                       | 1 A   |                                                                                     |                                                                                      |                                                                                       |
| Contact material ❶                                                                                                                                                                                                                                                                    |       | AgNi<br>AgNi/Au 5 µm<br>AgSnO <sub>2</sub>                                          | AgNi<br>AgNi/Au 5 µm<br>AgSnO <sub>2</sub>                                           | AgNi<br>AgNi/Au 5 µm<br>AgSnO <sub>2</sub>                                            |
| Coil data                                                                                                                                                                                                                                                                             |       |                                                                                     |                                                                                      |                                                                                       |
| Rated voltage                                                                                                                                                                                                                                                                         | V AC  | 12 ... 240 50/60 Hz                                                                 |                                                                                      | 12 ... 240 50/60 Hz                                                                   |
|                                                                                                                                                                                                                                                                                       | V DC  | 3 ... 110                                                                           | 5 ... 48                                                                             | 3 ... 110                                                                             |
| Rated power consumption                                                                                                                                                                                                                                                               | VA AC | 0,75                                                                                |                                                                                      | 0,75                                                                                  |
|                                                                                                                                                                                                                                                                                       | W DC  | 0,4...0,48                                                                          | 0,25                                                                                 | 0,4...0,48                                                                            |
| General data                                                                                                                                                                                                                                                                          |       |                                                                                     |                                                                                      |                                                                                       |
| Electrical life (cycles)                                                                                                                                                                                                                                                              |       | > 10 <sup>5</sup>                                                                   | > 1,7 x 10 <sup>5</sup>                                                              | > 10 <sup>5</sup>                                                                     |
| Mechanical life (cycles)                                                                                                                                                                                                                                                              |       | > 3 x 10 <sup>7</sup>                                                               | > 3 x 10 <sup>7</sup>                                                                | > 3 x 10 <sup>7</sup>                                                                 |
| Ambient temperature                                                                                                                                                                                                                                                                   | °C AC | -40...+70                                                                           |                                                                                      | -40...+70                                                                             |
|                                                                                                                                                                                                                                                                                       | °C DC | -40...+85                                                                           | -40...+85                                                                            | -40...+85                                                                             |
| • operating                                                                                                                                                                                                                                                                           |       |                                                                                     |                                                                                      |                                                                                       |
| Weight                                                                                                                                                                                                                                                                                | g     | 14                                                                                  | 14                                                                                   | 14                                                                                    |
| Cover protection category ❶                                                                                                                                                                                                                                                           |       | IP 40 or <b>IP 67</b>                                                               | IP 40 or <b>IP 67</b>                                                                | IP 40                                                                                 |
| Recognitions, certifications, directives                                                                                                                                                                                                                                              |       |  |  |  |
| Insulation dielectric strength                                                                                                                                                                                                                                                        |       |                                                                                     |                                                                                      |                                                                                       |
| • between coil and contacts                                                                                                                                                                                                                                                           | V AC  | 5 000                                                                               | 5 000                                                                                | 5 000                                                                                 |
| Contact - coil distance                                                                                                                                                                                                                                                               |       |                                                                                     |                                                                                      |                                                                                       |
| • clearance                                                                                                                                                                                                                                                                           | mm    | ≥ 10                                                                                | ≥ 10                                                                                 | ≥ 10                                                                                  |
| • creepage                                                                                                                                                                                                                                                                            | mm    | ≥ 10                                                                                | ≥ 10                                                                                 | ≥ 10                                                                                  |
| Operating time                                                                                                                                                                                                                                                                        | ms    | 7                                                                                   | 7                                                                                    | 7                                                                                     |
| Release time                                                                                                                                                                                                                                                                          | ms    | 3                                                                                   | 3                                                                                    | 3                                                                                     |
| Detailed informations                                                                                                                                                                                                                                                                 |       | page 76                                                                             | page 76                                                                              | page 82                                                                               |

Plug-in sockets and accessories availability index - see pages 252, 253.

| RM96                                                                                                  | RM83                                                                                                  | RM92                                                                                                  | RM94                                                                                                    | RA2<br>automotive relays                                                                                  |
|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
|                      |                      |                      |                      |                        |
| 30 x 10 x 16,2 ④                                                                                      | 29,2 x 13,1 x 25,1 ④                                                                                  | 28 x 11,5 x 26 ⑤                                                                                      | 28 x 12,5 x 26 ⑤                                                                                        | 18,6 x 13,0 x 18,5 ⑦                                                                                      |
| 1 C/O, 1 NO, 1 NC<br>250 / 440                                                                        | 1 C/O, 1 NO, 1 NC<br>250 / 440                                                                        | 1 C/O, 1 NO, 1 NC<br>250 / 440                                                                        | 2 C/O, 2 NO, 2 NC<br>250 / 440                                                                          | 1 C/O, 1 NO, 2 NO<br>DC: 60 / 60                                                                          |
|                      |                      |                      |                      |                        |
| AgSnO <sub>2</sub><br>AgSnO <sub>2</sub> /Au 3 μm<br>AgCdO                                            | AgSnO <sub>2</sub><br>AgCdO<br>AgCdO/Au 0,2 μm                                                        | AgCu/Au 0,2 μm<br>AgCdO<br>AgCdO/Au 3 μm                                                              | AgCu/Au 0,2 μm<br>AgCdO<br>AgCdO/Au 3 μm                                                                | AgSnO <sub>2</sub>                                                                                        |
| 5 ... 48                                                                                              | 5 ... 110                                                                                             | 5 ... 80                                                                                              | 5 ... 110                                                                                               | 5 ... 48                                                                                                  |
| 0,22...0,3                                                                                            | 0,6...0,9                                                                                             | 0,5...0,8                                                                                             | 0,5...0,8                                                                                               | 1,44                                                                                                      |
| > 10 <sup>5</sup><br>> 2 x 10 <sup>7</sup>                                                            | > 10 <sup>5</sup><br>> 3 x 10 <sup>7</sup>                                                            | > 2 x 10 <sup>5</sup><br>> 3 x 10 <sup>7</sup>                                                        | > 2 x 10 <sup>5</sup><br>> 3 x 10 <sup>7</sup>                                                          | > 10 <sup>5</sup><br>> 10 <sup>7</sup>                                                                    |
| -40...+80<br>11                                                                                       | -40...+70<br>18                                                                                       | -40...+70<br>17                                                                                       | -40...+70<br>20                                                                                         | -40...+85<br>12                                                                                           |
| IP 40 or IP 67<br> | IP 40 or IP 67<br> | IP 40 or IP 67<br> | IP 40 or IP 67<br> | IP 40 or IP 00 ⑨<br> |
| 4 000                                                                                                 | 4 000                                                                                                 | 4 000                                                                                                 | 4 000                                                                                                   | 500                                                                                                       |
| ≥ 8<br>≥ 8                                                                                            | ≥ 8<br>≥ 8                                                                                            | ≥ 8<br>≥ 8                                                                                            | ≥ 8<br>≥ 8                                                                                              | ≥ 1<br>≥ 1                                                                                                |
| 10                                                                                                    | 7                                                                                                     | 6                                                                                                     | 7                                                                                                       | 10                                                                                                        |
| 5                                                                                                     | 3                                                                                                     | 2                                                                                                     | 2                                                                                                       | 3                                                                                                         |
| page 86                                                                                               | page 90                                                                                               | page 94                                                                                               | page 98                                                                                                 | page 102                                                                                                  |

④ Special version available: relays in transparent cover

⑦ For IP 00; for IP 40: 20,5 x 15,3 x 19,7 mm ⑤ For 1 NO: 20 A, for 2 NO: 2 x 12,5 A ⑨ IP 00 for relay without cover

| Type of relay                                                                                                                                                                                                                                                                             |    | R2                                                                                | R3                                                                                 | R4                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <p>❶ The data in bold type pertain to the standard versions of the relays.<br/>                     ❷ For plug-in sockets version: standard (WT)<br/>                     ❸ For plug-in sockets version: standard<br/>                     ❹ AUCOTEAM GmbH Berlin - railway standards</p> |    |  |  |  |
| Dimensions (L x W x H)                                                                                                                                                                                                                                                                    | mm | 27,5 x 21,2 x 35,6 ❷                                                              | 27,5 x 21,2 x 35,6 ❷                                                               | 27,5 x 21,2 x 35,6 ❷                                                                |

## Contact data

|                                |      |                                        |                                        |                                        |
|--------------------------------|------|----------------------------------------|----------------------------------------|----------------------------------------|
| Number and type of contacts    |      | 2 C/O                                  | 3 C/O                                  | 4 C/O                                  |
| Rated / max. switching voltage | V AC | 250 / 440                              | 250 / 440                              | 250 / 250                              |
| Rated current                  | 25 A |                                        |                                        |                                        |
|                                | 16 A |                                        |                                        |                                        |
|                                | 12 A | 12 A ❶                                 | 10 A                                   |                                        |
|                                | 8 A  |                                        |                                        |                                        |
|                                | 6 A  |                                        |                                        | 6 A                                    |
|                                | 3 A  |                                        |                                        |                                        |
|                                | 1 A  |                                        |                                        |                                        |
| Contact material ❶             |      | AgNi<br>AgNi/Au 0,2 µm<br>AgNi/Au 5 µm | AgNi<br>AgNi/Au 0,2 µm<br>AgNi/Au 5 µm | AgNi<br>AgNi/Au 0,2 µm<br>AgNi/Au 5 µm |

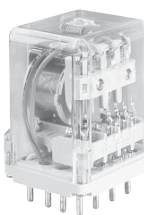
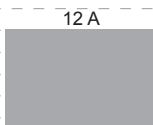
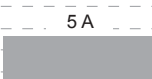
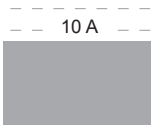
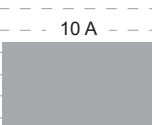
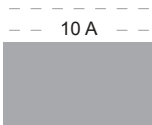
## Coil data

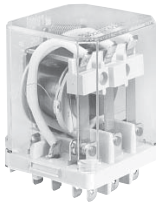
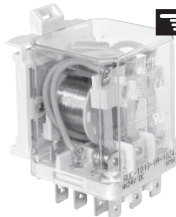
|                         |       |                    |                    |                    |
|-------------------------|-------|--------------------|--------------------|--------------------|
| Rated voltage           | V AC  | 6 ... 240 50/60 Hz | 6 ... 240 50/60 Hz | 6 ... 240 50/60 Hz |
|                         | V DC  | 5 ... 220          | 5 ... 220          | 5 ... 220          |
| Rated power consumption | VA AC | 1,6                | 1,6                | 1,6                |
|                         | W DC  | 0,9                | 0,9                | 0,9                |

## General data

|                                          |       |                                                                                     |                                                                                      |                                                                                       |
|------------------------------------------|-------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Electrical life (cycles)                 |       | ≥ 10 <sup>5</sup>                                                                   | ≥ 10 <sup>5</sup>                                                                    | ≥ 10 <sup>5</sup>                                                                     |
| Mechanical life (cycles)                 |       | ≥ 2 x 10 <sup>7</sup>                                                               | ≥ 2 x 10 <sup>7</sup>                                                                | ≥ 2 x 10 <sup>7</sup>                                                                 |
| Ambient temperature                      | °C AC | -40...+55                                                                           | -40...+55                                                                            | -40...+55                                                                             |
|                                          | °C DC | -40...+70                                                                           | -40...+70                                                                            | -40...+70                                                                             |
| Weight                                   |       | g                                                                                   | 35                                                                                   | 35                                                                                    |
| Cover protection category ❶              |       | IP 40                                                                               | IP 40                                                                                | IP 40                                                                                 |
| Recognitions, certifications, directives |       |  |  |  |
| Insulation dielectric strength           |       |                                                                                     |                                                                                      |                                                                                       |
| • between coil and contacts              | V AC  | 2 500                                                                               | 2 500                                                                                | 2 500                                                                                 |
| Contact - coil distance                  |       |                                                                                     |                                                                                      |                                                                                       |
| • clearance                              | mm    | ≥ 2,5                                                                               | ≥ 2,5                                                                                | ≥ 1,6                                                                                 |
| • creepage                               | mm    | ≥ 4                                                                                 | ≥ 4                                                                                  | ≥ 3,2                                                                                 |
| Operating time                           | ms    | AC: 10, DC: 13                                                                      | AC: 10, DC: 13                                                                       | AC: 10, DC: 13                                                                        |
| Release time                             | ms    | AC: 8, DC: 3                                                                        | AC: 8, DC: 3                                                                         | AC: 8, DC: 3                                                                          |
| Detailed informations                    |       | page 106                                                                            | page 111                                                                             | page 115                                                                              |

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| RY2                                                                                                  | R2M                                                                                         | R15 2 C/O                                                                                                                                                                                 | R15 3 C/O                                                                                                                                                                                    | R15 4 C/O                                                                                     |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
|                     |            |                                                                                                          |                                                                                                           |            |
| 27,5 x 21,1 x 34,5  | 27,5 x 14 x 32,9                                                                            | 35 x 35 x 54,4                                                                                                                                                                            | 35 x 35 x 54,4                                                                                                                                                                               | 35 x 42,5 x 54,5                                                                              |
| 2 C/O                                                                                                | 2 C/O                                                                                       | 2 C/O                                                                                                                                                                                     | 3 C/O                                                                                                                                                                                        | 4 C/O                                                                                         |
| 250 / 440                                                                                            | 250 / 250                                                                                   | 250 / 440                                                                                                                                                                                 | 250 / 440                                                                                                                                                                                    | 250 / 250                                                                                     |
|                     |            |                                                                                                          |                                                                                                           |            |
| <b>AgNi</b><br>AgCdO                                                                                 | <b>AgNi</b><br>AgNi/Au 0,2 µm<br>AgSnO <sub>2</sub>                                         | <b>AgNi</b><br>AgNi/Au 0,2 µm<br>AgNi/Au 5 µm                                                                                                                                             | <b>AgNi</b><br>AgNi/Au 0,2 µm<br>AgNi/Au 5 µm                                                                                                                                                | <b>AgCdO</b><br>AgCdO/Au 0,2 µm<br>AgCdO/Au 5 µm                                              |
| 6 ... 240 50/60 Hz<br>5 ... 220                                                                      | 6 ... 240 50/60 Hz<br>6 ... 110                                                             | 6 ... 240 50/60 Hz<br>6 ... 220                                                                                                                                                           | 6 ... 240 50/60 Hz<br>6 ... 220                                                                                                                                                              | 6 ... 240 50 Hz, 60 Hz<br>6 ... 220                                                           |
| 1,6<br>0,9                                                                                           | 1,2<br>0,9                                                                                  | 2,8 50 Hz 2,5 60 Hz<br>1,5                                                                                                                                                                | 2,8 50 Hz 2,5 60 Hz<br>1,5                                                                                                                                                                   | 2,8 50 Hz 2,5 60 Hz<br>1,5                                                                    |
| ≥ 10 <sup>5</sup><br>≥ 10 <sup>7</sup><br>-40...+55<br>-40...+55<br>35<br>IP 40                      | ≥ 2 x 10 <sup>5</sup><br>≥ 10 <sup>7</sup><br>-40...+55<br>-40...+55<br>22<br>IP 40         | ≥ 2 x 10 <sup>5</sup><br>≥ 2 x 10 <sup>7</sup><br>-40...+55<br>-40...+70<br>83<br>IP 40                                                                                                   | ≥ 2 x 10 <sup>5</sup><br>≥ 2 x 10 <sup>7</sup><br>-40...+55<br>-40...+70<br>83<br>IP 40                                                                                                      | ≥ 2 x 10 <sup>5</sup><br>≥ 2 x 10 <sup>7</sup><br>-40...+55<br>-40...+70<br>95<br>IP 40       |
| <br>RoHS          | <br>RoHS | <br>RoHS, AUCOTEAM  | <br>RoHS, AUCOTEAM  | <br>RoHS |
| 2 500                                                                                                | 2 000                                                                                       | 2 500                                                                                                                                                                                     | 2 500                                                                                                                                                                                        | 2 500                                                                                         |
| ≥ 2,6<br>≥ 4                                                                                         | ≥ 3<br>≥ 4                                                                                  | ≥ 3<br>≥ 4,2                                                                                                                                                                              | ≥ 3<br>≥ 4,2                                                                                                                                                                                 | ≥ 3<br>≥ 3,2                                                                                  |
| 15<br>10                                                                                             | AC: 8, DC: 10<br>AC: 7, DC: 3                                                               | AC: 12, DC: 18<br>AC: 10, DC: 7                                                                                                                                                           | AC: 12, DC: 18<br>AC: 10, DC: 7                                                                                                                                                              | AC: 12, DC: 18<br>AC: 10, DC: 7                                                               |
| page 120                                                                                             | page 124                                                                                    | page 128                                                                                                                                                                                  | page 128                                                                                                                                                                                     | page 128                                                                                      |

| Type of relay                                                                                                                                                                                                                                                                                                               |       | RUC faston 4,8x0,5                                                                | RUC faston 6,3x0,8                                                                             | RUC-M ④                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <p>① The data in bold type pertain to the standard versions of the relays.</p> <p>② For RUC faston 4,8 x 0,5 and RUC-M, with GUC11 socket, max. switching voltages and coil voltages of relays are limited to 250 V AC/DC.</p> <p>③ Version with contact gap ≥ 3 mm</p> <p>④ Magnetic blow-out relays for high DC load.</p> |       |  |  NEW product |  NEW product<br>for DC loads |
| Dimensions (L x W x H)                                                                                                                                                                                                                                                                                                      | mm    | 36,1 x 38,6 x 45,5 ⑤                                                              | 62,4 x 38,6 x 45,9 ⑥                                                                           | 36,1 x 38,6 x 45,5 ⑤                                                                                            |
| Contact data                                                                                                                                                                                                                                                                                                                |       |                                                                                   |                                                                                                |                                                                                                                 |
| Number and type of contacts                                                                                                                                                                                                                                                                                                 |       | 2 C/O, 3 C/O, 2 NO, 3 NO                                                          | 2 C/O, 3 C/O, 2 NO, 3 NO                                                                       | 1 NO, 2 NO                                                                                                      |
| Rated / max. switching voltage                                                                                                                                                                                                                                                                                              | V AC  | 400 / 440 ②                                                                       | 400 / 440                                                                                      | 250 / 440 ②                                                                                                     |
| Rated current                                                                                                                                                                                                                                                                                                               | 50 A  |                                                                                   |                                                                                                |                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                             | 35 A  |                                                                                   |                                                                                                |                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                             | 30 A  |                                                                                   |                                                                                                |                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                             | 25 A  |                                                                                   |                                                                                                |                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                             | 20 A  |                                                                                   |                                                                                                |                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                             | 16 A  | 16 A                                                                              | 16 A                                                                                           | 16 A                                                                                                            |
|                                                                                                                                                                                                                                                                                                                             | 10 A  |                                                                                   |                                                                                                |                                                                                                                 |
| Contact material ①                                                                                                                                                                                                                                                                                                          |       | AgCdO<br>AgNi                                                                     | AgCdO<br>AgNi                                                                                  | AgCdO                                                                                                           |
| Coil data                                                                                                                                                                                                                                                                                                                   |       |                                                                                   |                                                                                                |                                                                                                                 |
| Rated voltage                                                                                                                                                                                                                                                                                                               | V AC  | 6 ... 240 50/60 Hz                                                                | 6 ... 240 50/60 Hz                                                                             | 12 ... 240 50/60 Hz                                                                                             |
|                                                                                                                                                                                                                                                                                                                             | V AC  | 400 50 Hz ②                                                                       | 400 50 Hz                                                                                      |                                                                                                                 |
|                                                                                                                                                                                                                                                                                                                             | V DC  | 6 ... 220                                                                         | 6 ... 220                                                                                      | 12 ... 220                                                                                                      |
| Rated power consumption                                                                                                                                                                                                                                                                                                     | VA AC | 2,8                                                                               | 2,8                                                                                            | 2,8                                                                                                             |
|                                                                                                                                                                                                                                                                                                                             | W DC  | 1,5 (1,7 ③)                                                                       | 1,5 (1,7 ③)                                                                                    | 1,7                                                                                                             |
| General data                                                                                                                                                                                                                                                                                                                |       |                                                                                   |                                                                                                |                                                                                                                 |
| Electrical life (cycles)                                                                                                                                                                                                                                                                                                    |       | ≥ 10 <sup>5</sup>                                                                 | ≥ 10 <sup>5</sup>                                                                              | ≥ 2 x 10 <sup>5</sup>                                                                                           |
| Mechanical life (cycles)                                                                                                                                                                                                                                                                                                    |       | ≥ 10 <sup>7</sup>                                                                 | ≥ 10 <sup>7</sup>                                                                              | ≥ 2 x 10 <sup>7</sup>                                                                                           |
| Ambient temperature                                                                                                                                                                                                                                                                                                         | °C AC | -40...+55 3 C/O (+70 2 C/O)                                                       | -40...+55 3 C/O (+70 2 C/O)                                                                    | -40...+70                                                                                                       |
|                                                                                                                                                                                                                                                                                                                             | °C DC | -40...+55 3 C/O (+70 2 C/O)                                                       | -40...+55 3 C/O (+70 2 C/O)                                                                    | -40...+70                                                                                                       |
| Weight                                                                                                                                                                                                                                                                                                                      | g     | 80 ⑦ 85 ⑧                                                                         | 85 ⑧                                                                                           | 80 ⑦ 85 ⑧                                                                                                       |
| Cover protection category                                                                                                                                                                                                                                                                                                   |       | IP 00                                                                             | IP 00                                                                                          | IP 00                                                                                                           |
| Recognitions, certifications, directives                                                                                                                                                                                                                                                                                    |       | CE B RoHS                                                                         | CE B RoHS                                                                                      | CE c RoHS                                                                                                       |
| Insulation dielectric strength                                                                                                                                                                                                                                                                                              |       |                                                                                   |                                                                                                |                                                                                                                 |
| • between coil and contacts                                                                                                                                                                                                                                                                                                 | V AC  | 2 500                                                                             | 2 500                                                                                          | 2 500                                                                                                           |
| Contact - coil distance                                                                                                                                                                                                                                                                                                     |       |                                                                                   |                                                                                                |                                                                                                                 |
| • clearance                                                                                                                                                                                                                                                                                                                 | mm    | ≥ 5                                                                               | ≥ 5                                                                                            | ≥ 6,3                                                                                                           |
| • creepage                                                                                                                                                                                                                                                                                                                  | mm    | ≥ 8                                                                               | ≥ 8                                                                                            | ≥ 8                                                                                                             |
| Operating time                                                                                                                                                                                                                                                                                                              | ms    | 20                                                                                | 20                                                                                             | 20                                                                                                              |
| Release time                                                                                                                                                                                                                                                                                                                | ms    | 15                                                                                | 15                                                                                             | 15                                                                                                              |
| Detailed informations                                                                                                                                                                                                                                                                                                       |       | page 135                                                                          | page 135                                                                                       | page 140                                                                                                        |

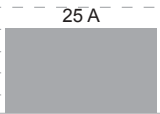
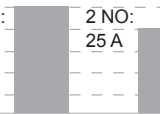
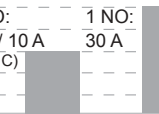
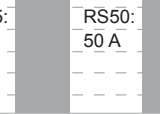
⑤ For plug-in sockets version. For version: with (V) adaptor: 58,75 x 38,6 x 45,9 mm; with (H) adaptor: 46,8 x 38,6 x 62,45 mm.

For version with mounting flange: 66,3 x 38,6 x 36,1 mm. For PCB version: 36,1 x 38,6 x 52,5 mm.

⑥ For version with (V) adaptor. For version with (H) adaptor: 46,8 x 38,6 x 66,1 mm. For version with mounting flange: 66,3 x 38,6 x 36,1 mm.

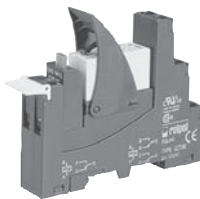
⑦ Weight of plug-in sockets version and PCB version.

⑧ Weight of version with (V) or (H) adaptor, and version with mounting flange.

| RG25                                                                                                | R20                                                                                         | R30                                                                                           | RS35, RS50 ⑨                                                                                   |
|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|                    |            |  NEW product |  NEW product |
| 26 x 49 x 72                                                                                        | 67 x 33 x 35                                                                                | 32,2 x 27,5 x 20,5                                                                            | 40 x 25 x 49,2                                                                                 |
| 2 NO<br>400 / 440                                                                                   | 1 NO, 2 NO<br>250 / 440                                                                     | 1 C/O, 1 NO<br>250 / 440                                                                      | 2 NO<br>250 V / 440                                                                            |
|                    |            |              |             |
| AgCdO                                                                                               | AgSnO <sub>2</sub>                                                                          | AgSnO <sub>2</sub>                                                                            | AgSnO <sub>2</sub>                                                                             |
| 12 ... 400 50 Hz<br>12 ... 220<br>3,0<br>1,7                                                        | 24 ... 230 50/60 Hz<br>12 ... 110<br>1,7...2,5<br>1,9                                       | 12 ... 24<br>1,0                                                                              | 5 ... 110<br>0,48                                                                              |
| ≥ 10 <sup>5</sup><br>≥ 10 <sup>6</sup><br>-25...+85<br>-25...+85<br>130<br>IP 20<br>CE B PG<br>RoHS | 10 <sup>5</sup><br>> 10 <sup>7</sup><br>-25...+75<br>-25...+75<br>90<br>IP 50<br>CE<br>RoHS | 10 <sup>5</sup><br>> 10 <sup>7</sup><br>-30...+55<br>22<br>IP 64<br>cULUS<br>RoHS             | 5 x 10 <sup>4</sup><br>10 <sup>6</sup><br>-40...+85<br>105<br>IP 40<br>CE cULUS VDE<br>RoHS    |
| 5 000                                                                                               | 4 000                                                                                       | 1 500                                                                                         | 5 000                                                                                          |
| ≥ 6<br>≥ 8<br>20<br>20                                                                              | ≥ 9<br>≥ 11<br>30<br>30                                                                     | 15<br>10                                                                                      | ≥ 10<br>≥ 10<br>30<br>5                                                                        |
| page 144                                                                                            | page 148                                                                                    | page 151                                                                                      | page 154                                                                                       |

⑨ Relays for power control in solar systems generating energy.

Plug-in sockets and accessories availability index - see pages 252, 253.

| Type of relay                                                                                                                                                                           | PI84                                                                              | PI85                                                                               | PI84                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <div>❶ The data in bold type pertain to the standard versions of the relays.</div> <div>❷ Between coil (input) and contacts</div> <div>❸ AUCOTEAM GmbH Berlin - railway standards</div> | with socket <b>GZT80</b>                                                          | with socket <b>GZT80</b>                                                           | with socket <b>GZM80</b>                                                            |
|                                                                                                                                                                                         |  |  |  |
|                                                                                                                                                                                         | Dimensions (L x W x H)mm75,3 x 15,5 x 67                                          | 75,3 x 15,5 x 67                                                                   | 78,1 x 15,9 x 66,5                                                                  |

- ❶ The data in bold type pertain to the standard versions of the relays.  
 ❷ Between coil (input) and contacts  
 ❸ AUCOTEAM GmbH Berlin - railway standards

## Contact data

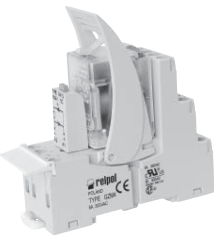
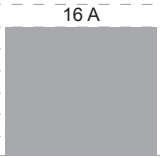
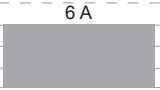
|                                |                                                  |           |           |           |
|--------------------------------|--------------------------------------------------|-----------|-----------|-----------|
| Number and type of contacts    |                                                  | 2 C/O     | 1 C/O     | 2 C/O     |
| Rated / max. switching voltage | V AC                                             | 250 / 440 | 250 / 440 | 250 / 440 |
| Rated current                  | 25 A<br>16 A<br>12 A<br>8 A<br>6 A<br>3 A<br>1 A | 8 A       | 16 A      | 8 A       |
| Contact material ❶             |                                                  | AgNi      | AgNi      | AgNi      |

## Coil data / Input control circuit

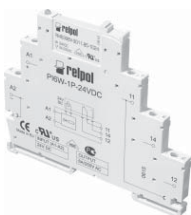
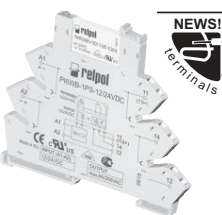
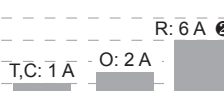
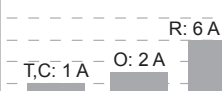
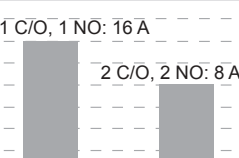
|                         |       |                     |                     |                     |
|-------------------------|-------|---------------------|---------------------|---------------------|
| Rated voltage ❶         | V AC  | 12 ... 230 50/60 Hz | 12 ... 230 50/60 Hz | 12 ... 230 50/60 Hz |
|                         | V DC  | 12 ... 110          | 12 ... 110          | 12 ... 110          |
| Rated power consumption | VA AC | 0,75                | 0,75                | 0,75                |
|                         | W DC  | 0,4...0,48          | 0,4...0,48          | 0,4...0,48          |

## General data

|                                          |       |                                  |                                  |                                  |
|------------------------------------------|-------|----------------------------------|----------------------------------|----------------------------------|
| Electrical life (cycles)                 |       | > 10 <sup>5</sup>                | > 0,7 x 10 <sup>5</sup>          | > 10 <sup>5</sup>                |
| Mechanical life (cycles)                 |       | > 3 x 10 <sup>7</sup>            | > 3 x 10 <sup>7</sup>            | > 3 x 10 <sup>7</sup>            |
| Ambient temperature                      | °C AC | -40...+70                        | -40...+70                        | -40...+70                        |
| • operating                              | °C DC | -40...+85                        | -40...+85                        | -40...+85                        |
| Weight                                   | g     | 62                               | 62                               | 59                               |
| Cover protection category                |       | IP 20                            | IP 20                            | IP 20                            |
| Recognitions, certifications, directives |       | CE PG<br>recognitions RM84, RoHS | CE PG<br>recognitions RM85, RoHS | CE PG<br>recognitions RM84, RoHS |
| Insulation dielectric strength ❷         | V AC  | 5 000                            | 5 000                            | 5 000                            |
| Contact - coil distance                  |       |                                  |                                  |                                  |
| • clearance                              | mm    | ≥ 10                             | ≥ 10                             | ≥ 10                             |
| • creepage                               | mm    | ≥ 10                             | ≥ 10                             | ≥ 10                             |
| Operating time                           | ms    | 7                                | 7                                | 7                                |
| Release time                             | ms    | 3                                | 3                                | 3                                |
| Detailed informations                    |       | page 158                         | page 162                         | page 166                         |

| PI85                                                                                                           | PIR2                                                                                                                    | PIR3                                                                                                                    | PIR4                                                                                                                     | PIR2M                                                                                                           |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| with socket <b>GZM80</b>                                                                                       | with socket <b>GZM2</b>                                                                                                 | with socket <b>GZM3</b>                                                                                                 | with socket <b>GZM4</b>                                                                                                  | with socket <b>GZ2</b>       |
|                               |                                        |                                        |                                        |                              |
| 78,1 x 15,9 x 66,5                                                                                             | 75 x 27 x 82                                                                                                            | 75 x 27 x 82                                                                                                            | 75 x 27 x 82                                                                                                             | 65,2 x 20 x 60,6                                                                                                |
| 1 C/O                                                                                                          | 2 C/O                                                                                                                   | 3 C/O                                                                                                                   | 4 C/O                                                                                                                    | 2 C/O                                                                                                           |
| 250 / 440                                                                                                      | 250 / 440                                                                                                               | 250 / 440                                                                                                               | 250 / 440                                                                                                                | 250 / 250                                                                                                       |
|                               |                                        |                                        |                                       |                              |
| AgNi                                                                                                           | AgNi                                                                                                                    | AgNi                                                                                                                    | AgNi                                                                                                                     | AgNi                                                                                                            |
| 12 ... 230 50/60 Hz<br>12 ... 110                                                                              | 12 ... 230 50/60 Hz<br>12 ... 110                                                                                       | 12 ... 230 50/60 Hz<br>12 ... 110                                                                                       | 12 ... 230 50/60 Hz<br>12 ... 110                                                                                        | 6 ... 230 50/60 Hz<br>6 ... 110                                                                                 |
| 0,75<br>0,4...0,48                                                                                             | 1,6 50 Hz 1,3 60 Hz<br>0,9                                                                                              | 1,6 50 Hz 1,3 60 Hz<br>0,9                                                                                              | 1,6 50 Hz 1,3 60 Hz<br>0,9                                                                                               | 1,2<br>0,9                                                                                                      |
| $> 0,7 \times 10^5$                                                                                            | $> 10^5$                                                                                                                | $> 10^5$                                                                                                                | $> 10^5$                                                                                                                 | $\geq 2 \times 10^5$                                                                                            |
| $> 3 \times 10^7$                                                                                              | $> 2 \times 10^7$                                                                                                       | $> 2 \times 10^7$                                                                                                       | $> 2 \times 10^7$                                                                                                        | $\geq 10^7$                                                                                                     |
| -40...+70<br>-40...+85                                                                                         | -40...+55<br>-40...+70                                                                                                  | -40...+55<br>-40...+70                                                                                                  | -40...+55<br>-40...+70                                                                                                   | -40...+55<br>-40...+55                                                                                          |
| 59                                                                                                             | 97                                                                                                                      | 107                                                                                                                     | 108                                                                                                                      | 44,5                                                                                                            |
| IP 20                                                                                                          | IP 20                                                                                                                   | IP 20                                                                                                                   | IP 20                                                                                                                    | IP 00                                                                                                           |
| <br>recognitions RM85, RoHS |  AUCOTEAM ®<br>recognitions R2, RoHS |  AUCOTEAM ®<br>recognitions R3, RoHS |  AUCOTEAM ®<br>recognitions R4, RoHS | <br>recognitions R2M, RoHS |
| 5 000                                                                                                          | 2 500                                                                                                                   | 2 500                                                                                                                   | 2 500                                                                                                                    | 2 000                                                                                                           |
| $\geq 10$<br>$\geq 10$                                                                                         | $\geq 2,5$<br>$\geq 4$                                                                                                  | $\geq 2,5$<br>$\geq 4$                                                                                                  | $\geq 1,6$<br>$\geq 3,2$                                                                                                 | $\geq 3$<br>$\geq 4$                                                                                            |
| 7                                                                                                              | AC: 10, DC: 13                                                                                                          | AC: 10, DC: 13                                                                                                          | AC: 10, DC: 13                                                                                                           | AC: 8, DC: 10                                                                                                   |
| 3                                                                                                              | AC: 8, DC: 3                                                                                                            | AC: 8, DC: 3                                                                                                            | AC: 8, DC: 3                                                                                                             | AC: 7, DC: 3                                                                                                    |
| page 170                                                                                                       | page 174                                                                                                                | page 177                                                                                                                | page 180                                                                                                                 | page 183                                                                                                        |

| Type of relay                                                                                                                                                                                                                             |              | PI6-1P                                                                            | PI6-1T                                                                             | PI6-OC                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <p>❶ The data in bold type pertain to the standard versions of the relays.</p> <p>❷ Contacts AgSnO<sub>2</sub></p> <p>❸ 0,3 / 0,3 24 V AC/DC</p> <p>❹ Refers version PIR6W-....-230VAC/DC-10 with integrated anti-interference filter</p> |              |  |  |  |
| Dimensions (L x W x H)                                                                                                                                                                                                                    | mm           | 93,8 x 6,2 x 80                                                                   | 93,8 x 6,2 x 80                                                                    | 93,8 x 6,2 x 80                                                                     |
| Output circuit - contact / output data                                                                                                                                                                                                    |              | Triac                                                                             |                                                                                    | Transistor                                                                          |
| Number and type of contacts / outputs                                                                                                                                                                                                     |              | 1 C/O                                                                             | 1 NO                                                                               | 1 NO                                                                                |
| Rated / max. switching voltage                                                                                                                                                                                                            | V AC         | 250 / 400 ❷                                                                       | 400 / 440                                                                          | DC: 70 / 70                                                                         |
| Rated current                                                                                                                                                                                                                             | 25 A         |                                                                                   |                                                                                    |                                                                                     |
|                                                                                                                                                                                                                                           | 16 A         |                                                                                   |                                                                                    |                                                                                     |
|                                                                                                                                                                                                                                           | 12 A         |                                                                                   |                                                                                    |                                                                                     |
|                                                                                                                                                                                                                                           | 8 A          |                                                                                   |                                                                                    |                                                                                     |
|                                                                                                                                                                                                                                           | 6 A          |                                                                                   |                                                                                    |                                                                                     |
|                                                                                                                                                                                                                                           | 3 A          |                                                                                   |                                                                                    |                                                                                     |
|                                                                                                                                                                                                                                           | 1 A          |                                                                                   |                                                                                    |                                                                                     |
| Contact material ❶                                                                                                                                                                                                                        |              | AgSnO <sub>2</sub><br>AgSnO <sub>2</sub> /Au 3 µm                                 |                                                                                    |                                                                                     |
| Input control circuit                                                                                                                                                                                                                     |              |                                                                                   |                                                                                    |                                                                                     |
| Rated voltage ❶                                                                                                                                                                                                                           | V AC         |                                                                                   |                                                                                    |                                                                                     |
|                                                                                                                                                                                                                                           | V DC         | 12 ... 36                                                                         | 5...32                                                                             | 5...32                                                                              |
|                                                                                                                                                                                                                                           | V AC/DC      | 24 ... 230 AC: 50/60 Hz                                                           | 24 ... 230 AC: 50/60 Hz                                                            | 24 ... 230 AC: 50/60 Hz                                                             |
| Rated power consumption                                                                                                                                                                                                                   | VA AC        |                                                                                   |                                                                                    |                                                                                     |
|                                                                                                                                                                                                                                           | W DC         | 0,3...0,7                                                                         | 0,3                                                                                | 0,3                                                                                 |
|                                                                                                                                                                                                                                           | VA AC / W DC | 0,3...1,6 / 0,3...1,6                                                             | 1,6 / 1,6 230 V AC/DC ❹                                                            | 1,0 / 1,0 230 V AC/DC ❹                                                             |
| General data                                                                                                                                                                                                                              |              |                                                                                   |                                                                                    |                                                                                     |
| Electrical life (cycles)                                                                                                                                                                                                                  |              | > 0,6 x 10 <sup>5</sup>                                                           |                                                                                    |                                                                                     |
| Mechanical life (cycles)                                                                                                                                                                                                                  |              | > 2 x 10 <sup>7</sup>                                                             |                                                                                    |                                                                                     |
| Ambient temperature                                                                                                                                                                                                                       | °C AC        | -40...+55                                                                         | -40...+55                                                                          | -40...+55                                                                           |
|                                                                                                                                                                                                                                           | °C DC        | -40...+60 12, 24 V DC                                                             | -40...+55                                                                          | -40...+55                                                                           |
| Weight                                                                                                                                                                                                                                    | g            | 40                                                                                | 40                                                                                 | 40                                                                                  |
| Cover protection category                                                                                                                                                                                                                 |              | IP 20                                                                             | IP 20                                                                              | IP 20                                                                               |
| Recognitions, certifications, directives                                                                                                                                                                                                  |              | CE cULus VDE PC                                                                   | CE PC                                                                              | CE PC                                                                               |
| Insulation dielectric strength                                                                                                                                                                                                            |              |                                                                                   |                                                                                    |                                                                                     |
| • input - output                                                                                                                                                                                                                          | V AC         | 4 000                                                                             | 4 000                                                                              | 3 000                                                                               |
| Input - output distance                                                                                                                                                                                                                   |              |                                                                                   |                                                                                    |                                                                                     |
| • clearance                                                                                                                                                                                                                               | mm           | ≥ 6                                                                               |                                                                                    |                                                                                     |
| • creepage                                                                                                                                                                                                                                | mm           | ≥ 8                                                                               |                                                                                    |                                                                                     |
| Operating time                                                                                                                                                                                                                            | ms           | AC: 7, DC: 6                                                                      | max. 10 (zero turn-on)                                                             |                                                                                     |
| Release time                                                                                                                                                                                                                              | ms           | AC: 15, DC: 10                                                                    | max. 10                                                                            |                                                                                     |
| Detailed informations                                                                                                                                                                                                                     |              | page 186                                                                          | page 188                                                                           | page 190                                                                            |

| PIR6W-1P-...                                                                        | PIR6W-1PS-...-⑤                                                                     | PIR6WB-1PS-...-⑤                                                                    | MT-PI-...                                                                             |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |    |
| 98,5 x 6,2 x 85,5                                                                   | 98,5 x 6,2 x 85,5                                                                   | 98,3 x 6,2 x 84,6                                                                   | 90 (98,8) x 17,5 x 63,5                                                               |
| Contacts                                                                            | Contacts ⑤                                                                          | Contacts ⑤                                                                          | Contacts                                                                              |
| 1 C/O                                                                               | 1 C/O ⑤                                                                             | 1 C/O ⑤                                                                             | 1 C/O, 2 C/O, 1 NO, 2 NO                                                              |
| 250 / 400 ②                                                                         | 250 / 400 ②                                                                         | 250 / 400 ②                                                                         | ... / max. 400 V AC, 300 V DC                                                         |
|    |    |    |     |
| AgSnO <sub>2</sub><br>AgSnO <sub>2</sub> /Au 3 μm                                   | AgSnO <sub>2</sub><br>AgSnO <sub>2</sub> /Au 3 μm                                   | AgSnO <sub>2</sub><br>AgSnO <sub>2</sub> /Au 3 μm                                   | AgNi                                                                                  |
| 12 ... 36<br>24 ... 230 AC: 50/60 Hz                                                | 6 ... 60<br>24 ... 230 AC: 50/60 Hz                                                 | 6 ... 60<br>24 ... 230 AC: 50/60 Hz                                                 | 115 ... 230 AC: 50/60 Hz<br>12 ... 48<br>12 ... 115 AC: 50 Hz                         |
| 0,3<br>0,3...2,1 / 0,3...1,0                                                        | 0,2...0,5<br>0,5...1,2 / 0,4...1,2                                                  | 0,2...0,5<br>0,5...1,2 / 0,4...1,2                                                  | 0,5...1,0<br>0,5...0,65<br>0,65...0,75 / 0,65...0,75                                  |
| > 0,6 x 10 <sup>5</sup><br>> 2 x 10 <sup>7</sup>                                    | > 0,5 x 10 <sup>5</sup><br>> 10 <sup>7</sup>                                        | > 0,5 x 10 <sup>5</sup><br>> 10 <sup>7</sup>                                        | ≥ 10 <sup>7</sup>                                                                     |
| -40...+55<br>-40...+60 12, 24 V DC                                                  | -40...+55 ②<br>-40...+55 ②                                                          | -40 (-20 ④)...+55<br>-40 (-20 ④)...+55                                              | -20...+45<br>-20...+45                                                                |
| 45                                                                                  | 45                                                                                  | 55                                                                                  | 1 C/O, 1 NO: 60 ⑥                                                                     |
| IP 20                                                                               | IP 20                                                                               | IP 20                                                                               | IP 20                                                                                 |
|  |  |  |  |
| 4 000                                                                               | 4 000                                                                               | 4 000                                                                               | 1 C/O, 2 C/O: 3 000 ⑦                                                                 |
| ≥ 6<br>≥ 8                                                                          | ≥ 6<br>≥ 8                                                                          | ≥ 6<br>≥ 8                                                                          |                                                                                       |
| AC: 11, DC: 8, (AC/DC: 20 ④)                                                        | AC/DC: 20, DC: 8                                                                    | AC/DC: 20, DC: 8                                                                    | 15                                                                                    |
| AC: 15, DC: 10, (AC/DC: 18 ④)                                                       | AC/DC: 25, DC: 10                                                                   | AC/DC: 25 (18 ④), DC: 10                                                            | 20                                                                                    |
| page 192                                                                            | page 195                                                                            | page 198                                                                            | page 203                                                                              |

⑤ R - operational electromagnetic relay RM699BV type for PIR6W.-1PS-...-R.  
T/C/O - operational solid state relay RSR30 type for PIR6W.-1PS-...-T (or C or O)  
- see catalogue "Solid state relays" and [www.relpol.com.pl](http://www.relpol.com.pl)  
⑥ 2 C/O, 2 NO: 65 g  
⑦ 1 NO, 2 NO: 4000 V AC

|                                                                                                                                                                                                                                                                                                                           | multifunctions                                                                                                                                                      |                                                                                                                                                                        | single-functions                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type of relay                                                                                                                                                                                                                                                                                                             | MT-TUA-...                                                                                                                                                          | MT-TUB-...                                                                                                                                                             | MT-T-....                                                                                                                                                               |
| <p>❶ The data in bold type pertain to the standard versions of the relays.</p> <p>❷ 0,7 / 0,7 24 V AC/DC</p> <p>❸ T-R4 + GZT4: 76,3 x 27 x 90 mm / 113 g<br/>T-R4: 27,5 x 21,2 x 62,5 mm / 49 g</p> <p>❹ With time module T(COM3)</p> <p>❺ PIR15 3 C/O with socket GZP11 (standard),<br/>PIR15 2 C/O with socket GZP8</p> |   |   |   |
| Dimensions (L x W x H) mm                                                                                                                                                                                                                                                                                                 | 90 (98,8) x 17,5 x 63,5                                                                                                                                             | 90 (98,8) x 17,5 x 63,5                                                                                                                                                | 90 (98,8) x 17,5 x 63,5                                                                                                                                                 |

## Output circuits - contact data

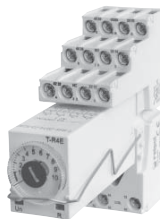
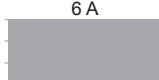
| Number and type of contacts / outputs | 1 C/O                                                                                                                                    | 1 C/O                                                                                                                                    | 1 C/O                                                                                                                                    |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Max. switching voltage V AC / DC      | 400 / 300                                                                                                                                | 400 / 300                                                                                                                                | 400 / 300                                                                                                                                |
| Rated current                         | <div> <div>25 A</div> <div>16 A</div> <div>12 A</div> <div>8 A</div> <div>6 A</div> <div>3 A</div> <div>1 A</div> </div> <div>10 A</div> | <div> <div>25 A</div> <div>16 A</div> <div>12 A</div> <div>8 A</div> <div>6 A</div> <div>3 A</div> <div>1 A</div> </div> <div>10 A</div> | <div> <div>25 A</div> <div>16 A</div> <div>12 A</div> <div>8 A</div> <div>6 A</div> <div>3 A</div> <div>1 A</div> </div> <div>10 A</div> |
| Contact material ❶                    | AgNi                                                                                                                                     | AgNi                                                                                                                                     | AgNi                                                                                                                                     |

## Input control circuit

|                         |                      |                 |                 |
|-------------------------|----------------------|-----------------|-----------------|
| Rated voltage ❶         | 50/60 Hz V AC        |                 |                 |
|                         | V DC                 |                 |                 |
|                         | AC: 50/60 Hz V AC/DC | 12...240        | 12...240        |
| Rated power consumption | VA AC                | ≤ 4,5 AC: 50 Hz | ≤ 4,5 AC: 50 Hz |
|                         | W DC                 | ≤ 1,5           | ≤ 1,5           |
|                         | VA AC / W DC         |                 |                 |

## General data

|                                          |       |                         |                         |                         |
|------------------------------------------|-------|-------------------------|-------------------------|-------------------------|
| Electrical life (cycles)                 |       | ≥ 0,5 x 10 <sup>5</sup> | ≥ 0,5 x 10 <sup>5</sup> | ≥ 0,5 x 10 <sup>5</sup> |
| Mechanical life (cycles)                 |       | ≥ 3 x 10 <sup>7</sup>   | ≥ 3 x 10 <sup>7</sup>   | ≥ 3 x 10 <sup>7</sup>   |
| Ambient temperature                      | °C AC | -20...+45               | -20...+45               | -20...+45               |
| • operating                              | °C DC | -20...+45               | -20...+45               | -20...+45               |
| Weight                                   | g     | 64                      | 64                      | 64                      |
| Cover protection category                |       | IP 20                   | IP 20                   | IP 20                   |
| Recognitions, certifications, directives |       | CE                      | CE                      | CE                      |
| Insulation dielectric strength           |       |                         |                         |                         |
| • input - outputs                        | V AC  | 2 500                   | 2 500                   | 2 500                   |
| Input - outputs distance                 |       |                         |                         |                         |
| • clearance                              | mm    |                         |                         |                         |
| • creepage                               | mm    |                         |                         |                         |
| Operating time                           | ms    |                         |                         |                         |
| Release time                             | ms    |                         |                         |                         |
| Detailed informations                    |       | page 207                | page 210                | page 213                |

| single-functions                                                                                     | multifunctions                                                                        |                                                                                                                                                                                               | single-functions                                                                                                  | multifunctions                                                                                                                          |
|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| MT-TSD-...                                                                                           | TR4N 4 C/O                                                                            | TR4N 1 C/O, 2 C/O                                                                                                                                                                             | T-R4                                                                                                              | PIR15...T ④                                                                                                                             |
|  <b>NEW product</b> |      |                                                                                                              |  with socket <b>GZM4 (GZT4)</b> |  <b>NEW product</b> with socket <b>GZP11, GZP8 ⑤</b> |
| 90 (98,8) x 17,5 x 63,5                                                                              | 90 x 36 x 55                                                                          | 90 x 17,6 x 55                                                                                                                                                                                | T-R4+GZM4: 75 x 27 x 91,5 ⑥                                                                                       | 73 x 38,2 x 85,4                                                                                                                        |
| 2 x 1 C/O                                                                                            | 4 C/O                                                                                 | 1 C/O, 2 C/O                                                                                                                                                                                  | 4 C/O                                                                                                             | 2 C/O, 3 C/O ⑥                                                                                                                          |
| 400 / 300                                                                                            | 250 / 250                                                                             | 440 / 300                                                                                                                                                                                     | 250 / 250                                                                                                         | 440 / 250                                                                                                                               |
|  10 A               |  6 A |  1 C/O: 16 A<br> 2 C/O: 8 A |  6 A                           |  10 A                                                |
| AgNi                                                                                                 | AgNi                                                                                  | AgNi                                                                                                                                                                                          | AgNi                                                                                                              | AgNi                                                                                                                                    |
| 12...240                                                                                             | 115 ... 230                                                                           | 115 ... 230                                                                                                                                                                                   | 24 ... 230                                                                                                        | 24 ... 240                                                                                                                              |
| ≤ 4,5 AC: 50 Hz                                                                                      | 12 ... 24                                                                             | 12 ... 24                                                                                                                                                                                     | 12 ... 24                                                                                                         | 24 ... 220                                                                                                                              |
| ≤ 1,5                                                                                                | 2,2 115, 230 V AC                                                                     | 1,3 115 V AC 1,7 230 V AC                                                                                                                                                                     | 2,2                                                                                                               | 3,0                                                                                                                                     |
|                                                                                                      | 1,0 / 1,0 12, 24 V AC/DC                                                              | 0,5 / 0,5 12 V AC/DC ②                                                                                                                                                                        | 1,2                                                                                                               | 2,0                                                                                                                                     |
| ≥ 0,5 x 10 <sup>5</sup>                                                                              | ≥ 10 <sup>5</sup>                                                                     | 1 C/O: ≥ 0,7 x 10 <sup>5</sup><br>2 C/O: ≥ 10 <sup>5</sup>                                                                                                                                    | > 10 <sup>5</sup>                                                                                                 | ≥ 2 x 10 <sup>5</sup>                                                                                                                   |
| ≥ 3 x 10 <sup>7</sup>                                                                                | ≥ 2 x 10 <sup>7</sup>                                                                 | ≥ 3 x 10 <sup>7</sup>                                                                                                                                                                         | > 2 x 10 <sup>7</sup>                                                                                             | ≥ 2 x 10 <sup>7</sup>                                                                                                                   |
| -20...+45                                                                                            | -20...+55                                                                             | -20...+55                                                                                                                                                                                     | -20...+55                                                                                                         | -40...+55                                                                                                                               |
| -20...+45                                                                                            | -20...+55                                                                             | -20...+55                                                                                                                                                                                     | -20...+55                                                                                                         | -40...+55                                                                                                                               |
| 84                                                                                                   | 115                                                                                   | 67                                                                                                                                                                                            | T-R4 + GZM4: 123 ③                                                                                                | 3 C/O: 175 2 C/O: 168                                                                                                                   |
| IP 20                                                                                                | IP 20                                                                                 | IP 20                                                                                                                                                                                         | IP 20                                                                                                             | IP 20                                                                                                                                   |
| CE                                                                                                   | CE PG                                                                                 | CE PG                                                                                                                                                                                         | CE recognitions R4                                                                                                | CE recognitions R15, RoHS                                                                                                               |
| 2 500                                                                                                | 2 500                                                                                 | 2 500                                                                                                                                                                                         | 2 500                                                                                                             | 2 500                                                                                                                                   |
|                                                                                                      | ≥ 1,6<br>≥ 3,2                                                                        | ≥ 10<br>≥ 10                                                                                                                                                                                  | ≥ 1,6<br>≥ 3,2                                                                                                    | ≥ 3<br>≥ 4,2                                                                                                                            |
|                                                                                                      |                                                                                       |                                                                                                                                                                                               | 10                                                                                                                | AC: 12, DC: 18                                                                                                                          |
|                                                                                                      |                                                                                       |                                                                                                                                                                                               | 8                                                                                                                 | AC: 10, DC: 7                                                                                                                           |
| page 216                                                                                             | page 219                                                                              | page 222                                                                                                                                                                                      | page 225                                                                                                          | page 229                                                                                                                                |

Time functions TR4N, T-R4, PIR15...T - see pages 233, 234.

## Subminiature signal relays

|              |    |
|--------------|----|
| RSM822 ..... | 27 |
| RSM954 ..... | 30 |
| RSM957 ..... | 33 |



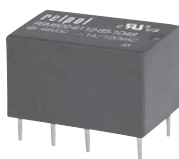
Subminiature relays are applied in e.g. telecommunication devices, office equipment, alarm systems, measurement devices, medical monitoring devices, AV devices, control sensors.

Their major features which provide for their applications in electronic circuits as interface-control units are:

- miniature dimensions,
- high switching capacity,
- high resistance of the Cover to difficult operating conditions,
- wide range of control voltages.

Space-saving of the electronic plates, low power consumption of the control circuits, a few applicable mounting technologies are only few of the advantages offered by the aforementioned features.

The relays are recognized and certified by:     
They meet the requirements of RoHS Directive.



- Subminiature monostable relays for switching low loads • **DC coils** - **standard and sensitive of up to 48 V DC**, low coil power 0,20 W (sensitive version) or 0,36 W (standard version) • Mounting on printed circuit boards • Operation possible at high temperature and in chemical environment • Sealed, for wave soldering and cleaning • Applications: for telephone equipment, household equipment, office equipment, AV devices, control devices - remote control devices
- Recognitions, certifications, directives: RoHS, 

### Contact data

|                                |     |                       |
|--------------------------------|-----|-----------------------|
| Number and type of contacts    |     | 2 C/O                 |
| Contact material               |     | <b>AgPd/Au 0,2 µm</b> |
| Rated / max. switching voltage | AC  | 120 V / 120 V         |
| Min. switching voltage         |     | 1 V                   |
| Rated load                     | AC1 | 1 A / 120 V AC        |
|                                | DC1 | 2 A / 24 V DC         |
| Min. switching current         |     | 1 mA                  |
| Rated current                  |     | 2 A                   |
| Max. breaking capacity         | AC1 | 120 VA                |
| Min. breaking capacity         |     | 1 mW                  |
| Contact resistance             |     | ≤ 100 mΩ              |

### Coil data

|                                   |    |                              |                         |
|-----------------------------------|----|------------------------------|-------------------------|
| Rated voltage                     | DC | 3 ... 24 V sensitive version | 48 V standard version   |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub>     |                         |
| Operating range of supply voltage |    | see Table 1                  |                         |
| Rated power consumption           | DC | 0,20 W sensitive version     | 0,36 W standard version |

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

|                             |            |                                        |
|-----------------------------|------------|----------------------------------------|
| Dielectric strength         |            |                                        |
| • between coil and contacts | 1 000 V AC | type of insulation: basic              |
| • contact clearance         | 500 V AC   | type of clearance: micro-disconnection |
| Contact - coil distance     |            |                                        |
| • clearance                 | ≥ 1,3 mm   |                                        |
| • creepage                  | ≥ 1,5 mm   |                                        |

### General data

|                                           |                    |                                |                              |
|-------------------------------------------|--------------------|--------------------------------|------------------------------|
| Operating / release time (typical values) |                    | 8 ms / 4 ms sensitive version  | 6 ms / 4 ms standard version |
| Electrical life                           |                    |                                |                              |
| • resistive AC1                           | 1 800 cycles/hour  | > 10 <sup>5</sup>              | 1 A, 120 V AC                |
| Mechanical life                           | 18 000 cycles/hour | > 10 <sup>7</sup>              |                              |
| Dimensions (L x W x H)                    |                    | 21 x 10,1 x 12,1 mm            |                              |
| Weight                                    |                    | 4,8 g                          |                              |
| Ambient temperature                       | • operating        | -30...+80 °C                   |                              |
| Cover protection category                 |                    | IP 64                          | PN-EN 60529                  |
| Shock resistance                          |                    | 10 g                           |                              |
| Vibration resistance                      |                    | 1,5 mm DA (constant amplitude) | 10...55 Hz                   |
| Solder bath temperature                   |                    | max. 235 °C                    |                              |
| Soldering time                            |                    | max. 3,5 s                     |                              |

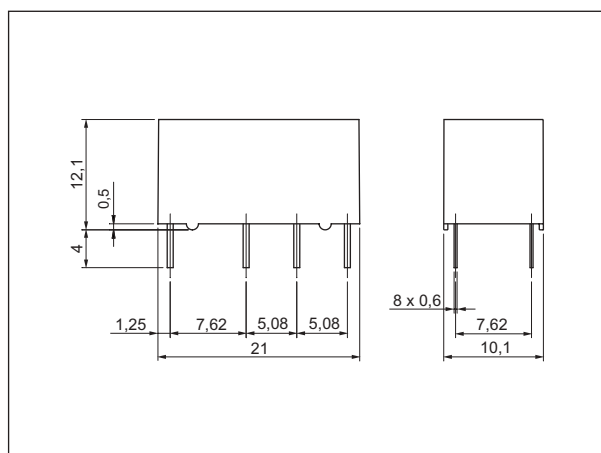
The data in bold type pertain to the standard versions of the relays.

Coil data - DC voltage version

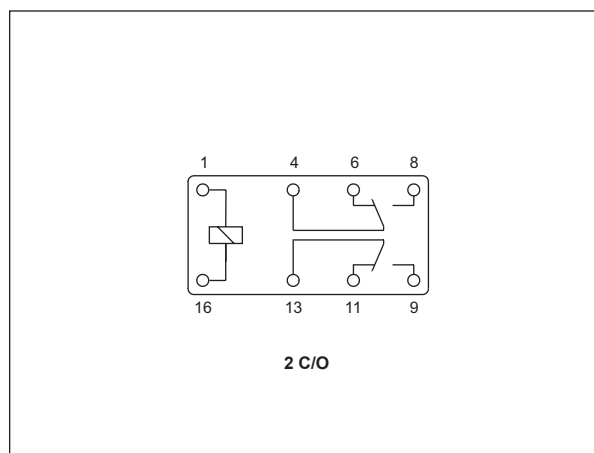
Table 1

| Coil code           |                      | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>at 20°C<br>V DC |      | Power<br>consumption<br>mW |
|---------------------|----------------------|-----------------------|---------------------------------------------------|-----------------------------------------|------|----------------------------|
| standard<br>version | sensitive<br>version |                       |                                                   | min.                                    | max. |                            |
| —                   | S003                 | 3                     | 45                                                | 2,25                                    | 4,5  | 200                        |
| —                   | S005                 | 5                     | 125                                               | 3,75                                    | 7,5  | 200                        |
| —                   | S006                 | 6                     | 180                                               | 4,50                                    | 9,0  | 200                        |
| —                   | S009                 | 9                     | 405                                               | 6,75                                    | 13,5 | 200                        |
| —                   | S012                 | 12                    | 720                                               | 9,00                                    | 18,0 | 200                        |
| —                   | S024                 | 24                    | 2 880                                             | 18,00                                   | 36,0 | 200                        |
| 1048                | —                    | 48                    | 6 400                                             | 36,00                                   | 72,0 | 360                        |

## Dimensions

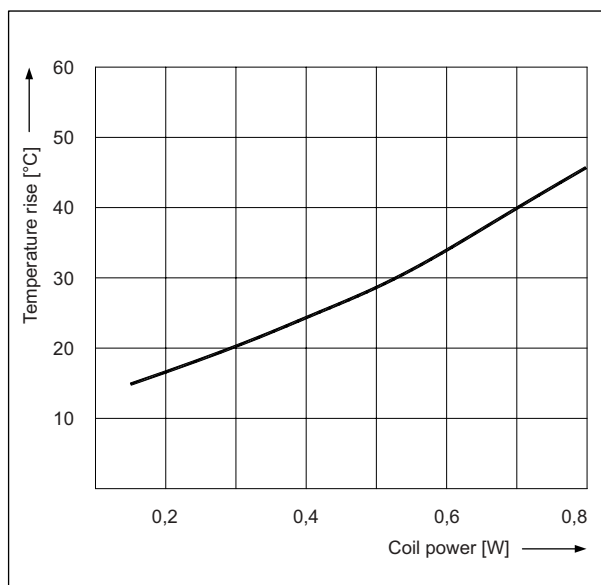


## Connection diagram (pin side view)



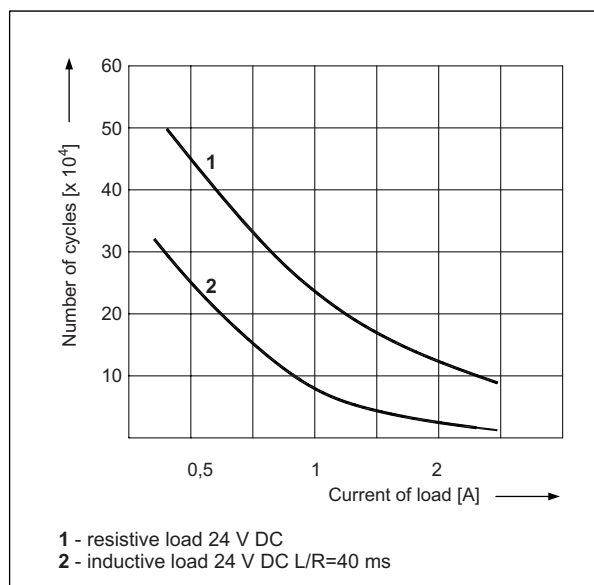
## Coil temperature rise

Fig. 1

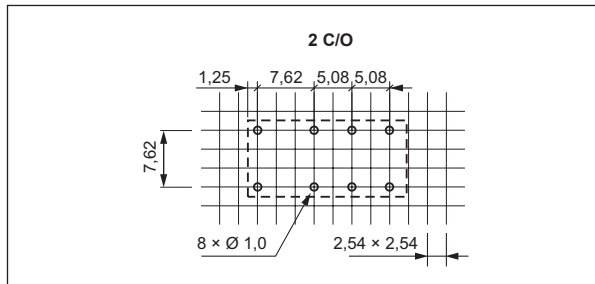


## Electrical life

Fig. 2



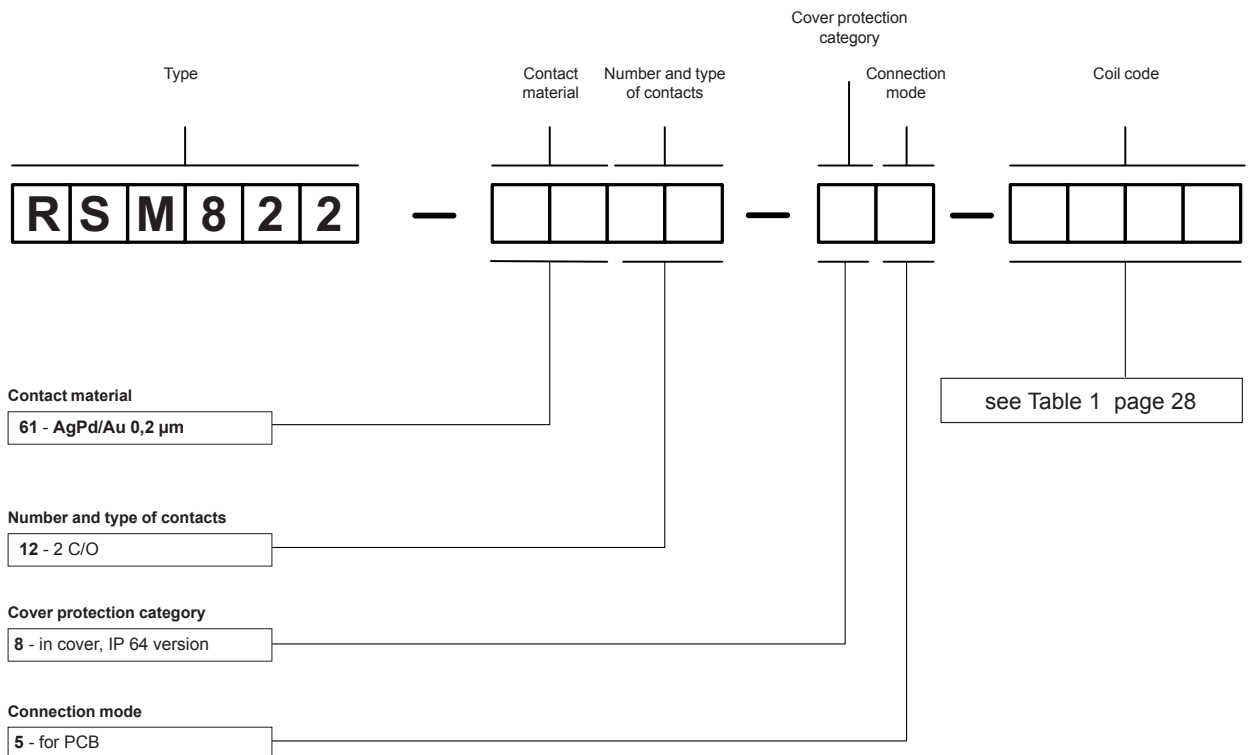
## Pinout (solder side view)



## Mounting

Relays **RSM822** are designed for direct PCB mounting.

## Ordering codes



Example of ordering code:

**RSM822-6112-85-S005**

relay **RSM822**, contact material AgPd/Au 0,2 µm, with two changeover contacts, in cover IP 64, for PCB, sensitive voltage version 5 V DC



- Subminiature, monostable relays
- Small dimensions
- **DC coils of up to 24 V DC**, low coil power 0,36 W
- Sealed, for wave soldering and cleaning
- Applications: for telecommunication devices, office equipment, industrial control, etc.
- Recognitions, certifications, directives: RoHS, 

## Contact data

|                                |            |                                 |
|--------------------------------|------------|---------------------------------|
| Number and type of contacts    |            | 1 C/O                           |
| Contact material               |            | <b>Ag/Au 0,2 µm</b>             |
| Rated / max. switching voltage | AC         | 120 V / 120 V                   |
| Min. switching voltage         |            | 5 V                             |
| Rated load                     | AC1<br>DC1 | 3 A / 120 V AC<br>3 A / 24 V DC |
| Min. switching current         |            | 10 mA                           |
| Rated current                  |            | 3 A                             |
| Max. breaking capacity         | AC1        | 360 VA                          |
| Min. breaking capacity         |            | 50 mW                           |
| Contact resistance             |            | ≤ 100 mΩ                        |

## Coil data

|                                   |    |                           |
|-----------------------------------|----|---------------------------|
| Rated voltage                     | DC | 3 ... 24 V                |
| Must release voltage              |    | DC: ≥ 0,05 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1               |
| Rated power consumption           | DC | 0,36 W                    |

## Insulation according to PN-EN 60664-1

|                             |  |                                                 |
|-----------------------------|--|-------------------------------------------------|
| Dielectric strength         |  |                                                 |
| • between coil and contacts |  | 500 V AC type of insulation: basic              |
| • contact clearance         |  | 500 V AC type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                 |
| • clearance                 |  | ≥ 1,2 mm                                        |
| • creepage                  |  | ≥ 2 mm                                          |

## General data

|                                           |                    |                                           |
|-------------------------------------------|--------------------|-------------------------------------------|
| Operating / release time (typical values) |                    | 8 ms / 4 ms                               |
| Electrical life                           |                    |                                           |
| • resistive AC1                           | 1 800 cycles/hour  | > 10 <sup>5</sup> 3 A, 120 V AC           |
| • resistive DC1                           | 1 800 cycles/hour  | > 10 <sup>5</sup> 3 A, 24 V DC            |
| Mechanical life                           | 18 000 cycles/hour | > 10 <sup>7</sup>                         |
| Dimensions (L x W x H)                    |                    | 15,4 x 10,4 x 11,4 mm                     |
| Weight                                    |                    | 3,5 g                                     |
| Ambient temperature                       | • operating        | -25...+55 °C                              |
| Cover protection category                 |                    | IP 64 PN-EN 60529                         |
| Shock resistance                          |                    | 10 g                                      |
| Vibration resistance                      |                    | 1,5 mm DA (constant amplitude) 10...55 Hz |
| Solder bath temperature                   |                    | max. 235 °C                               |
| Soldering time                            |                    | max. 3,5 s                                |

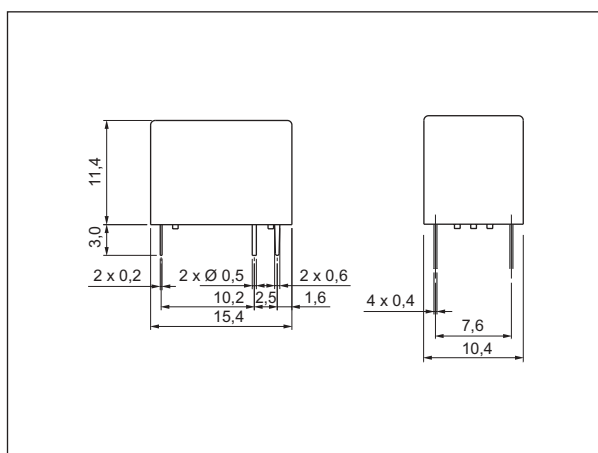
The data in bold type pertain to the standard versions of the relays.

Coil data - DC voltage version

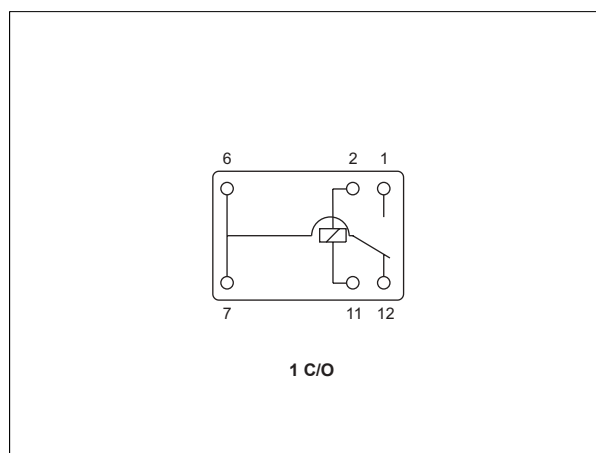
Table 1

| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>at 20°C<br>V DC |      | Power<br>consumption<br>mW |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------|------|----------------------------|
|           |                       |                                                   | min.                                    | max. |                            |
| 1003      | 3                     | 25                                                | 2,25                                    | 3,9  | 360                        |
| 1005      | 5                     | 69                                                | 3,75                                    | 6,5  | 360                        |
| 1006      | 6                     | 100                                               | 4,50                                    | 7,8  | 360                        |
| 1009      | 9                     | 225                                               | 6,75                                    | 11,7 | 360                        |
| 1012      | 12                    | 400                                               | 9,00                                    | 15,6 | 360                        |
| 1024      | 24                    | 1 600                                             | 18,00                                   | 31,2 | 360                        |

Dimensions

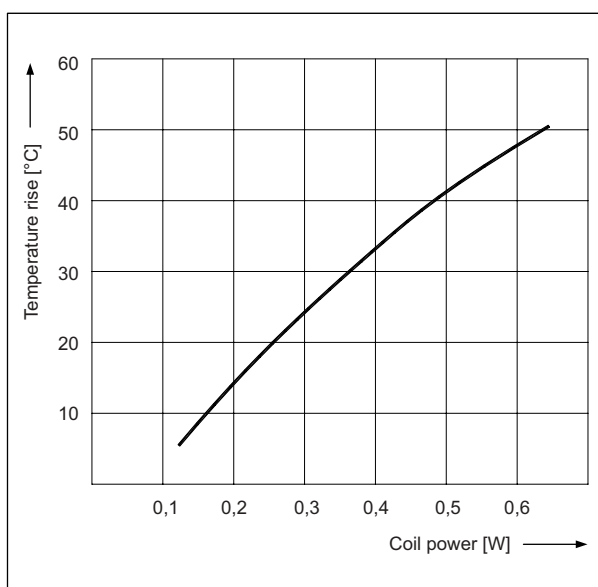


Connection diagram (pin side view)



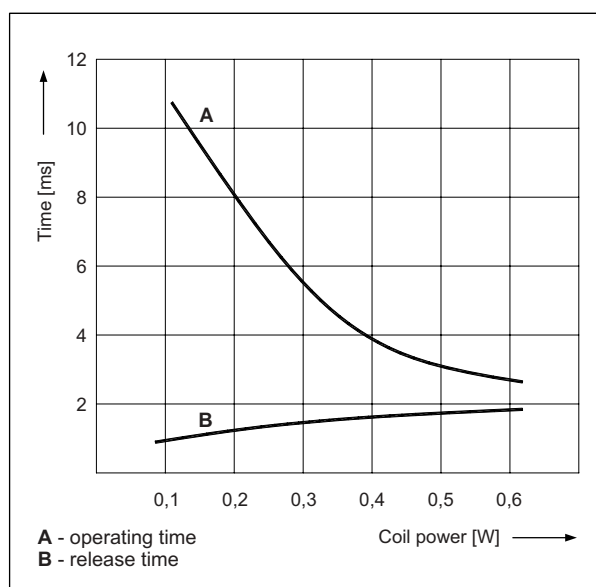
Coil temperature rise

Fig. 1



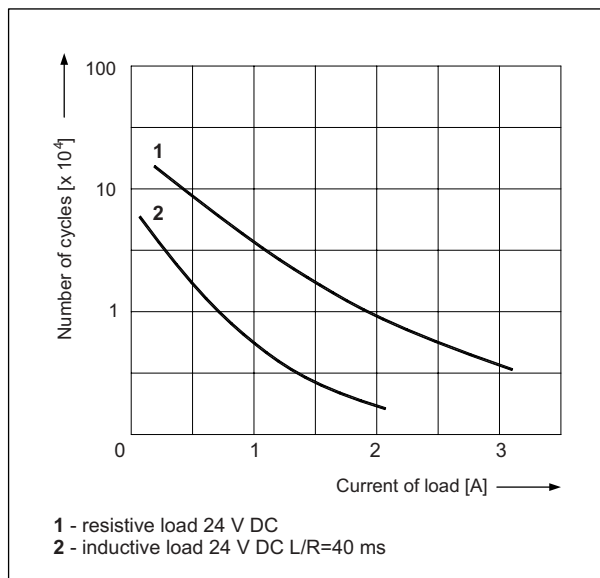
Operating / release time

Fig. 2

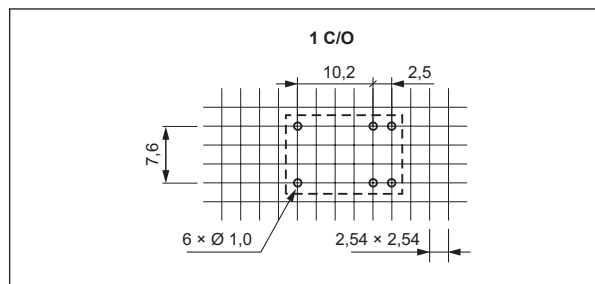


## Electrical life

Fig. 3



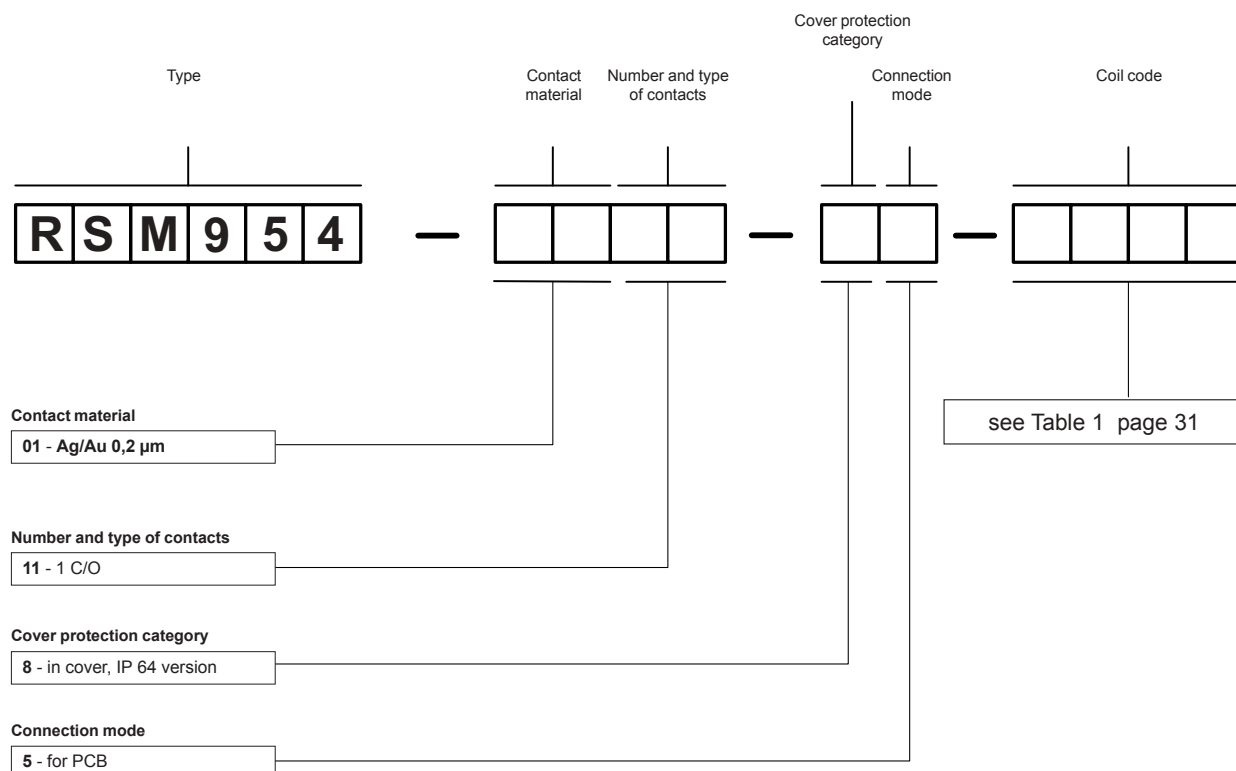
## Pinout (solder side view)



## Mounting

Relays **RSM954** are designed for direct PCB mounting.

## Ordering codes



Example of ordering code:

**RSM954-0111-85-1005**

relay **RSM954**, contact material Ag/Au 0,2  $\mu$ m, with one changeover contact, in cover IP 64, for PCB, voltage version 5 V DC



- Subminiature, monostable relays
- Very small dimensions
- **DC coils - sensitive of up to 24 V DC**, low coil power 0,15...0,20 W
- Sealed, for wave soldering and cleaning
- Applications: for telecommunication devices, office equipment, industrial control, etc.
- Recognitions, certifications, directives: RoHS, 

### Contact data

|                                |     |                     |
|--------------------------------|-----|---------------------|
| Number and type of contacts    |     | 1 C/O               |
| Contact material               |     | <b>Ag/Au 0,2 µm</b> |
| Rated / max. switching voltage | AC  | 120 V / 125 V       |
| Min. switching voltage         |     | 5 V                 |
| Rated load                     | AC1 | 2 A / 120 V AC      |
|                                | DC1 | 2 A / 24 V DC       |
| Min. switching current         |     | 10 mA               |
| Rated current                  |     | 2 A                 |
| Max. breaking capacity         | AC1 | 240 VA              |
| Min. breaking capacity         |     | 50 mW               |
| Contact resistance             |     | ≤ 100 mΩ            |

### Coil data

|                                   |    |                           |
|-----------------------------------|----|---------------------------|
| Rated voltage                     | DC | 3 ... 24 V                |
| Must release voltage              |    | DC: ≥ 0,05 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1               |
| Rated power consumption           | DC | 0,15...0,20 W             |

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

|                             |            |                                        |
|-----------------------------|------------|----------------------------------------|
| Dielectric strength         |            |                                        |
| • between coil and contacts | 1 000 V AC | type of insulation: basic              |
| • contact clearance         | 400 V AC   | type of clearance: micro-disconnection |
| Contact - coil distance     |            |                                        |
| • clearance                 | ≥ 0,6 mm   |                                        |
| • creepage                  | ≥ 0,6 mm   |                                        |

### General data

|                                           |                    |                                           |
|-------------------------------------------|--------------------|-------------------------------------------|
| Operating / release time (typical values) |                    | 5 ms / 5 ms                               |
| Electrical life                           |                    |                                           |
| • resistive AC1                           | 1 800 cycles/hour  | > 10 <sup>5</sup> 2 A, 120 V AC           |
| • resistive DC1                           | 1 800 cycles/hour  | > 10 <sup>5</sup> 2 A, 24 V DC            |
| Mechanical life                           | 18 000 cycles/hour | > 10 <sup>7</sup>                         |
| Dimensions (L x W x H)                    |                    | 12,6 x 7,8 x 10 mm                        |
| Weight                                    |                    | 2,2 g                                     |
| Ambient temperature                       | • operating        | -30...+70 °C                              |
| Cover protection category                 |                    | IP 64 PN-EN 60529                         |
| Shock resistance                          |                    | 10 g                                      |
| Vibration resistance                      |                    | 1,5 mm DA (constant amplitude) 10...55 Hz |
| Solder bath temperature                   |                    | max. 235 °C                               |
| Soldering time                            |                    | max. 3,5 s                                |

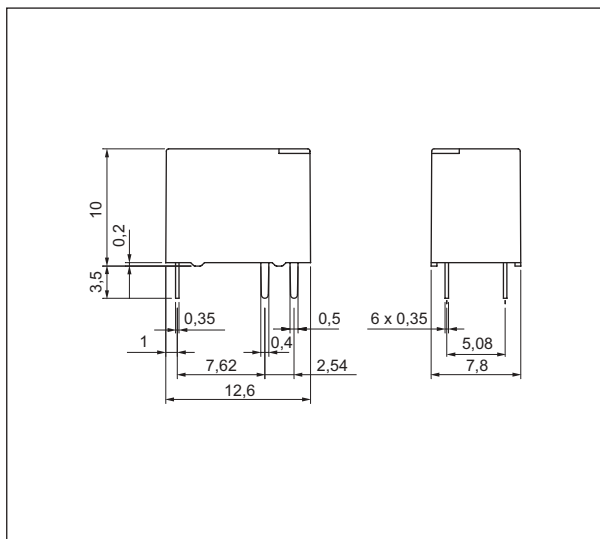
The data in bold type pertain to the standard versions of the relays.

### Coil data - DC voltage version

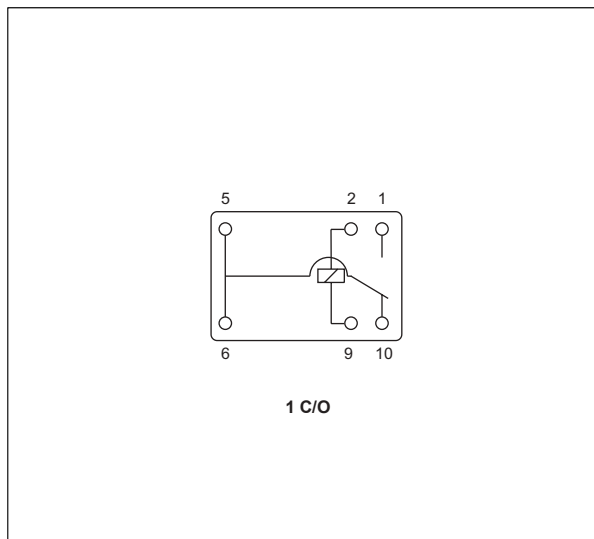
Table 1

| Coil code | Rated voltage<br>V DC | Coil resistance<br>± 10% at 20°C<br>Ω | Coil operating range<br>at 20°C<br>V DC |      | Power<br>consumption<br>mW |
|-----------|-----------------------|---------------------------------------|-----------------------------------------|------|----------------------------|
|           |                       |                                       | min.                                    | max. |                            |
| S003      | 3                     | 60                                    | 2,4                                     | 3,9  | 150                        |
| S005      | 5                     | 167                                   | 4,0                                     | 6,5  | 150                        |
| S006      | 6                     | 240                                   | 4,8                                     | 7,8  | 150                        |
| S009      | 9                     | 540                                   | 7,2                                     | 11,7 | 150                        |
| S012      | 12                    | 960                                   | 9,6                                     | 15,6 | 150                        |
| S024      | 24                    | 2 880                                 | 18,0                                    | 31,2 | 200                        |

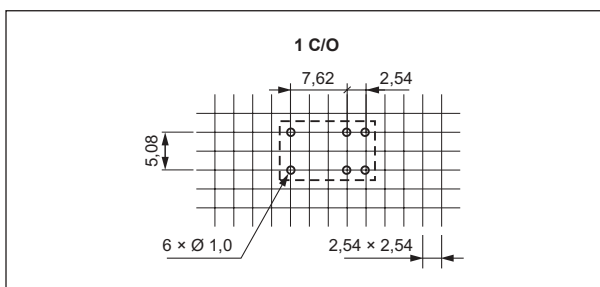
## Dimensions



## Connection diagram (pin side view)



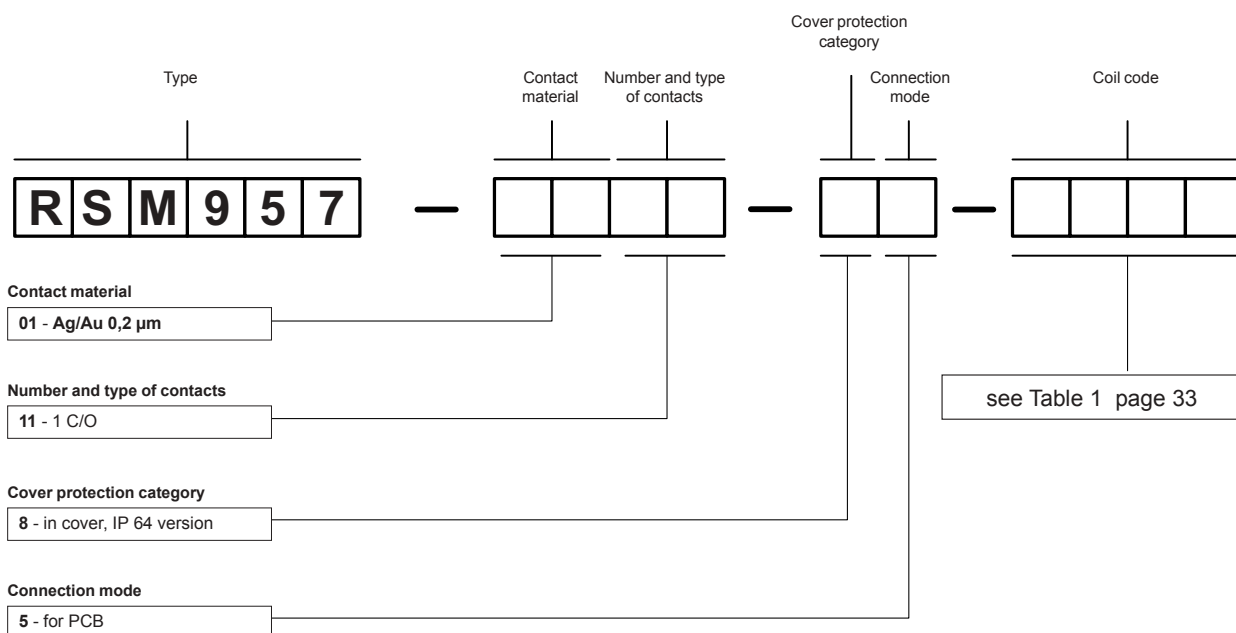
## Pinout (solder side view)



## Mounting

Relays **RSM957** are designed for direct PCB mounting.

## Ordering codes



## Miniature relays

|                             |    |                            |     |
|-----------------------------|----|----------------------------|-----|
| RM40 .....                  | 36 |                            |     |
| RM50 .....                  | 39 |                            |     |
| RM699B .....                | 42 |                            |     |
| RM84 .....                  | 46 |                            |     |
| RM84 SMT .....              | 50 |                            |     |
| RM85 .....                  | 54 |                            |     |
| RM85 ⚡ .....                | 58 |                            |     |
| RM85 inrush .....           | 61 |                            |     |
| RM85 105 °C sensitive ..... | 65 |                            |     |
| RM85 SMT .....              | 69 |                            |     |
| RM85 faston .....           | 73 |                            |     |
|                             |    | RM87, RM87 sensitive ..... | 76  |
|                             |    | RM87N SMT .....            | 82  |
|                             |    | RM96 .....                 | 86  |
|                             |    | RM83 .....                 | 90  |
|                             |    | RM92 .....                 | 94  |
|                             |    | RM94 .....                 | 98  |
|                             |    | <b>Automotive relays</b>   |     |
|                             |    | RA2 .....                  | 102 |

⚡ **RM85** with increased contact gap

Owing to their universality, miniature relays may be applied in alarm systems, as interface systems in industrial automation, power-electric systems, lighting control systems /e.g. in daylight-saving switches/, staircase lighting control systems, emergency lighting control systems, time relays as their output terminals, control systems of household and catering industry equipment, and in numerous electric systems.

The basic features of the miniature relays are:

- wide range of coil voltages,
- AC and DC coils,
- rated contact switching currents up to 20 A /depending on the relay type/,
- height from 10,5 to 26 mm /depending on the relay type/,
- high electric strength of the insulation,
- possibility of mounting on PCB, SMT and in plug-in sockets.

This type of relay is of high quality and reliability.

RM84 and RM85 relays are the basis for the interface relays of PI84 and PI85 types which are described in the section of "Interface relays".

The relays are recognized and certified by:         
They meet the requirements of RoHS Directive.



- Very small dimensions
- High switching capacity up to 5 A or 8 A
- Cover with enhanced sealing protects the relay in course of soldering and cleaning
- Applications: for household equipment, office machines, control devices, alarm systems, in industrial control, industrial controllers
- Recognitions, certifications, directives: RoHS,  

## Contact data

|                                |     |                                   |                                |
|--------------------------------|-----|-----------------------------------|--------------------------------|
| Number and type of contacts    |     | 1 C/O                             | 1 NO                           |
| Contact material               |     | 1 C/O: <b>AgNi</b> , AgNi/Au 3 µm | 1 NO: <b>AgSnO<sub>2</sub></b> |
| Rated / max. switching voltage | AC  | 1 C/O: 250 V / 380 V              | 1 NO: 250 V / 440 V            |
| Min. switching voltage         |     | 5 V AgNi, 1 V AgNi/Au 3 µm        | 5 V AgSnO <sub>2</sub>         |
| Rated load                     | AC1 | 1 C/O: 5 A / 250 V AC             | 1 NO: 8 A / 250 V AC           |
|                                | DC1 | 1 C/O: 5 A / 30 V DC              | 1 NO: 8 A / 30 V DC            |
| Min. switching current         |     | 10 mA AgNi, 1 mA AgNi/Au 3 µm     | 10 mA AgSnO <sub>2</sub>       |
| Rated current                  |     | 1 C/O: 5 A                        | 1 NO: 8 A                      |
| Max. breaking capacity         | AC1 | 1 C/O: 1 250 VA                   | 1 NO: 2 000 VA                 |
| Min. breaking capacity         |     | 50 mW AgNi, 1 mW AgNi/Au 3 µm     | 50 mW AgSnO <sub>2</sub>       |
| Contact resistance             |     | ≤ 100 mΩ                          |                                |

## Coil data

|                                   |    |                           |
|-----------------------------------|----|---------------------------|
| Rated voltage                     | DC | 3 ... 48 V                |
| Must release voltage              |    | DC: ≥ 0,05 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1               |
| Rated power consumption           | DC | 0,20 W                    |

## Insulation according to PN-EN 60664-1

|                             |            |                                        |
|-----------------------------|------------|----------------------------------------|
| Dielectric strength         |            |                                        |
| • between coil and contacts | 4 000 V AC | type of insulation: reinforced         |
| • contact clearance         | 1 000 V AC | type of clearance: micro-disconnection |
| Contact - coil distance     |            |                                        |
| • clearance                 | ≥ 5 mm     |                                        |
| • creepage                  | ≥ 5 mm     |                                        |

## General data

|                                           |                    |                                |                      |                     |
|-------------------------------------------|--------------------|--------------------------------|----------------------|---------------------|
| Operating / release time (typical values) |                    | 8 ms / 4 ms                    |                      |                     |
| Electrical life                           |                    |                                |                      |                     |
| • resistive AC1                           | 360 cycles/hour    | > 10 <sup>5</sup>              | 1 C/O: 5 A, 250 V AC | 1 NO: 8 A, 250 V AC |
| • resistive DC1                           | 1 800 cycles/hour  | > 10 <sup>5</sup>              | 1 C/O: 5 A, 30 V DC  | 1 NO: 8 A, 30 V DC  |
| Mechanical life                           | 18 000 cycles/hour | > 10 <sup>7</sup>              |                      |                     |
| Dimensions (L x W x H)                    |                    | 20 x 10 x 10,5 mm              |                      |                     |
| Weight                                    |                    | 6 g                            |                      |                     |
| Ambient temperature                       | • operating        | -40...+85 °C                   |                      |                     |
| Cover protection category                 |                    | IP 64                          | PN-EN 60529          |                     |
| Shock resistance                          |                    | 10 g                           |                      |                     |
| Vibration resistance                      |                    | 1,5 mm DA (constant amplitude) | 10...55 Hz           |                     |
| Solder bath temperature                   |                    | max. 235 °C                    |                      |                     |
| Soldering time                            |                    | max. 3,5 s                     |                      |                     |

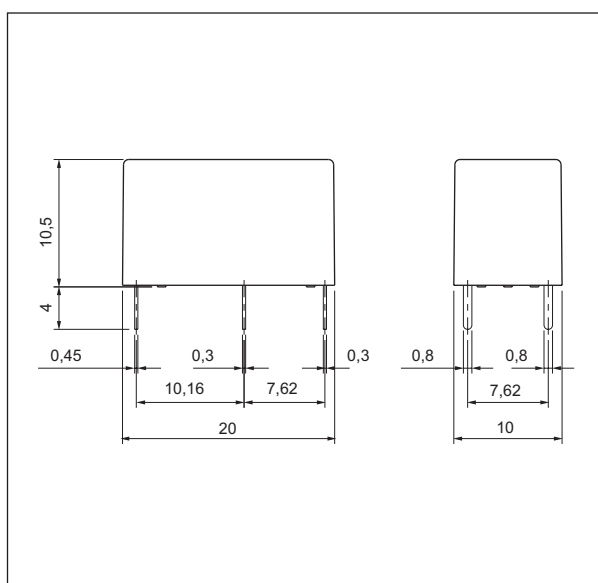
The data in bold type pertain to the standard versions of the relays.

Coil data - DC voltage version

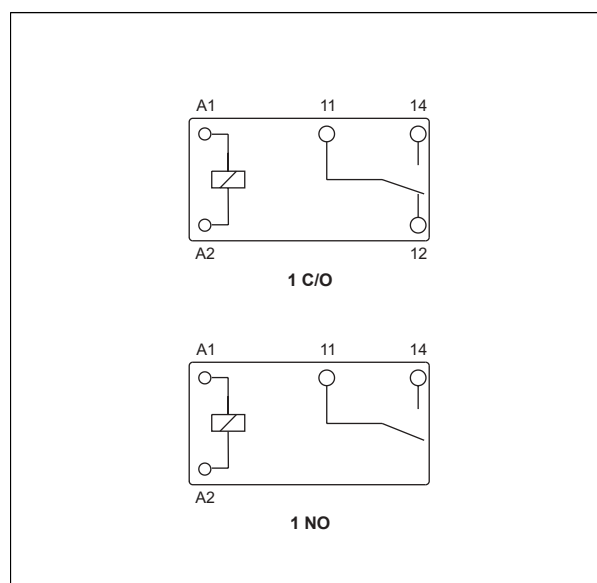
Table 1

| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>at 20°C<br>V DC |      | Power<br>consumption<br>mW |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------|------|----------------------------|
|           |                       |                                                   | min.                                    | max. |                            |
| 1003      | 3                     | 45                                                | 2,25                                    | 4,5  | 200                        |
| 1005      | 5                     | 125                                               | 3,75                                    | 7,5  | 200                        |
| 1006      | 6                     | 180                                               | 4,50                                    | 9,0  | 200                        |
| 1009      | 9                     | 405                                               | 6,75                                    | 13,5 | 200                        |
| 1012      | 12                    | 720                                               | 9,00                                    | 18,0 | 200                        |
| 1024      | 24                    | 2 880                                             | 18,00                                   | 36,0 | 200                        |
| 1048      | 48                    | 11 520                                            | 36,00                                   | 72,0 | 200                        |

## Dimensions

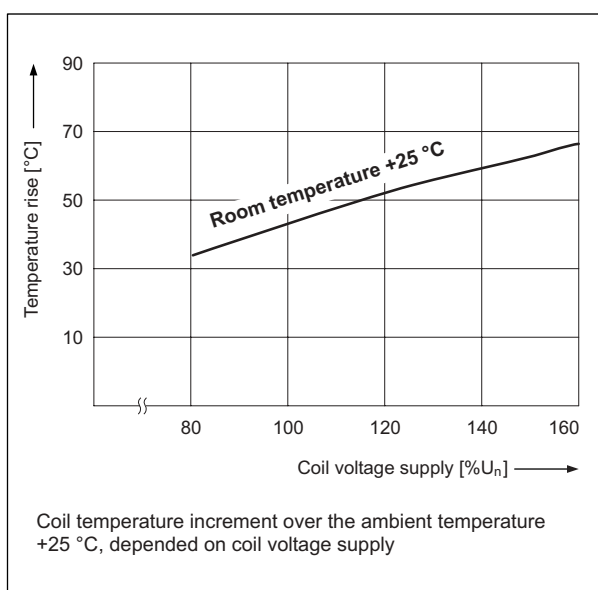


## Connection diagrams (pin side view)



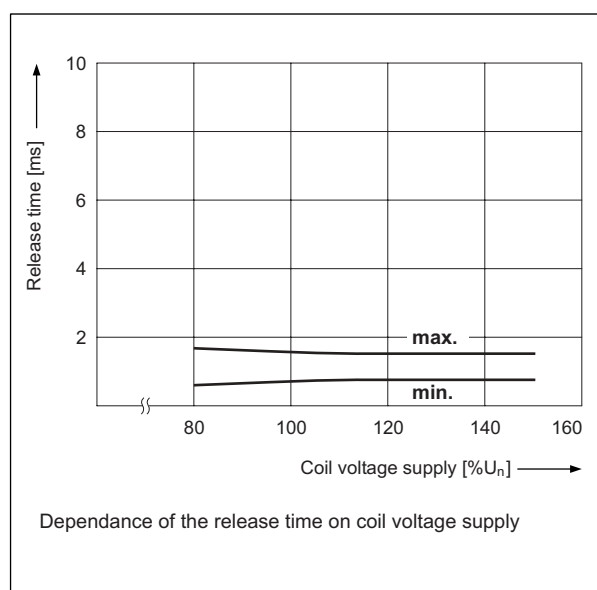
## Coil temperature rise

Fig. 1

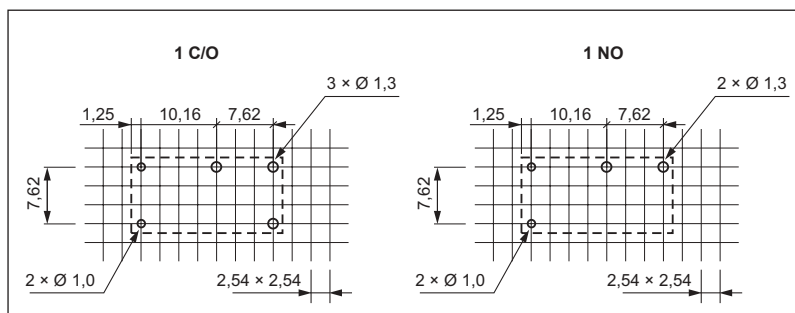


## Release time

Fig. 2



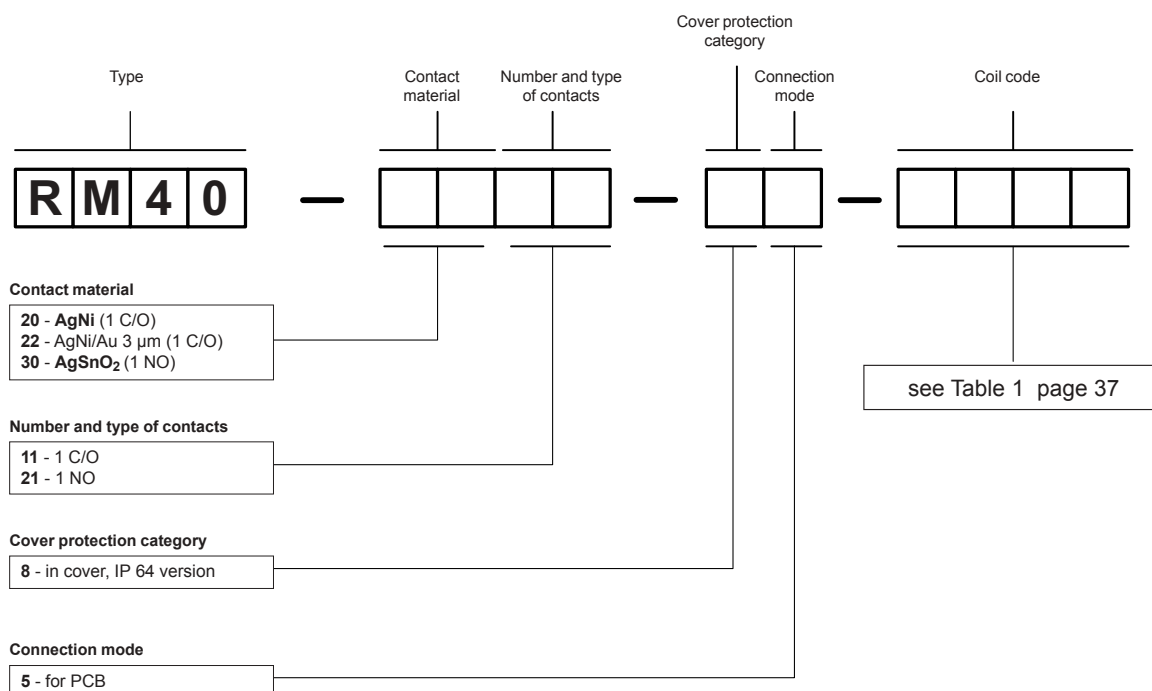
## Pinout (solder side view)



## Mounting

Relays **RM40** are designed for direct PCB mounting.

## Ordering codes



Examples of ordering code:

**RM40-2011-85-1003**

relay **RM40**, contact material AgNi, with one changeover contact, in cover IP 64, for PCB, voltage version 3 V DC

**RM40-3021-85-1024**

relay **RM40**, contact material AgSnO<sub>2</sub>, with one normally open contact, in cover IP 64, for PCB, voltage version 24 V DC



- Small dimensions
- Switching current up to 10 A / 15 A
- The plastics applied provide for the operation of the relays at high temperature and in chemical environment
- Sealed, for soldering
- Applications: for household equipment, office machines, audio equipment, coffee machines, control devices, etc.
- Recognitions, certifications, directives: RoHS, 

## Contact data

|                                |                                           |
|--------------------------------|-------------------------------------------|
| Number and type of contacts    | 1 C/O, 1 NO                               |
| Contact material               | <b>AgSnO<sub>2</sub></b>                  |
| Rated / max. switching voltage | AC 240 V / 277 V                          |
| Min. switching voltage         | 5 V                                       |
| Rated load                     | AC1 10 A / 240 V AC<br>DC1 15 A / 24 V DC |
| Min. switching current         | 15 mA                                     |
| Rated current                  | 12 A                                      |
| Max. breaking capacity         | AC1 3 000 VA                              |
| Min. breaking capacity         | 0,75 W                                    |
| Contact resistance             | ≤ 100 mΩ                                  |

## Coil data

|                                   |                           |
|-----------------------------------|---------------------------|
| Rated voltage                     | DC 3 ... 48 V             |
| Must release voltage              | DC: ≥ 0,05 U <sub>n</sub> |
| Operating range of supply voltage | see Table 1               |
| Rated power consumption           | DC 0,36...0,45 W          |

## Insulation according to PN-EN 60664-1

|                             |                                                 |
|-----------------------------|-------------------------------------------------|
| Dielectric strength         |                                                 |
| • between coil and contacts | 1 000 V AC type of insulation: basic            |
| • contact clearance         | 500 V AC type of clearance: micro-disconnection |
| Contact - coil distance     |                                                 |
| • clearance                 | ≥ 1,9 mm                                        |
| • creepage                  | ≥ 1,9 mm                                        |

## General data

|                                           |                                           |
|-------------------------------------------|-------------------------------------------|
| Operating / release time (typical values) | 10 ms / 5 ms                              |
| Electrical life                           |                                           |
| • resistive AC1 1 200 cycles/hour         | > 10 <sup>5</sup> 7 A, 250 V AC           |
| • resistive AC1 1 200 cycles/hour         | > 3 x 10 <sup>4</sup> 12 A, 250 V AC      |
| • resistive DC1 1 200 cycles/hour         | > 5 x 10 <sup>4</sup> 15 A, 24 V DC       |
| Mechanical life 18 000 cycles/hour        | > 10 <sup>7</sup>                         |
| Dimensions (L x W x H)                    | 19 x 15,4 x 15,5 mm                       |
| Weight                                    | 11 g                                      |
| Ambient temperature • operating           | -30...+55 °C                              |
| Cover protection category                 | IP 64 PN-EN 60529                         |
| Shock resistance                          | 10 g                                      |
| Vibration resistance                      | 1,5 mm DA (constant amplitude) 10...55 Hz |
| Solder bath temperature                   | max. 235 °C                               |
| Soldering time                            | max. 3,5 s                                |

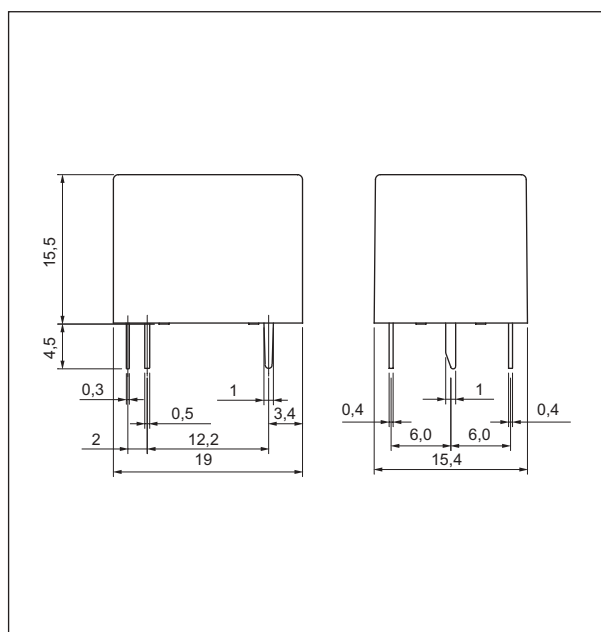
The data in bold type pertain to the standard versions of the relays.

Coil data - DC voltage version

Table 1

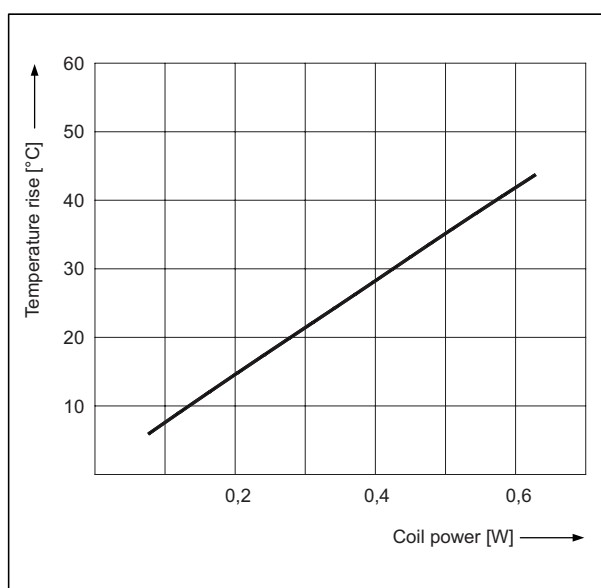
| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>at 20°C<br>V DC |      | Power<br>consumption<br>mW |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------|------|----------------------------|
|           |                       |                                                   | min.                                    | max. |                            |
| 1003      | 3                     | 25                                                | 2,25                                    | 3,9  | 360                        |
| 1005      | 5                     | 70                                                | 3,75                                    | 6,5  | 360                        |
| 1006      | 6                     | 100                                               | 4,50                                    | 7,8  | 360                        |
| 1009      | 9                     | 225                                               | 6,75                                    | 11,7 | 360                        |
| 1012      | 12                    | 400                                               | 9,00                                    | 15,6 | 360                        |
| 1018      | 18                    | 900                                               | 13,50                                   | 23,4 | 360                        |
| 1024      | 24                    | 1 600                                             | 18,00                                   | 31,2 | 360                        |
| 1048      | 48                    | 6 400                                             | 38,40                                   | 62,4 | 450                        |

## Dimensions

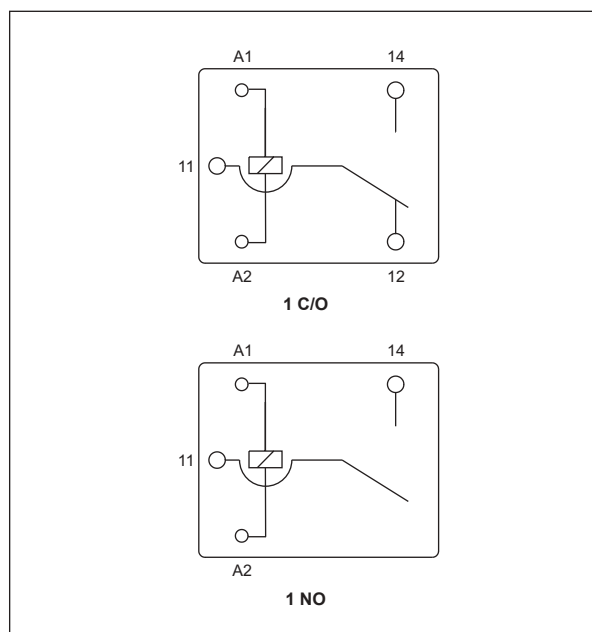


## Coil temperature rise

Fig. 1

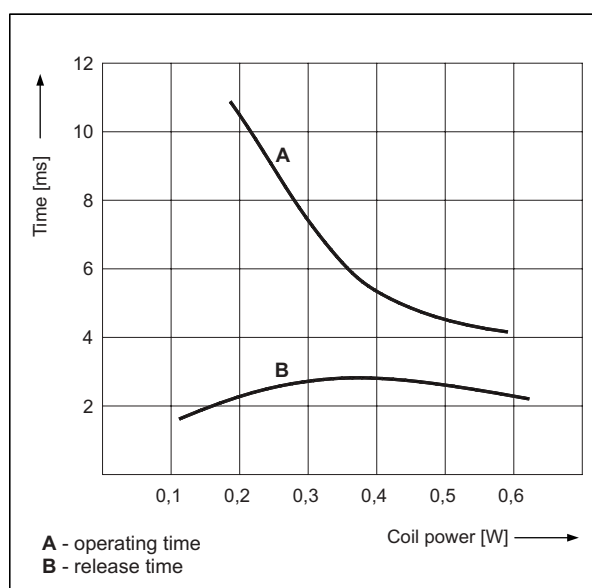


## Connection diagrams (pin side view)



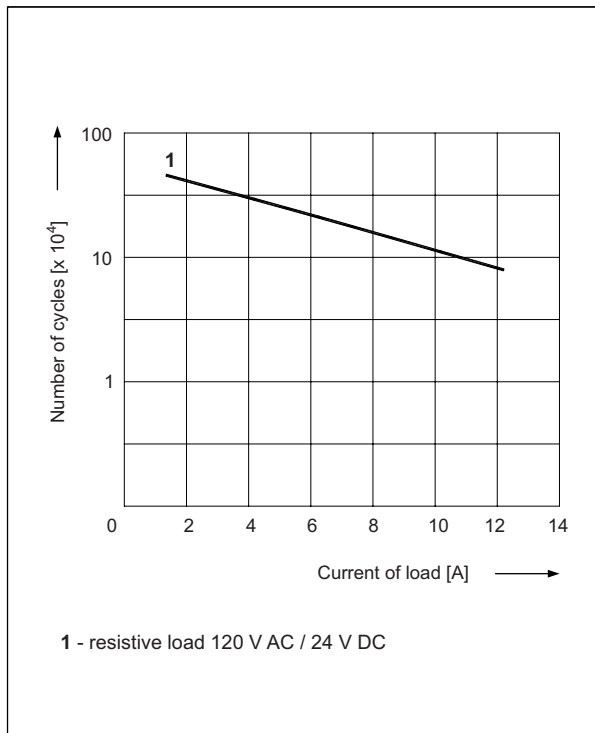
## Operating / release time

Fig. 2

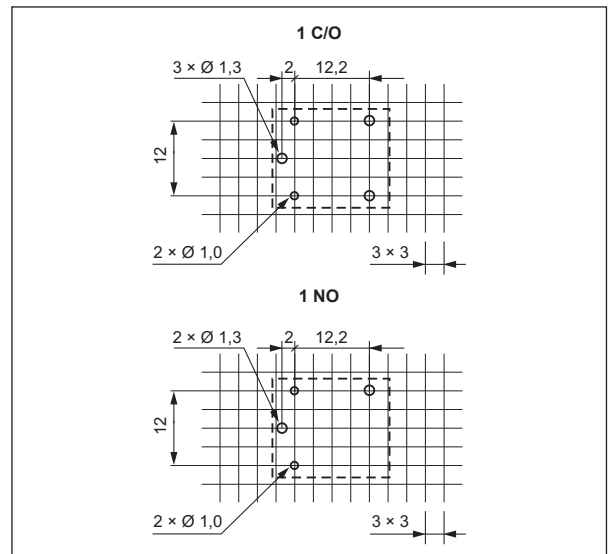


## Electrical life

Fig. 3



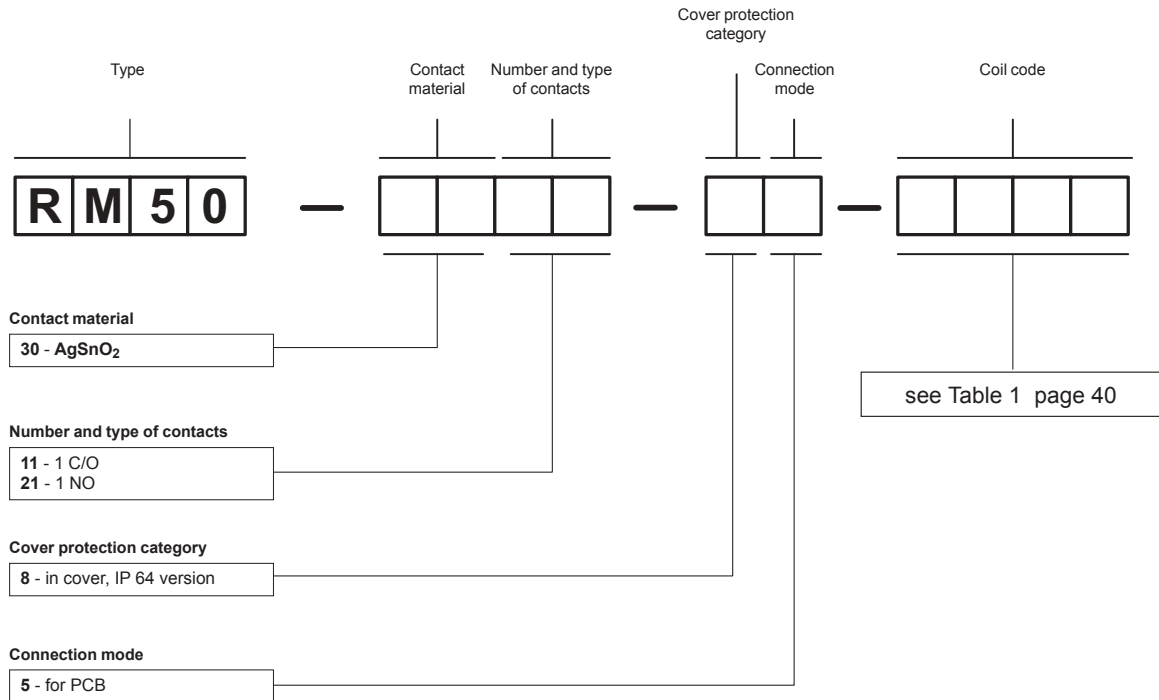
## Pinout (solder side view)



## Mounting

Relays **RM50** are designed for direct PCB mounting.

## Ordering codes



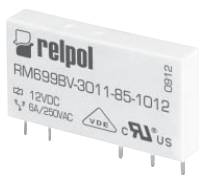
Example of ordering code:

**RM50-3011-85-1012**

relay **RM50**, contact material AgSnO<sub>2</sub>, with one changeover contact, in cover IP 64, for PCB, voltage version 12 V DC

version (V)

version (H)



- Cover width only 5,0 mm
- Sealed for soldering and cleaning
- **Terminals arrangement: vertical version (V) and horizontal version (H)**
- Applications: for PLC's, industrial machinery, time relays, counters, temperature adjusters, measurement instruments, office equipment, etc.
- Recognitions, certifications, directives: RoHS,

## Contact data

|                                |     |                          |                               |
|--------------------------------|-----|--------------------------|-------------------------------|
| Number and type of contacts    |     | 1 C/O                    |                               |
| Contact material               |     | <b>AgSnO<sub>2</sub></b> | AgSnO <sub>2</sub> /Au 3 µm ❶ |
| Rated / max. switching voltage | AC  | 250 V / 400 V            | – / 30 V ❶                    |
| Max. switching voltage         | DC  | 250 V                    | 36 V ❶                        |
| Min. switching voltage         |     | 10 V                     | 5 V                           |
| Rated load                     | AC1 | 6 A / 250 V AC           | 0,05 A / 30 V AC ❶            |
|                                | DC1 | 6 A / 24 V DC            | 0,05 A / 36 V DC ❶            |
| Min. switching current         |     | 100 mA                   | 10 mA                         |
| Max. inrush current            |     | 10 A 20 ms               | 0,1 A 20 ms ❶                 |
| Rated current                  |     | 6 A                      | 0,05 A ❶                      |
| Max. breaking capacity         | AC1 | 1 500 VA                 | 1,2 VA ❶                      |
| Min. breaking capacity         |     | 1 W                      | 0,05 W                        |
| Contact resistance             |     | ≤ 100 mΩ 100 mA, 24 V    | ≤ 30 mΩ 10 mA, 5 V            |
| Max. operating frequency       |     |                          |                               |
| • at rated load                |     | AC1                      | 360 cycles/hour               |
| • no load                      |     |                          | 72 000 cycles/hour            |

## Coil data

|                                   |    |                           |
|-----------------------------------|----|---------------------------|
| Rated voltage                     | DC | 5 ... 60 V                |
| Must release voltage              |    | DC: ≥ 0,05 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1               |
| Rated power consumption           | DC | 0,17...0,217 W            |

## Insulation according to PN-EN 60664-1

|                             |  |                                                   |
|-----------------------------|--|---------------------------------------------------|
| Insulation rated voltage    |  | 250 V AC                                          |
| Overvoltage category        |  | III                                               |
| Dielectric strength         |  |                                                   |
| • between coil and contacts |  | 4 000 V AC type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                   |
| • clearance                 |  | ≥ 6 mm                                            |
| • creepage                  |  | ≥ 8 mm                                            |

## General data

|                                           |             |                                                                                                                         |
|-------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------------|
| Operating / release time (typical values) |             | 8 ms / 4 ms                                                                                                             |
| Electrical life                           |             |                                                                                                                         |
| • resistive AC1                           |             | the NO and NC contact loaded (bilateral load): see Fig. 1<br>the NO contact loaded: > 3 x 10 <sup>4</sup> 6 A, 250 V AC |
| Mechanical life (cycles)                  |             | > 10 <sup>7</sup>                                                                                                       |
| Dimensions (L x W x H)                    |             | 28 x 5 x 15 mm                                                                                                          |
| Weight                                    |             | 6 g                                                                                                                     |
| Ambient temperature                       | • storage   | -40...+85 °C                                                                                                            |
|                                           | • operating | -40...+85 °C                                                                                                            |
| Cover protection category                 |             | IP 64 PN-EN 60529                                                                                                       |
| Environmental protection                  |             | RTIII PN-EN 116000-3                                                                                                    |
| Shock resistance                          |             | 5 g                                                                                                                     |
| Vibration resistance                      |             | 5 g 10...55 Hz                                                                                                          |
| Solder bath temperature                   |             | max. 235 °C                                                                                                             |
| Soldering time                            |             | max. 3,5 s                                                                                                              |

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

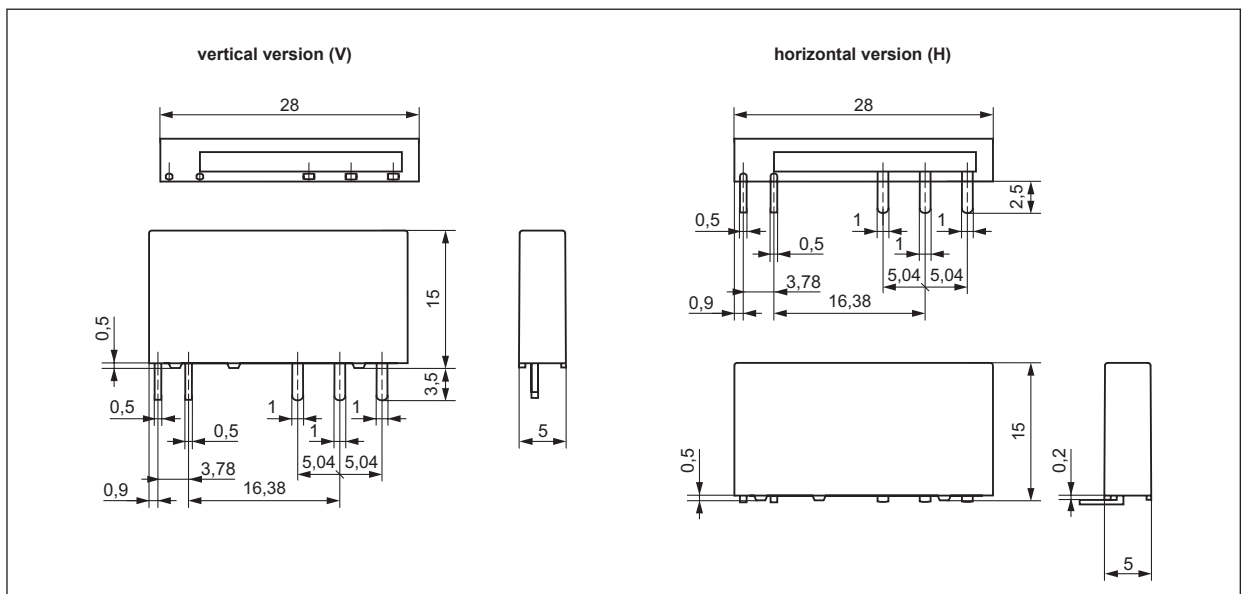
❶ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for AgSnO<sub>2</sub> contacts (see beside). In consequence however, the life of the contact may be shorter than that of the normal power contact.

Coil data - DC voltage version

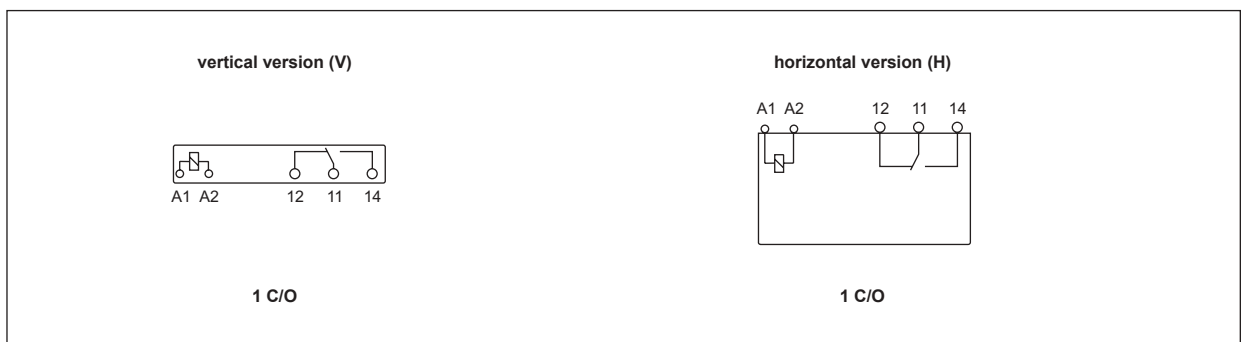
Table 1

| Coil code | Rated voltage<br>V DC | Coil resistance<br>at 20°C<br>$\Omega$ | Acceptable<br>resistance | Coil operating range<br>at 20°C<br>V DC |      | Power<br>consumption<br>mW |
|-----------|-----------------------|----------------------------------------|--------------------------|-----------------------------------------|------|----------------------------|
|           |                       |                                        |                          | min.                                    | max. |                            |
| 1005      | 5                     | 147                                    | $\pm 10\%$               | 3,75                                    | 7,5  | 170                        |
| 1012      | 12                    | 848                                    | $\pm 10\%$               | 9,0                                     | 18,0 | 170                        |
| 1024      | 24                    | 3 390                                  | $\pm 15\%$               | 18,0                                    | 36,0 | 170                        |
| 1048      | 48                    | 10 600                                 | $\pm 15\%$               | 36,0                                    | 72,0 | 217                        |
| 1060      | 60                    | 20 500                                 | $\pm 15\%$               | 45,0                                    | 90,0 | 217                        |

## Dimensions

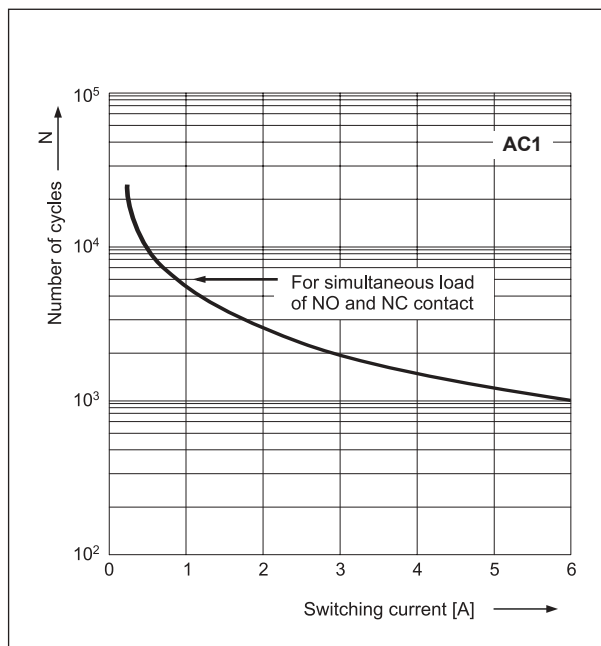


## Connection diagrams (pin side view)



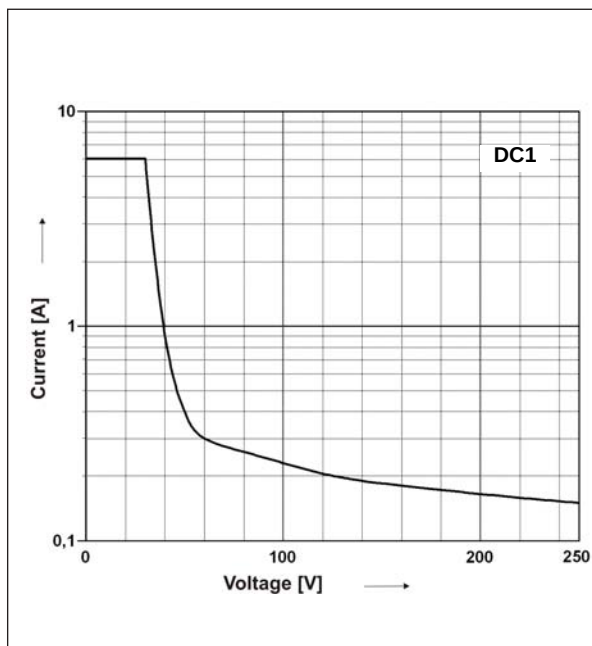
**Electrical life at AC resistive current.**  
Switching frequency: 360 cycles/hour

Fig. 1



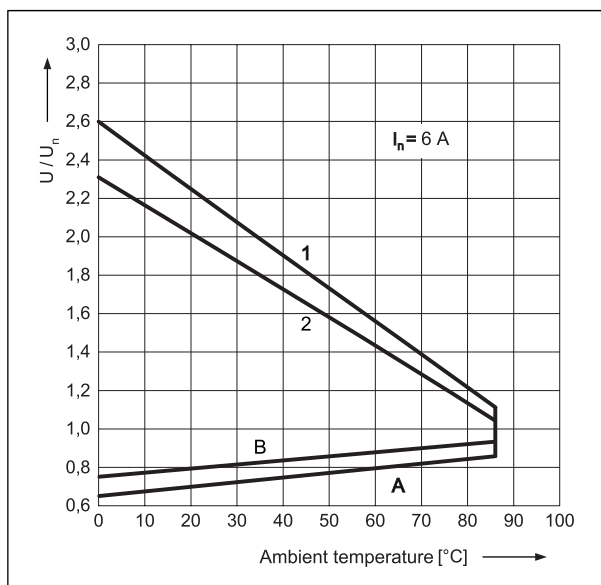
**Max. DC resistive load breaking capacity**

Fig. 2



**Coil operating range - DC**

Fig. 3



**Description of Fig. 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** - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

**1** - no load

**2** - rated load

## Mounting

Relays **RM699B vertical version (V)** are designed for:

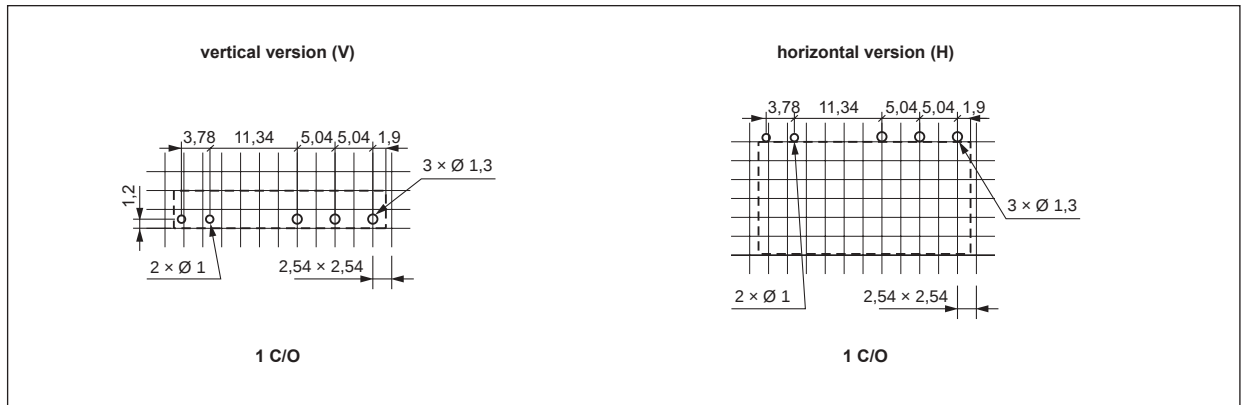
- direct PCB mounting
- sockets **PI6W-1P**, 35 mm rail mount acc. to PN-EN 60715 (see page 201).

Relays **RM699B horizontal version (H)** are designed for direct PCB mounting.

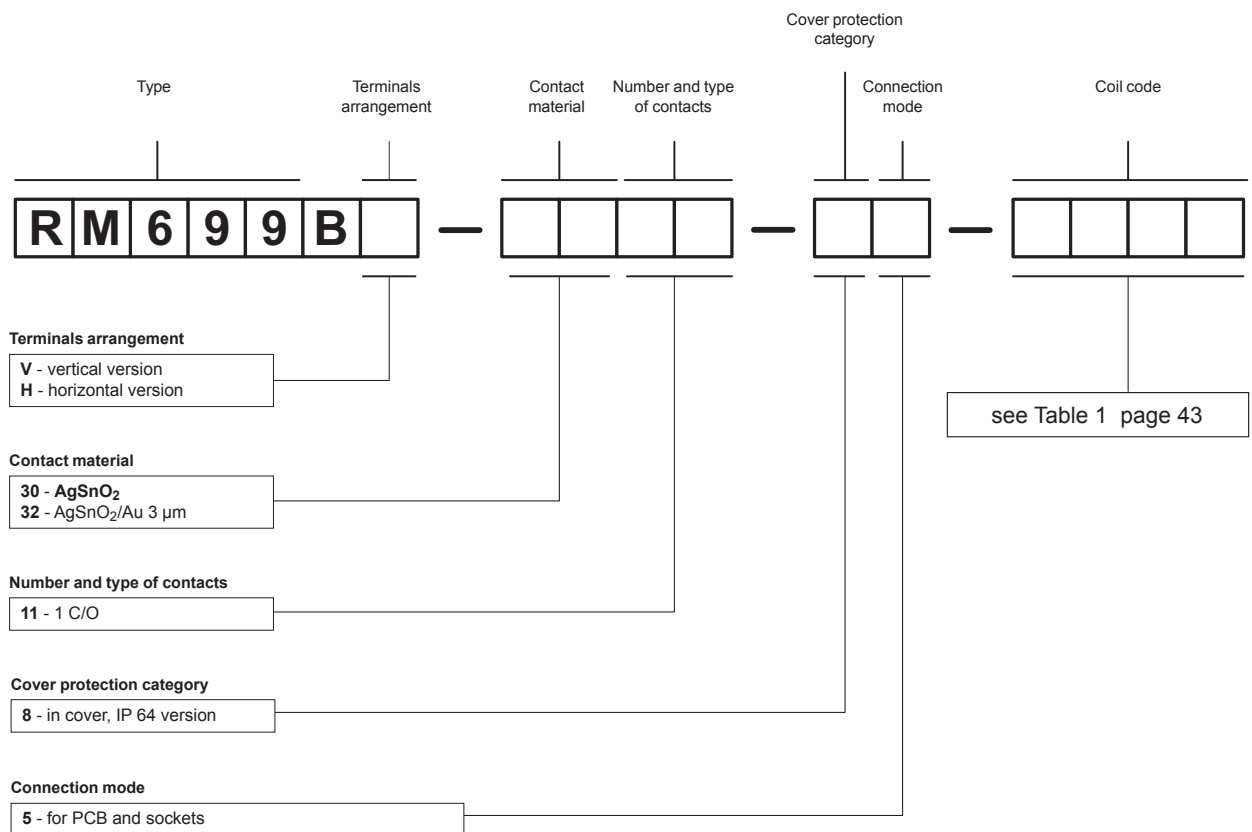


**PI6W-1P**

## Pinout (solder side view)



## Ordering codes



Examples of ordering code:

**RM699BV-3011-85-1012**

relay **RM699B**, vertical version, contact material AgSnO<sub>2</sub>, with one changeover contact, in cover IP 64, for PCB and sockets, voltage version 12 V DC

**RM699BH-3211-85-1005**

relay **RM699B**, horizontal version, contact material AgSnO<sub>2</sub>/Au 3 µm, with one changeover contact, in cover IP 64, for PCB, voltage version 5 V DC

RM84

RM84-...-01 ①



- Cadmium - free contacts • Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- Accessories: sockets and modules • AC and DC coils
- Available special versions: with transparent cover ①;  
with the increased dielectric strength of the contact clearance ②
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

## Contact data

|                                |                                                                                                                                                                                     |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number and type of contacts    | 2 C/O, 2 NO ②                                                                                                                                                                       |
| Contact material               | <b>AgNi</b> , AgNi/Au 5 µm, AgSnO <sub>2</sub>                                                                                                                                      |
| Rated / max. switching voltage | AC 250 V / 440 V                                                                                                                                                                    |
| Min. switching voltage         | 5 V AgNi, 5 V AgNi/Au 5 µm, 10 V AgSnO <sub>2</sub>                                                                                                                                 |
| Rated load (capacity)          | AC1 8 A / 250 V AC<br>AC15 3 A / 120 V      1,5 A / 240 V (B300)<br>AC3 550 W (single-phase motor)<br>DC1 8 A / 24 V DC (see Fig. 3)<br>DC13 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         | 5 mA AgNi, 2 mA AgNi/Au 5 µm, 10 mA AgSnO <sub>2</sub>                                                                                                                              |
| Max. inrush current            | 15 A AgSnO <sub>2</sub>                                                                                                                                                             |
| Rated current                  | 8 A                                                                                                                                                                                 |
| Max. breaking capacity         | AC1 2 000 VA                                                                                                                                                                        |
| Min. breaking capacity         | 0,3 W AgNi, 0,05 W AgNi/Au 5 µm, 1 W AgSnO <sub>2</sub>                                                                                                                             |
| Contact resistance             | ≤ 100 mΩ                                                                                                                                                                            |
| Max. operating frequency       |                                                                                                                                                                                     |
| • at rated load                | AC1 600 cycles/hour                                                                                                                                                                 |
| • no load                      | 72 000 cycles/hour                                                                                                                                                                  |

## Coil data

|                                   |             |                                                    |
|-----------------------------------|-------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 240 V                                       |
|                                   | DC          | 3 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC          | 0,75 VA                                            |
|                                   | DC          | 0,4 ... 0,48 W                                     |

## Insulation according to PN-EN 60664-1

|                             |                             |            |                                                        |
|-----------------------------|-----------------------------|------------|--------------------------------------------------------|
| Insulation rated voltage    |                             | 400 V AC   |                                                        |
| Rated surge voltage         |                             | 4 000 V    | 1,2 / 50 µs                                            |
| Overvoltage category        |                             | III        |                                                        |
| Insulation pollution degree |                             | 3          |                                                        |
| Dielectric strength         | • between coil and contacts | 5 000 V AC | type of insulation: reinforced                         |
|                             | • contact clearance         | 1 000 V AC | type of clearance: micro-disconnection                 |
|                             |                             | 2 000 V AC | contacts 2 NO, type of clearance: full-disconnection ② |
|                             | • pole - pole               | 2 500 V AC | type of insulation: basic                              |
| Contact - coil distance     | • clearance                 | ≥ 10 mm    |                                                        |
|                             | • creepage                  | ≥ 10 mm    |                                                        |

## General data

|                                           |                                                                              |
|-------------------------------------------|------------------------------------------------------------------------------|
| Operating / release time (typical values) | 7 ms / 3 ms                                                                  |
| Electrical life (number of cycles)        |                                                                              |
| • resistive AC1                           | > 10 <sup>5</sup> 8 A, 250 V AC                                              |
| • cos φ                                   | see Fig. 2                                                                   |
| • DC L/R=40 ms                            | > 10 <sup>5</sup> 0,15 A, 220 V DC                                           |
| Mechanical life (cycles)                  | > 3 x 10 <sup>7</sup>                                                        |
| Dimensions (L x W x H)                    | 29 x 12,7 x 15,7 mm                                                          |
| Weight                                    | 14 g                                                                         |
| Ambient temperature                       | • storage -40...+85 °C<br>• operating AC: -40...+70 °C      DC: -40...+85 °C |
| Cover protection category                 | IP 40 or <b>IP 67</b> PN-EN 60529                                            |
| Environmental protection                  | RTII or <b>RTIII</b> PN-EN 116000-3                                          |
| Shock resistance                          | 20 g                                                                         |
| Vibration resistance                      | (NO/NC) 10 g / 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. ① Available special version: relays in transparent cover - see "Ordering codes"

② Available special version with contacts 2 NO: relays with increased contact gap, dielectric strength 2000 V AC - see "Ordering codes"

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 20 °C) |
| 1003        | 3                     | 22                                      | $\pm 10\%$                   | 2,1                          | 7,6             |
| 1005        | 5                     | 60                                      | $\pm 10\%$                   | 3,5                          | 12,7            |
| 1006        | 6                     | 90                                      | $\pm 10\%$                   | 4,2                          | 15,3            |
| 1009        | 9                     | 200                                     | $\pm 10\%$                   | 6,3                          | 22,9            |
| <b>1012</b> | <b>12</b>             | <b>360</b>                              | <b><math>\pm 10\%</math></b> | <b>8,4</b>                   | <b>30,6</b>     |
| 1018        | 18                    | 710                                     | $\pm 10\%$                   | 12,6                         | 45,9            |
| <b>1024</b> | <b>24</b>             | <b>1 440</b>                            | <b><math>\pm 10\%</math></b> | <b>16,8</b>                  | <b>61,2</b>     |
| 1036        | 36                    | 3 140                                   | $\pm 10\%$                   | 25,2                         | 91,8            |
| 1048        | 48                    | 5 700                                   | $\pm 10\%$                   | 33,6                         | 122,4           |
| 1060        | 60                    | 7 500                                   | $\pm 10\%$                   | 42,0                         | 153,0           |
| 1110        | 110                   | 25 200                                  | $\pm 10\%$                   | 77,0                         | 280,0           |

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

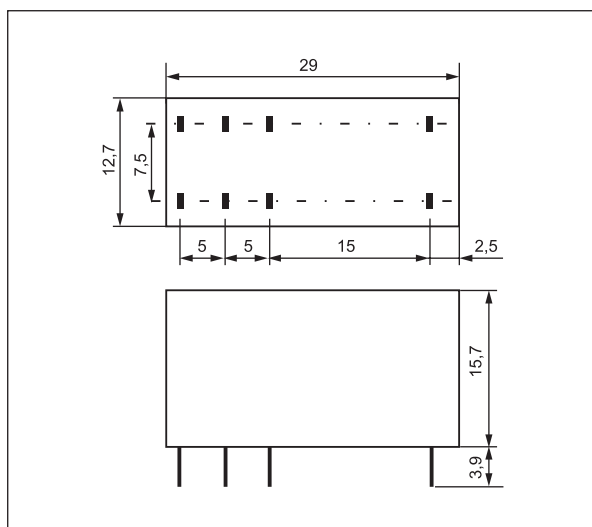
Coil data - AC 50/60 Hz voltage version

Table 2

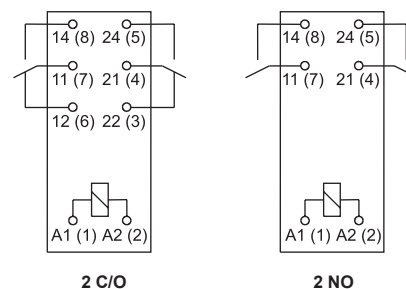
| Coil code   | Rated voltage<br>V AC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V AC 50 Hz |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)                    | max. (at 20 °C) |
| 5012        | 12                    | 100                                     | $\pm 10\%$                   | 9,6                                | 13,2            |
| <b>5024</b> | <b>24</b>             | <b>400</b>                              | <b><math>\pm 10\%</math></b> | <b>19,2</b>                        | <b>28,8</b>     |
| 5048        | 48                    | 1 550                                   | $\pm 10\%$                   | 38,4                               | 57,6            |
| 5060        | 60                    | 2 600                                   | $\pm 10\%$                   | 48,0                               | 72,0            |
| 5110        | 110                   | 8 900                                   | $\pm 10\%$                   | 88,0                               | 132,0           |
| 5115        | 115                   | 9 600                                   | $\pm 10\%$                   | 92,0                               | 138,0           |
| 5120        | 120                   | 10 200                                  | $\pm 10\%$                   | 96,0                               | 144,0           |
| 5220        | 220                   | 35 500                                  | $\pm 10\%$                   | 176,0                              | 264,0           |
| <b>5230</b> | <b>230</b>            | <b>38 500</b>                           | <b><math>\pm 10\%</math></b> | <b>184,0</b>                       | <b>276,0</b>    |
| 5240        | 240                   | 42 500                                  | $\pm 15\%$                   | 192,0                              | 288,0           |

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

## Dimensions



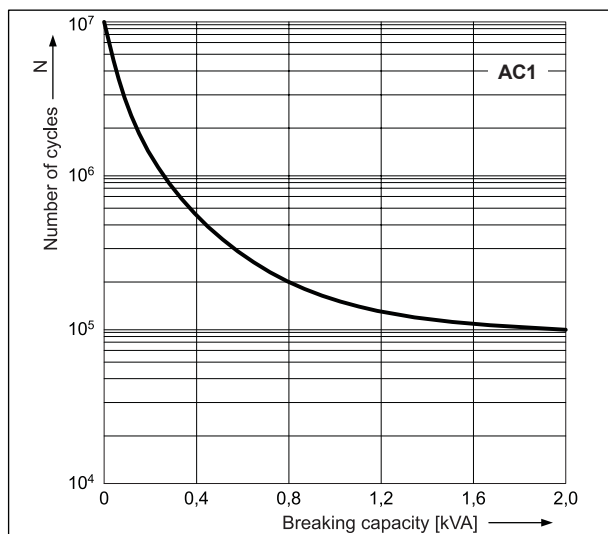
## Connection diagrams (pin side view)



| Terminal (pin)                             | A1(1); A2(2)      | 22(3); 21(4); 24(5); 12(6); 11(7); 14(8) |
|--------------------------------------------|-------------------|------------------------------------------|
| [mm]                                       | $\varnothing 0,6$ | $0,5 \times 0,9$                         |
| Drilling hole:                             |                   |                                          |
| • for relays $\varnothing 1,3 \pm 0,1$ mm  |                   |                                          |
| • for sockets $\varnothing 1,5 \pm 0,1$ mm |                   |                                          |

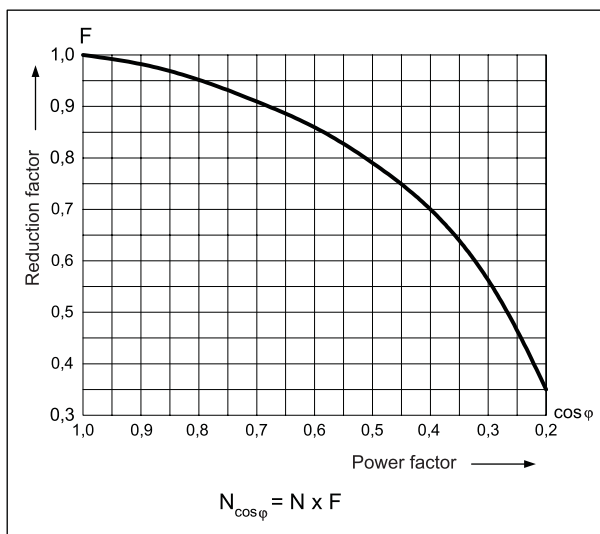
**Electrical life at AC resistive load.**  
Switching frequency: 600 cycles/hour

Fig. 1



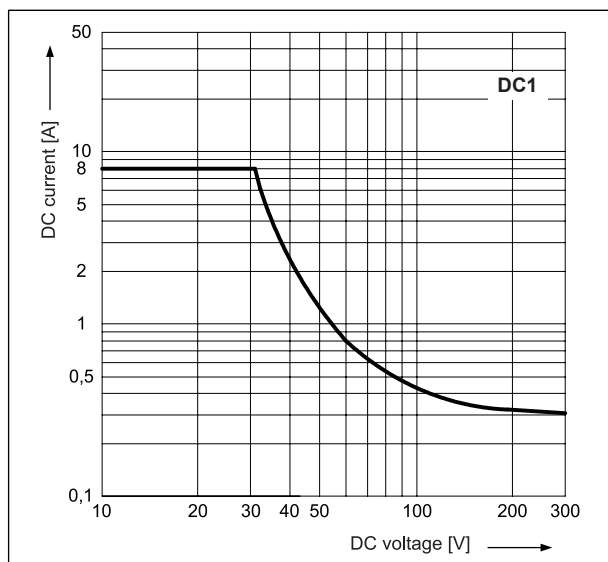
**Electrical life reduction factor at AC inductive load**

Fig. 2



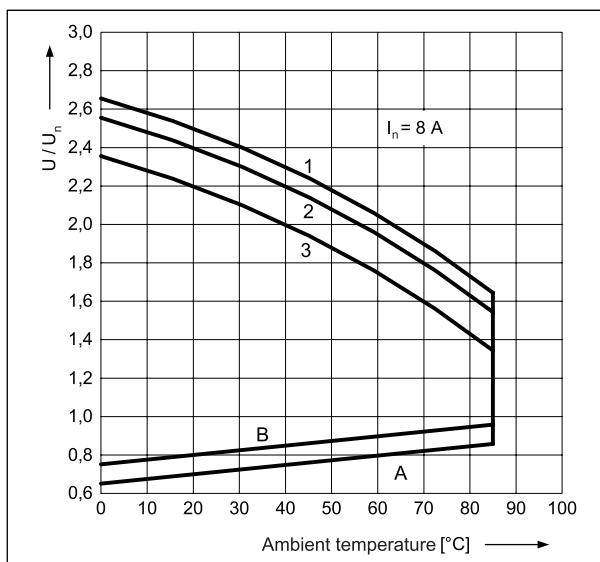
**Max. DC resistive load breaking capacity**

Fig. 3



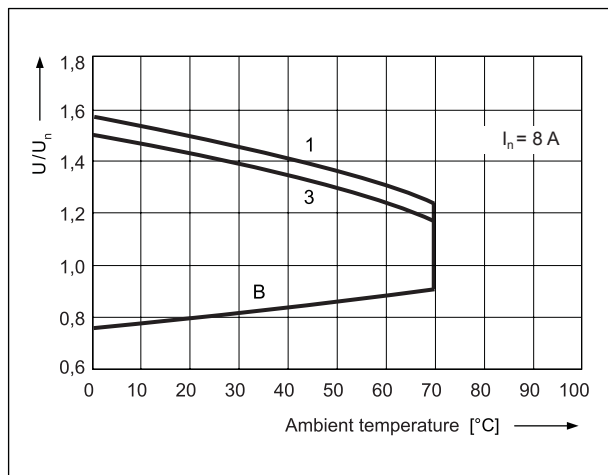
**Coil operating range - DC**

Fig. 4



**Coil operating range - AC 50 Hz**

Fig. 5



**Description of Fig. 4 and 5**

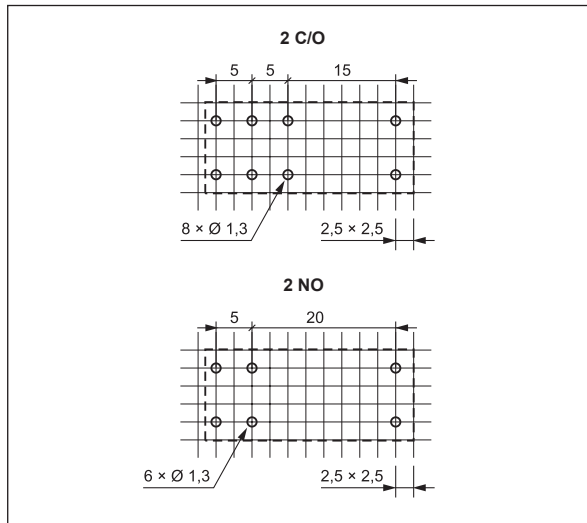
**A** - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

**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

## Pinout (solder side view)



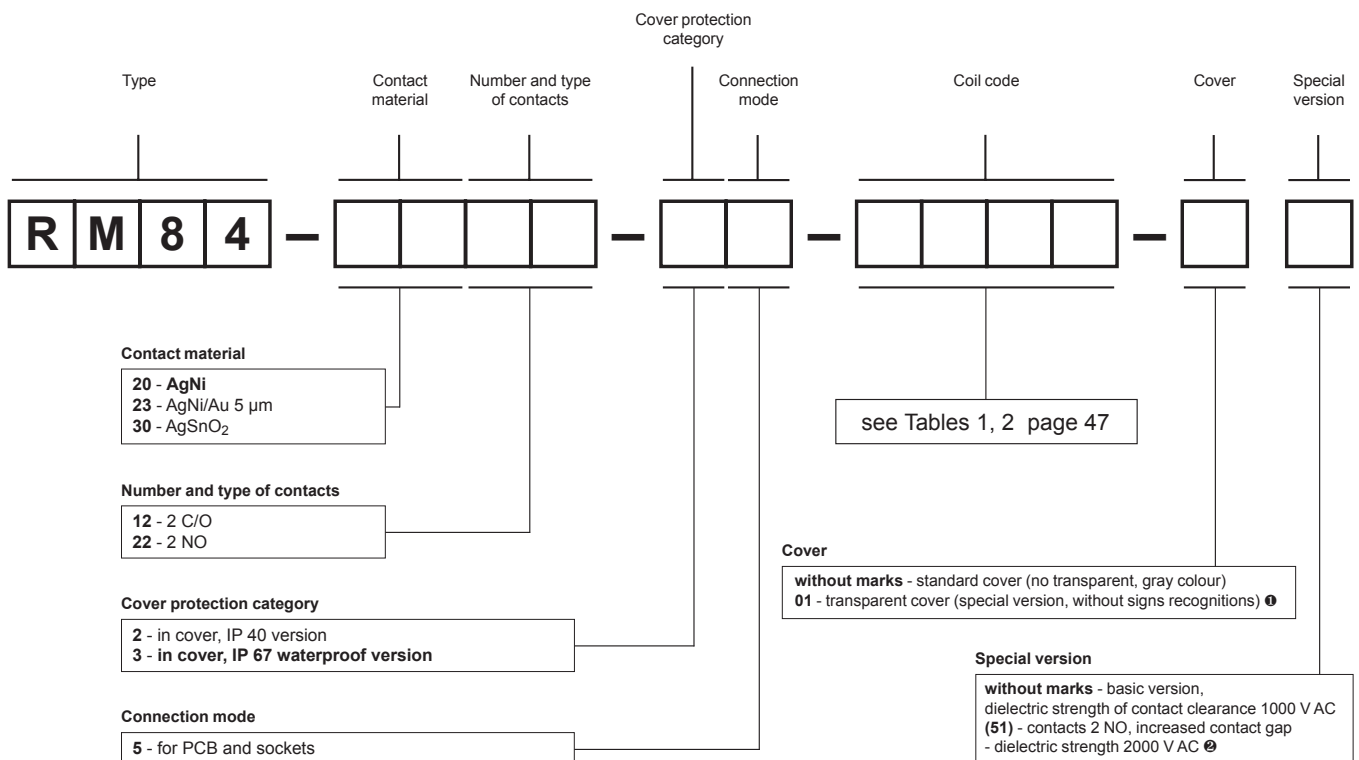
## Mounting

Relays **RM84** are designed for:

- direct PCB mounting
- screw terminals plug-in sockets **GZT80** ③ and **GZM80** ③ with clip **GZT80-0040** or **GZM80-0041**; plug-in sockets **GZS80** ③ with clip **GZS-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 250)
- plug-in sockets for PCB mounting **EC50** with clip **MP16-2**, **MH16-2**; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, **GD-0016**, **MH16-2**.

③ Plug-in sockets **GZT80**, **GZM80** and **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 261).

## Ordering codes



Examples of ordering code:

**RM84-3012-25-5024**

relay **RM84**, contact material AgSnO<sub>2</sub>, with two changeover contacts, in standard cover (no transparent, gray colour) IP 40, for PCB and sockets, voltage version 24 V AC 50/60 Hz

**RM84-2012-25-1012-01**

relay **RM84**, contact material AgNi, with two changeover contacts, in transparent cover (special version, without signs recognitions) ① IP 40, for PCB and sockets, voltage version 12 V DC

**RM84-2322-35-1024 (51)**

relay **RM84**, contact material AgNi/Au 5 µm, with two normally open contacts, special version ② with increased contact gap, in standard cover (no transparent, gray colour) IP 67, for PCB and sockets, voltage version 24 V DC



- Cadmium - free contacts
- Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- **For surface mounting SMT**
- AC and DC coils
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,     

## Contact data

|                                |      |                                                         |
|--------------------------------|------|---------------------------------------------------------|
| Number and type of contacts    |      | 2 C/O                                                   |
| Contact material               |      | <b>AgNi</b> , AgNi/Au 5 µm, AgSnO <sub>2</sub>          |
| Rated / max. switching voltage | AC   | 250 V / 440 V                                           |
| Min. switching voltage         |      | 5 V AgNi, 5 V AgNi/Au 5 µm, 10 V AgSnO <sub>2</sub>     |
| Rated load (capacity)          | AC1  | 8 A / 250 V AC                                          |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)                   |
|                                | AC3  | 550 W (single-phase motor)                              |
|                                | DC1  | 8 A / 24 V DC (see Fig. 3)                              |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300)                  |
| Min. switching current         |      | 5 mA AgNi, 2 mA AgNi/Au 5 µm, 10 mA AgSnO <sub>2</sub>  |
| Max. inrush current            |      | 15 A AgSnO <sub>2</sub>                                 |
| Rated current                  |      | 8 A                                                     |
| Max. breaking capacity         | AC1  | 2 000 VA                                                |
| Min. breaking capacity         |      | 0,3 W AgNi, 0,05 W AgNi/Au 5 µm, 1 W AgSnO <sub>2</sub> |
| Contact resistance             |      | ≤ 100 mΩ                                                |
| Max. operating frequency       |      |                                                         |
| • at rated load                | AC1  | 600 cycles/hour                                         |
| • no load                      |      | 72 000 cycles/hour                                      |

## Coil data

|                                   |             |                                                    |
|-----------------------------------|-------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 240 V                                       |
|                                   | DC          | 3 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC          | 0,75 VA                                            |
|                                   | DC          | 0,4 ... 0,48 W                                     |

## Insulation according to PN-EN 60664-1

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 µs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| • pole - pole               |  | 2 500 V AC    type of insulation: basic              |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

## General data

|                                           |             |                                      |
|-------------------------------------------|-------------|--------------------------------------|
| Operating / release time (typical values) |             | 7 ms / 3 ms                          |
| Electrical life (number of cycles)        |             |                                      |
| • resistive AC1                           |             | > 10 <sup>5</sup> 8 A, 250 V AC      |
| • cos φ                                   |             | see Fig. 2                           |
| • DC L/R=40 ms                            |             | > 10 <sup>5</sup> 0,15 A, 220 V DC   |
| Mechanical life (cycles)                  |             | > 3 x 10 <sup>7</sup>                |
| Dimensions (L x W x H)                    |             | 29 x 12,7 x 15,7 (17,7) mm           |
| Weight                                    |             | 14 g                                 |
| Ambient temperature                       | • storage   | -40...+85 °C                         |
|                                           | • operating | AC: -40...+70 °C    DC: -40...+85 °C |
| Cover protection category                 |             | IP 40    PN-EN 60529                 |
| Environmental protection                  |             | RTII    PN-EN 116000-3               |
| Shock resistance                          |             | 20 g                                 |
| Vibration resistance                      | (NO/NC)     | 10 g / 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.

**Coil data - DC voltage version**

**Table 1**

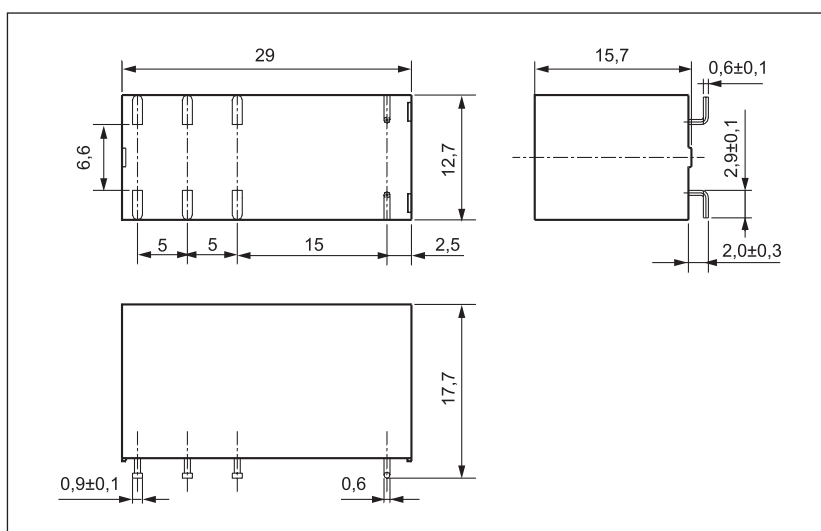
| Coil code | Rated voltage<br>V DC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance | Coil operating range<br>V DC |                 |
|-----------|-----------------------|-----------------------------------------|--------------------------|------------------------------|-----------------|
|           |                       |                                         |                          | min. (at 20 °C)              | max. (at 20 °C) |
| 1003      | 3                     | 22                                      | $\pm 10\%$               | 2,1                          | 7,6             |
| 1005      | 5                     | 60                                      | $\pm 10\%$               | 3,5                          | 12,7            |
| 1006      | 6                     | 90                                      | $\pm 10\%$               | 4,2                          | 15,3            |
| 1009      | 9                     | 200                                     | $\pm 10\%$               | 6,3                          | 22,9            |
| 1012      | 12                    | 360                                     | $\pm 10\%$               | 8,4                          | 30,6            |
| 1018      | 18                    | 710                                     | $\pm 10\%$               | 12,6                         | 45,9            |
| 1024      | 24                    | 1 440                                   | $\pm 10\%$               | 16,8                         | 61,2            |
| 1036      | 36                    | 3 140                                   | $\pm 10\%$               | 25,2                         | 91,8            |
| 1048      | 48                    | 5 700                                   | $\pm 10\%$               | 33,6                         | 122,4           |
| 1060      | 60                    | 7 500                                   | $\pm 10\%$               | 42,0                         | 153,0           |
| 1110      | 110                   | 25 200                                  | $\pm 10\%$               | 77,0                         | 280,0           |

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

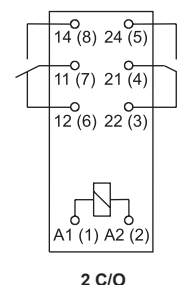
**Table 2**

| Coil code | Rated voltage<br>V AC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance | Coil operating range<br>V AC 50 Hz |                 |
|-----------|-----------------------|-----------------------------------------|--------------------------|------------------------------------|-----------------|
|           |                       |                                         |                          | min. (at 20 °C)                    | max. (at 20 °C) |
| 5012      | 12                    | 100                                     | $\pm 10\%$               | 9,6                                | 13,2            |
| 5024      | 24                    | 400                                     | $\pm 10\%$               | 19,2                               | 28,8            |
| 5048      | 48                    | 1 550                                   | $\pm 10\%$               | 38,4                               | 57,6            |
| 5060      | 60                    | 2 600                                   | $\pm 10\%$               | 48,0                               | 72,0            |
| 5110      | 110                   | 8 900                                   | $\pm 10\%$               | 88,0                               | 132,0           |
| 5115      | 115                   | 9 600                                   | $\pm 10\%$               | 92,0                               | 138,0           |
| 5120      | 120                   | 10 200                                  | $\pm 10\%$               | 96,0                               | 144,0           |
| 5220      | 220                   | 35 500                                  | $\pm 10\%$               | 176,0                              | 264,0           |
| 5230      | 230                   | 38 500                                  | $\pm 10\%$               | 184,0                              | 276,0           |
| 5240      | 240                   | 42 500                                  | $\pm 15\%$               | 192,0                              | 288,0           |

## Dimensions



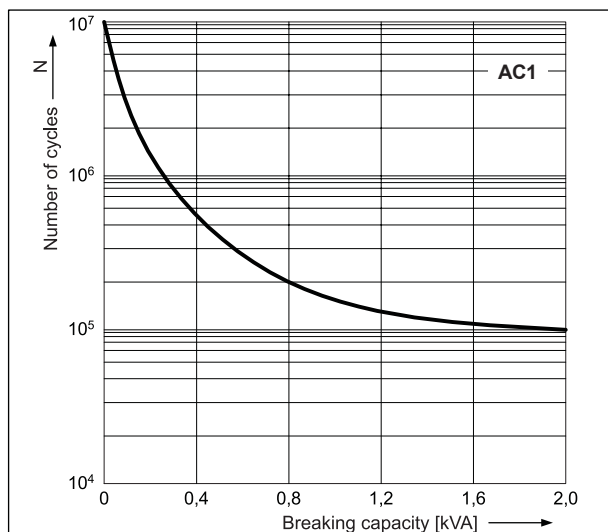
## Connection diagram (pin side view)



| Terminal (pin) | A1(1);<br>A2(2)   | 22(3); 21(4);<br>24(5); 12(6);<br>11(7); 14(8) |
|----------------|-------------------|------------------------------------------------|
| [mm]           | $\varnothing 0,6$ | 0,5 x 0,9                                      |

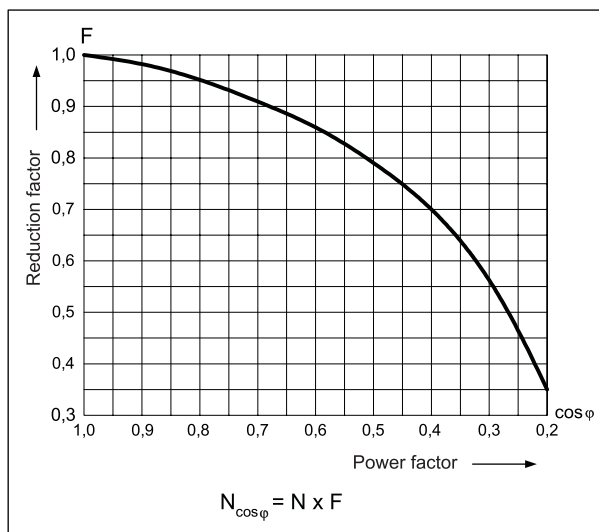
**Electrical life at AC resistive load.**  
Switching frequency: 600 cycles/hour

Fig. 1



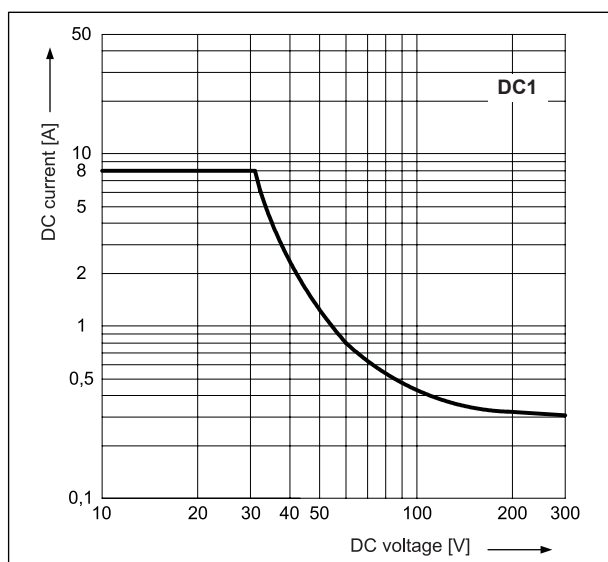
**Electrical life reduction factor at AC inductive load**

Fig. 2



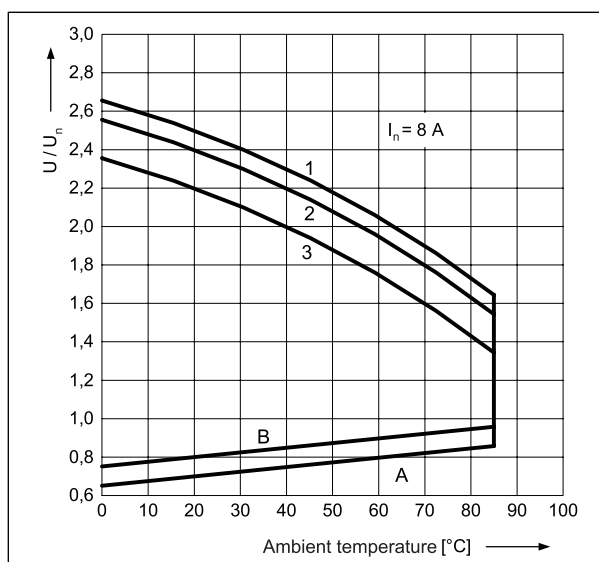
**Max. DC resistive load breaking capacity**

Fig. 3



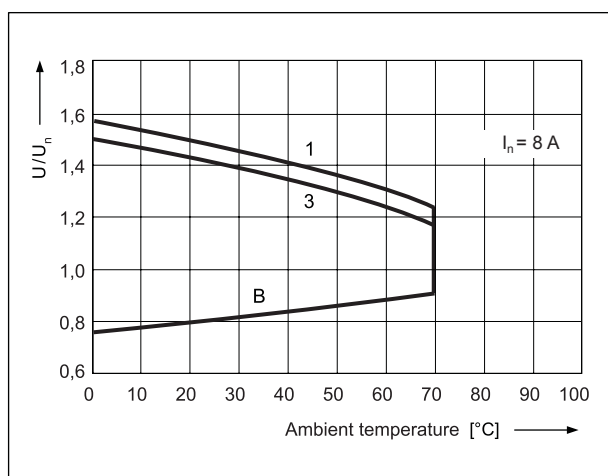
**Coil operating range - DC**

Fig. 4



**Coil operating range - AC 50 Hz**

Fig. 5



**Description of Fig. 4 and 5**

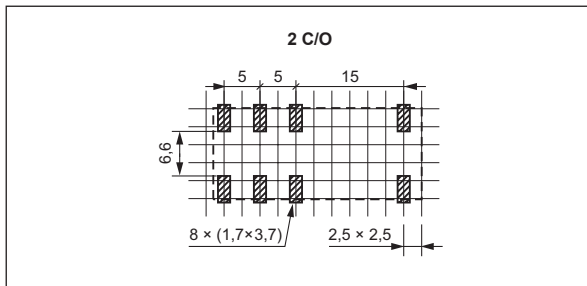
**A** - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

**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

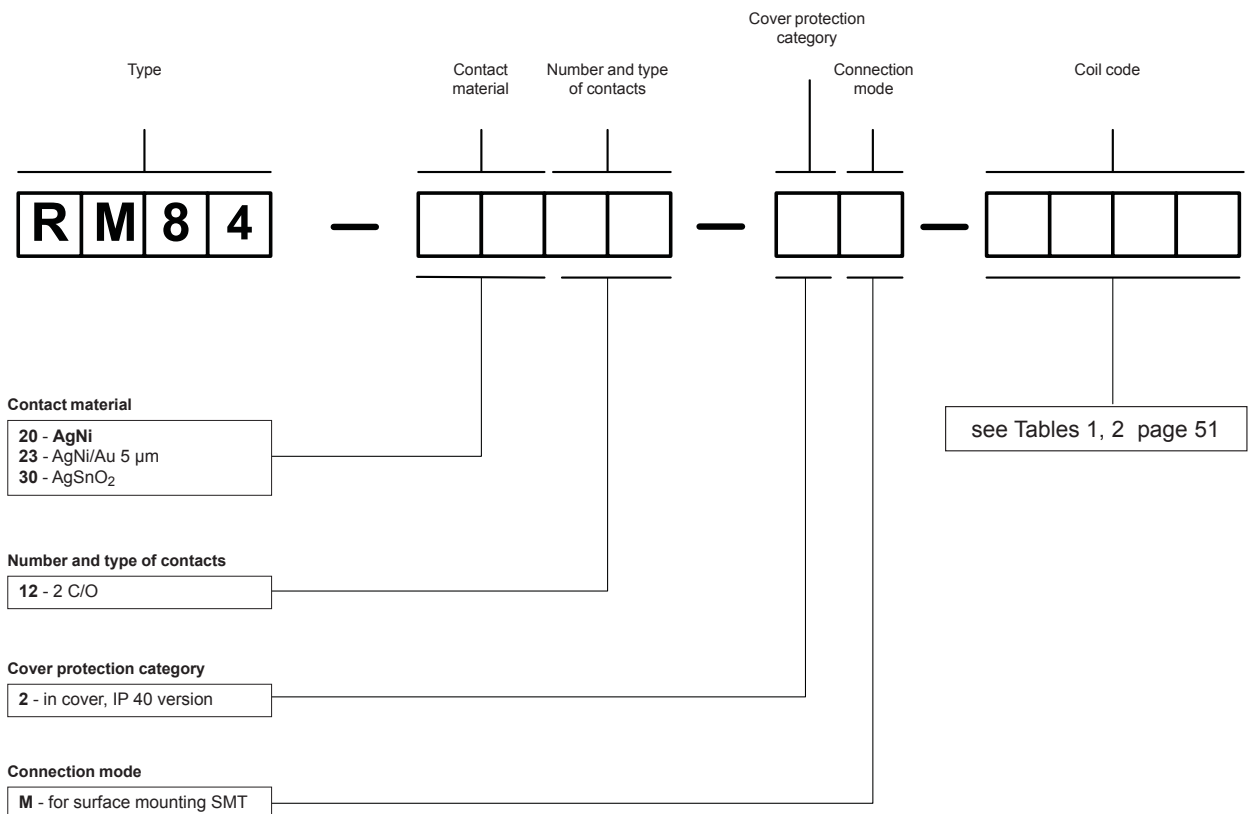
## Soldering areas (solder side view)



## Mounting

Relays **RM84 SMT** are designed for surface mounting SMT.

## Ordering codes



Example of ordering code:

**RM84-2012-2M-1024**

relay **RM84 SMT**, contact material AgNi, with two changeover contacts, in cover IP 40, for surface mounting SMT, voltage version 24 V DC

RM85

RM85-...-01 ①



- Cadmium - free contacts • Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- Accessories: sockets and modules • AC and DC coils
- Available special versions: with transparent cover ①;  
with the increased dielectric strength of the contact clearance ②
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

## Contact data

|                                |                                                                                                                                                                                       |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number and type of contacts    | 1 C/O, 1 NO ②                                                                                                                                                                         |
| Contact material               | <b>AgNi</b> , AgNi/Au 5 µm, AgSnO <sub>2</sub>                                                                                                                                        |
| Rated / max. switching voltage | AC 250 V / 440 V                                                                                                                                                                      |
| Min. switching voltage         | 5 V AgNi, 5 V AgNi/Au 5 µm, 10 V AgSnO <sub>2</sub>                                                                                                                                   |
| Rated load (capacity)          | AC1 16 A / 250 V AC<br>AC15 3 A / 120 V      1,5 A / 240 V (B300)<br>AC3 750 W (single-phase motor)<br>DC1 16 A / 24 V DC (see Fig. 3)<br>DC13 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         | 5 mA AgNi, 2 mA AgNi/Au 5 µm, 10 mA AgSnO <sub>2</sub>                                                                                                                                |
| Max. inrush current            | 30 A AgSnO <sub>2</sub>                                                                                                                                                               |
| Rated current                  | 16 A                                                                                                                                                                                  |
| Max. breaking capacity         | AC1 4 000 VA                                                                                                                                                                          |
| Min. breaking capacity         | 0,3 W AgNi, 0,05 W AgNi/Au 5 µm, 1 W AgSnO <sub>2</sub>                                                                                                                               |
| Contact resistance             | ≤ 100 mΩ                                                                                                                                                                              |
| Max. operating frequency       |                                                                                                                                                                                       |
| • at rated load                | AC1 600 cycles/hour                                                                                                                                                                   |
| • no load                      | 72 000 cycles/hour                                                                                                                                                                    |

## Coil data

|                                   |             |                                                    |
|-----------------------------------|-------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 240 V                                       |
|                                   | DC          | 3 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC          | 0,75 VA                                            |
|                                   | DC          | 0,4 ... 0,48 W                                     |

## Insulation according to PN-EN 60664-1

|                             |                                                                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation rated voltage    | 400 V AC                                                                                                                                                                                                                    |
| Rated surge voltage         | 4 000 V    1,2 / 50 µs                                                                                                                                                                                                      |
| Overvoltage category        | III                                                                                                                                                                                                                         |
| Insulation pollution degree | 3                                                                                                                                                                                                                           |
| Dielectric strength         | • between coil and contacts 5 000 V AC    type of insulation: reinforced<br>• contact clearance 1 000 V AC    type of clearance: micro-disconnection<br>2 000 V AC    contact 1 NO, type of clearance: full-disconnection ② |
| Contact - coil distance     | • clearance ≥ 10 mm                                                                                                                                                                                                         |
|                             | • creepage ≥ 10 mm                                                                                                                                                                                                          |

## General data

|                                           |                                                                                                       |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Operating / release time (typical values) | 7 ms / 3 ms                                                                                           |
| Electrical life (number of cycles)        |                                                                                                       |
| • resistive AC1                           | > 0,7 x 10 <sup>5</sup> 16 A, 250 V AC<br>> 10 <sup>4</sup> 20 A, 250 V AC, 85 °C (RM85-3021-25-1...) |
| • cos φ                                   | see Fig. 2                                                                                            |
| • DC L/R=40 ms                            | > 10 <sup>5</sup> 0,15 A, 220 V DC                                                                    |
| Mechanical life (cycles)                  | > 3 x 10 <sup>7</sup>                                                                                 |
| Dimensions (L x W x H)                    | 29 x 12,7 x 15,7 mm                                                                                   |
| Weight                                    | 14 g                                                                                                  |
| Ambient temperature                       | • storage -40...+85 °C<br>• operating AC: -40...+70 °C    DC: -40...+85 °C                            |
| Cover protection category                 | IP 40 or <b>IP 67</b> PN-EN 60529                                                                     |
| Environmental protection                  | RTII or <b>RTIII</b> PN-EN 116000-3                                                                   |
| Shock resistance                          | 30 g                                                                                                  |
| Vibration resistance                      | 10 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. ① Available special version: relays in transparent cover - see "Ordering codes"

② Available special version with contact 1 NO: relays with increased contact gap, dielectric strength 2000 V AC - see "Ordering codes"

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 20 °C) |
| 1003        | 3                     | 22                                      | $\pm 10\%$                   | 2,1                          | 7,6             |
| 1005        | 5                     | 60                                      | $\pm 10\%$                   | 3,5                          | 12,7            |
| 1006        | 6                     | 90                                      | $\pm 10\%$                   | 4,2                          | 15,3            |
| 1009        | 9                     | 200                                     | $\pm 10\%$                   | 6,3                          | 22,9            |
| <b>1012</b> | <b>12</b>             | <b>360</b>                              | <b><math>\pm 10\%</math></b> | <b>8,4</b>                   | <b>30,6</b>     |
| 1018        | 18                    | 710                                     | $\pm 10\%$                   | 12,6                         | 45,9            |
| <b>1024</b> | <b>24</b>             | <b>1 440</b>                            | <b><math>\pm 10\%</math></b> | <b>16,8</b>                  | <b>61,2</b>     |
| 1036        | 36                    | 3 140                                   | $\pm 10\%$                   | 25,2                         | 91,8            |
| 1048        | 48                    | 5 700                                   | $\pm 10\%$                   | 33,6                         | 122,4           |
| 1060        | 60                    | 7 500                                   | $\pm 10\%$                   | 42,0                         | 153,0           |
| 1110        | 110                   | 25 200                                  | $\pm 10\%$                   | 77,0                         | 280,0           |

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

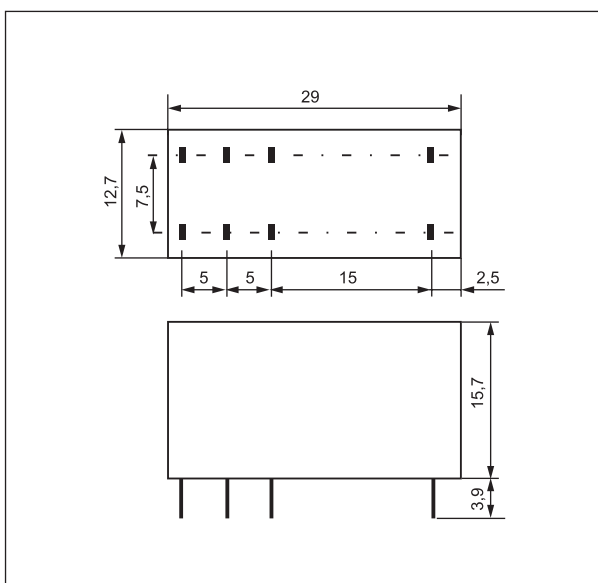
Coil data - AC 50/60 Hz voltage version

Table 2

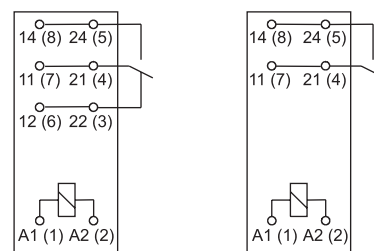
| Coil code   | Rated voltage<br>V AC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V AC 50 Hz |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)                    | max. (at 20 °C) |
| 5012        | 12                    | 100                                     | $\pm 10\%$                   | 9,6                                | 13,2            |
| <b>5024</b> | <b>24</b>             | <b>400</b>                              | <b><math>\pm 10\%</math></b> | <b>19,2</b>                        | <b>28,8</b>     |
| 5048        | 48                    | 1 550                                   | $\pm 10\%$                   | 38,4                               | 57,6            |
| 5060        | 60                    | 2 600                                   | $\pm 10\%$                   | 48,0                               | 72,0            |
| 5110        | 110                   | 8 900                                   | $\pm 10\%$                   | 88,0                               | 132,0           |
| 5115        | 115                   | 9 600                                   | $\pm 10\%$                   | 92,0                               | 138,0           |
| 5120        | 120                   | 10 200                                  | $\pm 10\%$                   | 96,0                               | 144,0           |
| 5220        | 220                   | 35 500                                  | $\pm 10\%$                   | 176,0                              | 264,0           |
| <b>5230</b> | <b>230</b>            | <b>38 500</b>                           | <b><math>\pm 10\%</math></b> | <b>184,0</b>                       | <b>276,0</b>    |
| 5240        | 240                   | 42 500                                  | $\pm 15\%$                   | 192,0                              | 288,0           |

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

## Dimensions



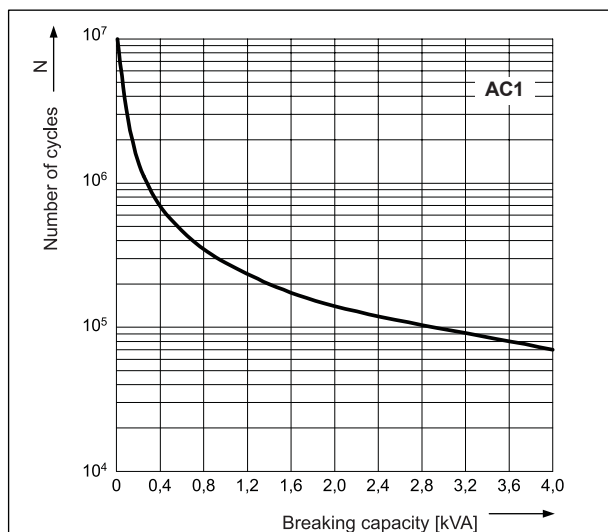
## Connection diagrams (pin side view)



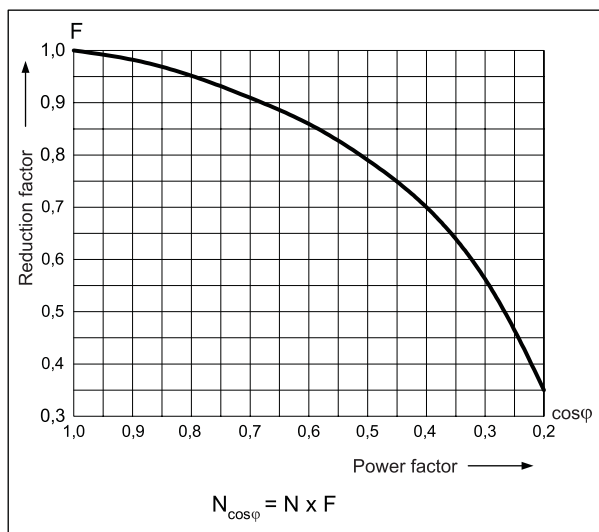
| Terminal (pin)                             | A1(1); A2(2)      | 22(3); 21(4); 24(5);<br>12(6); 11(7); 14(8) |
|--------------------------------------------|-------------------|---------------------------------------------|
| [mm]                                       | $\varnothing 0,6$ | $0,5 \times 0,9$                            |
| Drilling hole:                             |                   |                                             |
| • for relays $\varnothing 1,3 \pm 0,1$ mm  |                   |                                             |
| • for sockets $\varnothing 1,5 \pm 0,1$ mm |                   |                                             |

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

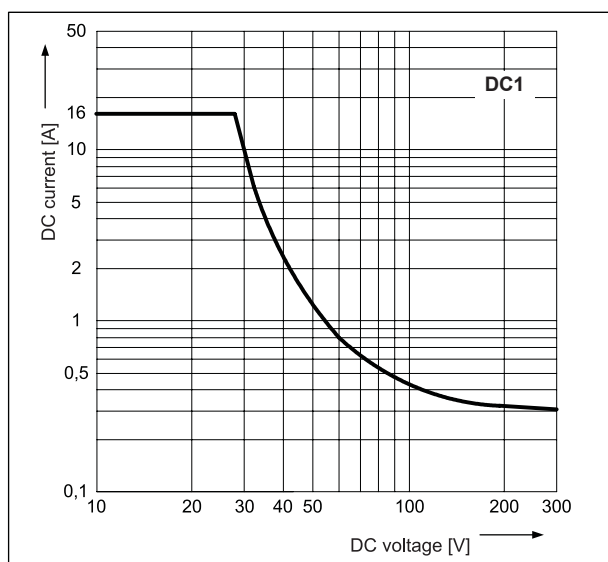
**Electrical life at AC resistive load.**  
**Switching frequency: 600 cycles/hour**



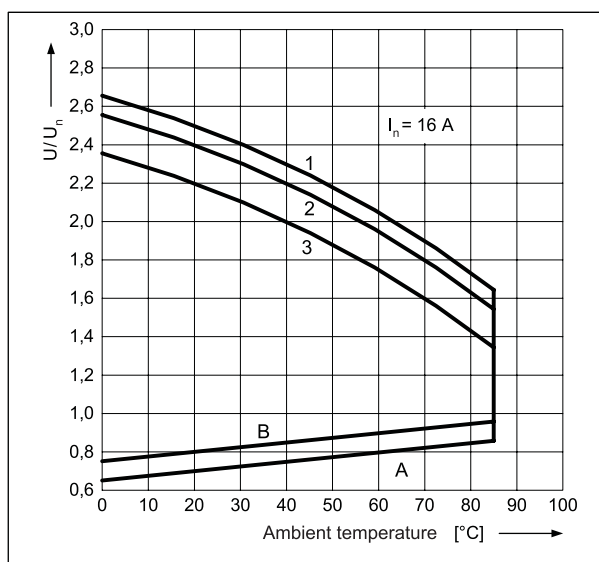
### Electrical life reduction factor at AC inductive load



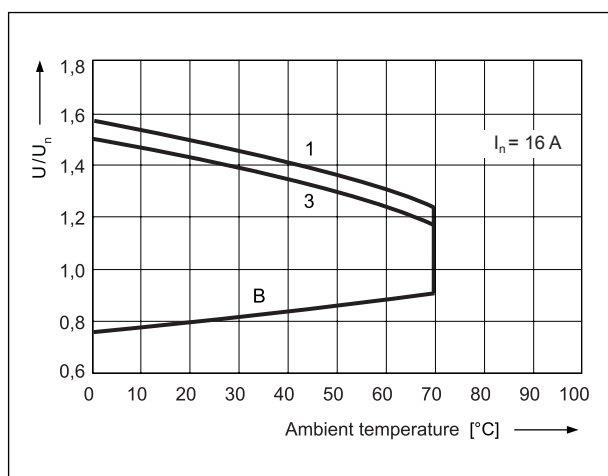
**Max. DC resistive load breaking capacity** Fig. 3



### Coil operating range - DC



**Coil operating range - AC 50 Hz**



### Description of Fig. 4 and 5

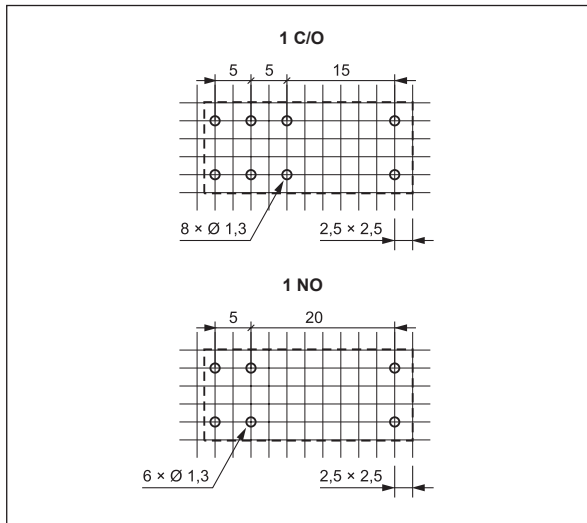
**A** - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

**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

## Pinout (solder side view)



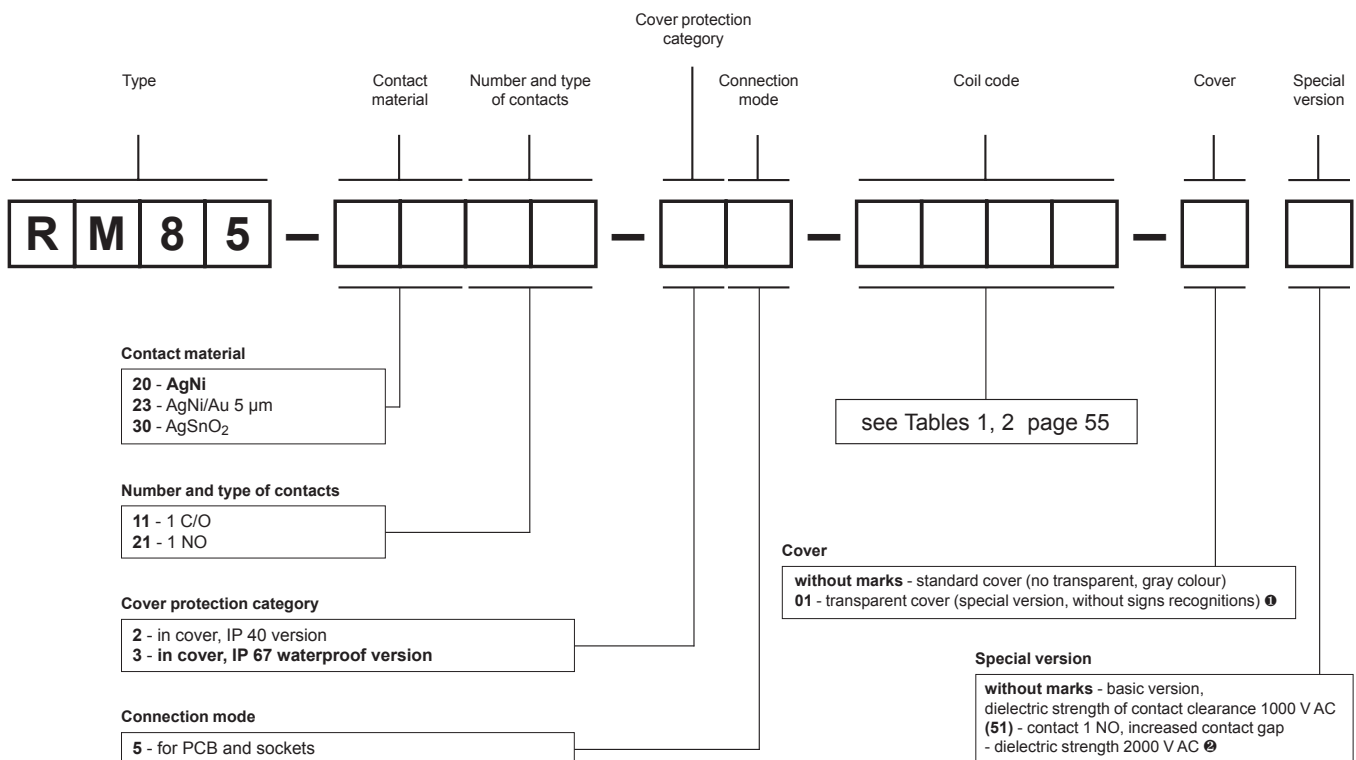
## Mounting

Relays **RM85** are designed for:

- direct PCB mounting
- screw terminals plug-in sockets **GZT80** ③ and **GZM80** ③ with clip **GZT80-0040** or **GZM80-0041**; plug-in sockets **GZS80** ③ with clip **GZS-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 250)
- plug-in sockets for PCB mounting **EC50** with clip **MP16-2**, **MH16-2**; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, **GD-0016**, **MH16-2**.

③ Plug-in sockets **GZT80**, **GZM80** and **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 261).

## Ordering codes



Examples of ordering code:

**RM85-3011-25-5024**

relay **RM85**, contact material AgSnO<sub>2</sub>, with one changeover contact, in standard cover (no transparent, gray colour) IP 40, for PCB and sockets, voltage version 24 V AC 50/60 Hz

**RM85-2011-25-1012-01**

relay **RM85**, contact material AgNi, with one changeover contact, in transparent cover (special version, without signs recognitions) ① IP 40, for PCB and sockets, voltage version 12 V DC

**RM85-2321-35-1024 (51)**

relay **RM85**, contact material AgNi/Au 5 µm, with one normally open contact, special version ② with increased contact gap, in standard cover (no transparent, gray colour) IP 67, for PCB and sockets, voltage version 24 V DC



- for high voltage switching
- Cadmium - free contacts
- Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- For PCB
- DC coils
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,



### Contact data

|                                |      |                                        |
|--------------------------------|------|----------------------------------------|
| Number and type of contacts    |      | 1 NO                                   |
| Contact material               |      | <b>AgSnO<sub>2</sub></b>               |
| Rated / max. switching voltage | AC   | 250 V / 480 V                          |
| Min. switching voltage         |      | 10 V                                   |
| Rated load (capacity)          | AC1  | 5 A / 480 V AC                         |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)  |
|                                | AC3  | 750 W (single-phase motor)             |
|                                | DC1  | 16 A / 24 V DC                         |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |      | 10 mA                                  |
| Max. inrush current            |      | 30 A                                   |
| Rated current                  |      | 16 A / 250 V AC                        |
| Max. breaking capacity         | AC1  | 2 400 VA                               |
| Min. breaking capacity         |      | 1 W                                    |
| Contact resistance             |      | ≤ 100 mΩ    100 mA, 24 V               |
| Max. operating frequency       |      |                                        |
| • at rated load                | AC1  | 360 cycles/hour                        |
| • no load                      |      | 3 600 cycles/hour                      |

### Coil data

|                                   |     |                      |
|-----------------------------------|-----|----------------------|
| Rated voltage                     | D C | 3 ... 110 V          |
| Must release voltage              |     | ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage |     | see Table 1          |
| Rated power consumption           | D C | 0,4 ... 0,48 W       |

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

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 480 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 μs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 2                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 500 V AC    type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

### General data

|                                           |                   |                                                    |
|-------------------------------------------|-------------------|----------------------------------------------------|
| Operating / release time (typical values) |                   | 7 ms / 3 ms                                        |
| Electrical life (number of cycles)        |                   |                                                    |
| • at resistive load                       | AC1               | > 4 x 10 <sup>4</sup> 5 A, 480 V AC                |
| Mechanical life                           | 3 600 cycles/hour | > 3 x 10 <sup>7</sup>                              |
| Load according to UL 508                  |                   | Heavy Pilot Duty 480 V AC, 15 A make / 1,5 A break |
| Dimensions (L x W x H)                    |                   | 29 x 12,7 x 15,7 mm                                |
| Weight                                    |                   | 14 g                                               |
| Ambient temperature                       | • storage         | -40...+85 °C                                       |
|                                           | • operating       | -40...+85 °C                                       |
| Cover protection category                 |                   | IP 40 or <b>IP 67</b> PN-EN 60529                  |
| Environmental protection                  |                   | RTII    PN-EN 116000-3                             |
| Shock resistance                          |                   | 30 g                                               |
| Vibration resistance                      |                   | 10 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.

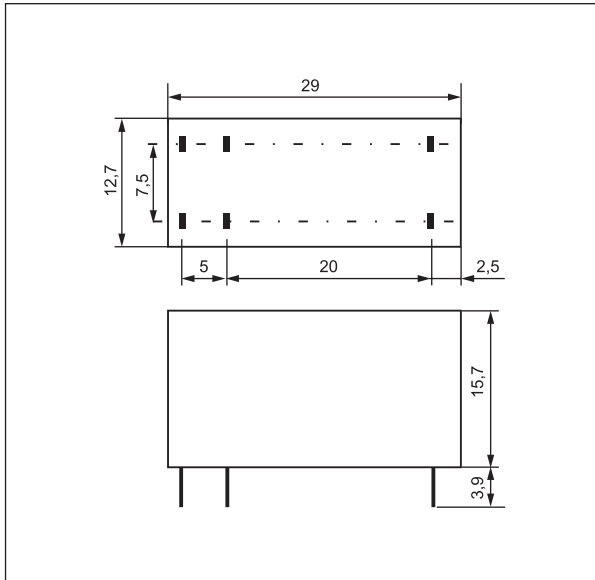
Coil data - DC voltage version

Table 1

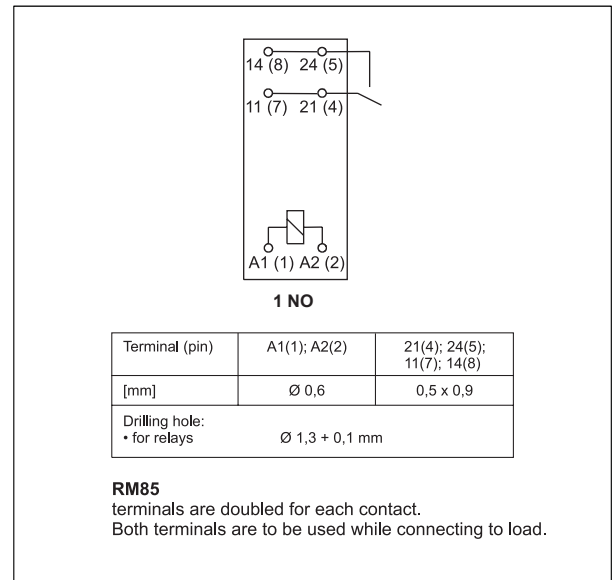
| Coil code   | Rated voltage<br>V DC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V DC |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)              | max. (at 20 °C) |
| 1003        | 3                     | 22                                      | $\pm 10\%$                   | 2,1                          | 7,6             |
| 1005        | 5                     | 60                                      | $\pm 10\%$                   | 3,5                          | 12,7            |
| 1006        | 6                     | 90                                      | $\pm 10\%$                   | 4,2                          | 15,3            |
| 1009        | 9                     | 200                                     | $\pm 10\%$                   | 6,3                          | 22,9            |
| <b>1012</b> | <b>12</b>             | <b>360</b>                              | <b><math>\pm 10\%</math></b> | <b>8,4</b>                   | <b>30,6</b>     |
| 1018        | 18                    | 710                                     | $\pm 10\%$                   | 12,6                         | 45,9            |
| <b>1024</b> | <b>24</b>             | <b>1 440</b>                            | <b><math>\pm 10\%</math></b> | <b>16,8</b>                  | <b>61,2</b>     |
| 1036        | 36                    | 3 140                                   | $\pm 10\%$                   | 25,2                         | 91,8            |
| 1048        | 48                    | 5 700                                   | $\pm 10\%$                   | 33,6                         | 122,4           |
| 1060        | 60                    | 7 500                                   | $\pm 10\%$                   | 42,0                         | 153,0           |
| 1110        | 110                   | 25 200                                  | $\pm 10\%$                   | 77,0                         | 280,0           |

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

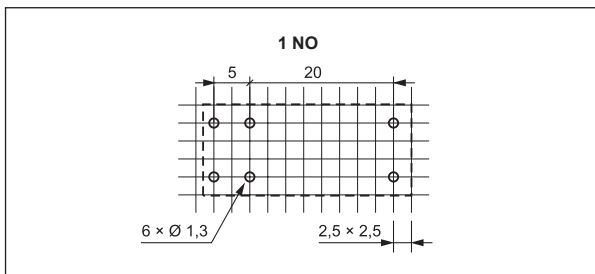
### Dimensions



### Connection diagram (pin side view)



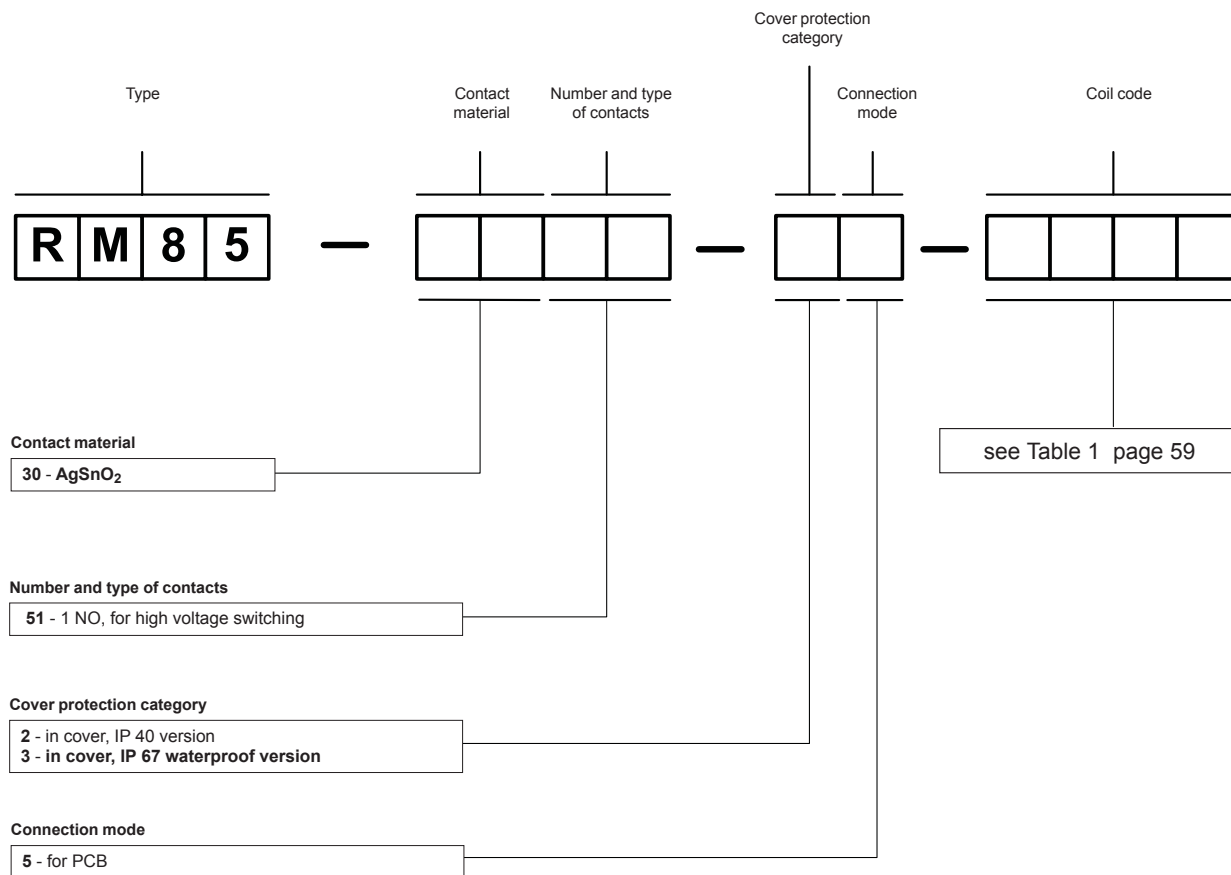
### Pinout (solder side view)



### Mounting

Relays **RM85** for high voltage switching for direct PCB mounting. for high voltage switching

### Ordering codes



Example of ordering code:

**RM85-3051-35-1012**

relay **RM85**, contact material AgSnO<sub>2</sub>, with one normally open contact, for high voltage switching, in cover IP 67, for PCB, voltage version 12 V DC



- Cadmium - free contacts • Height 15,7 mm • **Resistance to inrush current 80 A (20 ms)** • 5000 V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- Accessories: sockets and modules • DC coils
- Applications: for motor operation control, lighting, electromagnetic valves, and many other applications
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,    

### Contact data

|                                |      |                                        |
|--------------------------------|------|----------------------------------------|
| Number and type of contacts    |      | 1 NO                                   |
| Contact material               |      | <b>AgSnO<sub>2</sub></b>               |
| Rated / max. switching voltage | AC   | 250 V / 440 V                          |
| Min. switching voltage         |      | 10 V                                   |
| Rated load (capacity)          | AC1  | 16 A / 250 V AC                        |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)  |
|                                | AC3  | 750 W (single-phase motor)             |
|                                | DC1  | 16 A / 24 V DC (see Fig. 2)            |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |      | 10 mA                                  |
| Max. inrush current            |      | 80 A 20 ms                             |
| Rated current                  |      | 16 A                                   |
| Max. breaking capacity         | AC1  | 4 000 VA                               |
| Min. breaking capacity         |      | 1 W                                    |
| Contact resistance             |      | ≤ 100 mΩ                               |
| Max. operating frequency       |      |                                        |
| • at rated load                | AC1  | 600 cycles/hour                        |
| • no load                      |      | 72 000 cycles/hour                     |

### Coil data

|                                   |    |                          |
|-----------------------------------|----|--------------------------|
| Rated voltage                     | DC | 3 ... 110 V              |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1 and Fig. 3   |
| Rated power consumption           | DC | 0,4 ... 0,48 W           |

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

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 μs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

### General data

|                                           |                 |                                  |
|-------------------------------------------|-----------------|----------------------------------|
| Operating / release time (typical values) |                 | 8 ms / 3 ms                      |
| Electrical life (number of cycles)        |                 |                                  |
| • resistive AC1                           | 600 cycles/hour | > 10 <sup>5</sup> 16 A, 250 V AC |
| • cos φ                                   |                 | see Fig. 1                       |
| • resistive DC1                           | 600 cycles/hour | > 10 <sup>5</sup> 16 A, 24 V DC  |
| • inductive AC3, I = 3,5 A                |                 | > 2,5 x 10 <sup>5</sup>          |
| • at incandescent lamp load, 1000 W       |                 | > 0,9 x 10 <sup>5</sup>          |
| Mechanical life (cycles)                  |                 | > 3 x 10 <sup>7</sup>            |
| Dimensions (L x W x H)                    |                 | 29 x 12,7 x 15,7 mm              |
| Weight                                    |                 | 14 g                             |
| Ambient temperature                       | • storage       | -40...+85 °C                     |
|                                           | • operating     | -40...+85 °C                     |
| Cover protection category                 |                 | IP 40    PN-EN 60529             |
| Environmental protection                  |                 | RTII    PN-EN 116000-3           |
| Shock resistance                          |                 | 30 g                             |
| Vibration resistance                      |                 | 10 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.

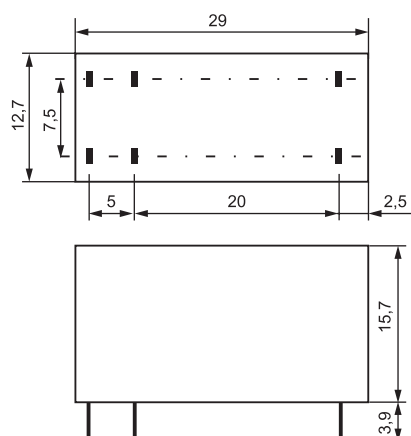
Coil data - DC voltage version

Table 1

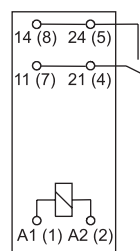
| Coil code   | Rated voltage<br>V DC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V DC |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)              | max. (at 20 °C) |
| 1003        | 3                     | 22                                      | $\pm 10\%$                   | 2,1                          | 7,6             |
| 1005        | 5                     | 60                                      | $\pm 10\%$                   | 3,5                          | 12,7            |
| 1006        | 6                     | 90                                      | $\pm 10\%$                   | 4,2                          | 15,3            |
| 1009        | 9                     | 200                                     | $\pm 10\%$                   | 6,3                          | 22,9            |
| <b>1012</b> | <b>12</b>             | <b>360</b>                              | <b><math>\pm 10\%</math></b> | <b>8,4</b>                   | <b>30,6</b>     |
| 1018        | 18                    | 710                                     | $\pm 10\%$                   | 12,6                         | 45,9            |
| <b>1024</b> | <b>24</b>             | <b>1 440</b>                            | <b><math>\pm 10\%</math></b> | <b>16,8</b>                  | <b>61,2</b>     |
| 1036        | 36                    | 3 140                                   | $\pm 10\%$                   | 25,2                         | 91,8            |
| 1048        | 48                    | 5 700                                   | $\pm 10\%$                   | 33,6                         | 122,4           |
| 1060        | 60                    | 7 500                                   | $\pm 10\%$                   | 42,0                         | 153,0           |
| 1110        | 110                   | 25 200                                  | $\pm 10\%$                   | 77,0                         | 280,0           |

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

## Dimensions



## Connection diagram (pin side view)



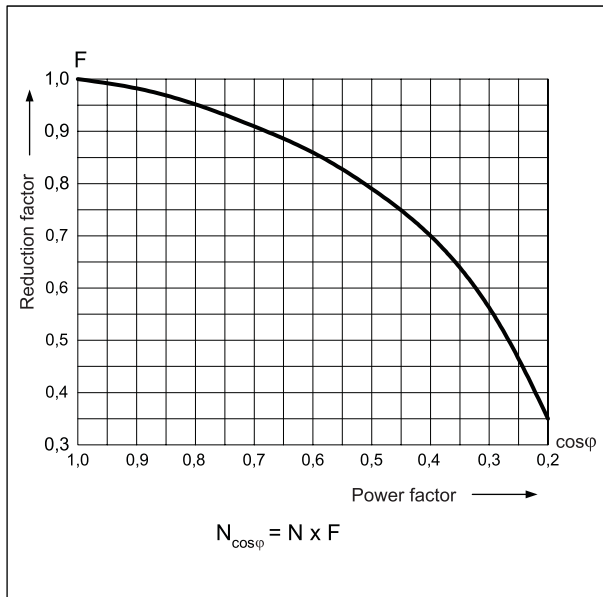
**1 NO**

| Terminal (pin)                             | A1(1); A2(2)      | 21(4); 24(5);<br>11(7); 14(8) |
|--------------------------------------------|-------------------|-------------------------------|
| [mm]                                       | $\varnothing 0,6$ | $0,5 \times 0,9$              |
| Drilling hole:                             |                   |                               |
| • for relays $\varnothing 1,3 \pm 0,1$ mm  |                   |                               |
| • for sockets $\varnothing 1,5 \pm 0,1$ mm |                   |                               |

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

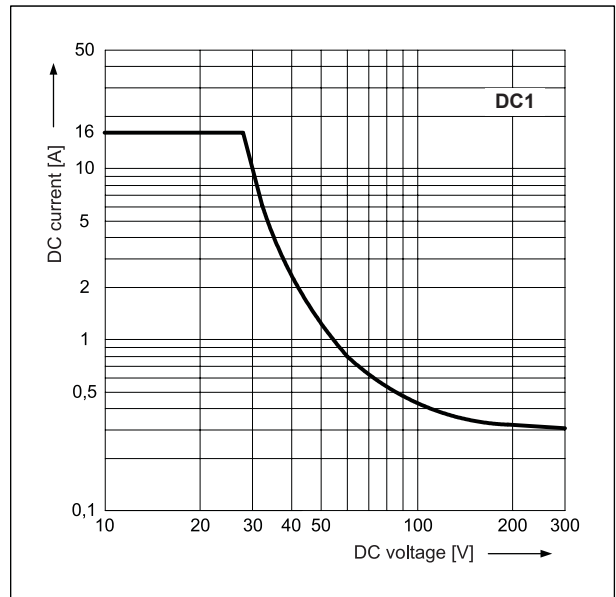
**Electrical life reduction factor at AC inductive load**

Fig. 1



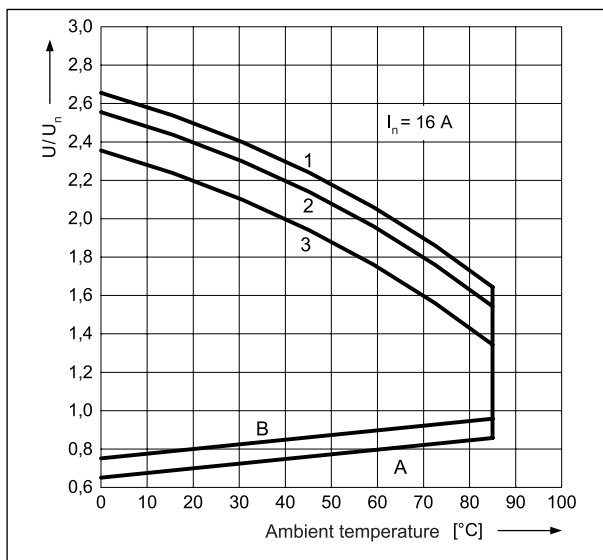
**Max. DC resistive load breaking capacity**

Fig. 2



**Coil operating range - DC**

Fig. 3



**Description of Fig. 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).

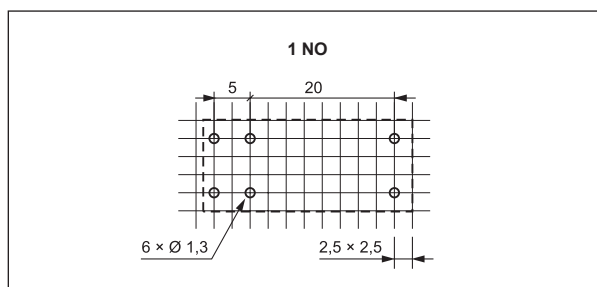
**1, 2, 3** - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

**1** - no load

**2** - 50% of rated load

**3** - rated load

## Pinout (solder side view)



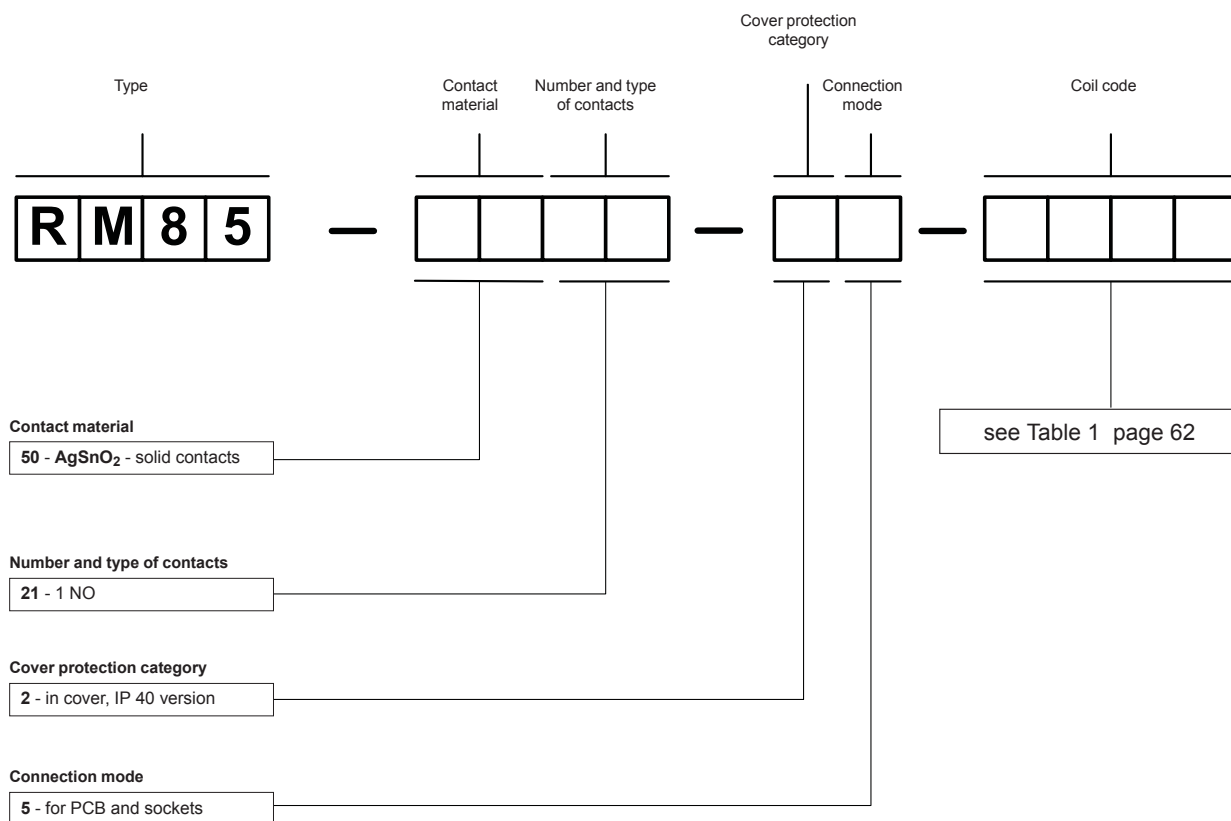
## Mounting

Relays **RM85 inrush** are designed for:

- direct PCB mounting
- screw terminals plug-in sockets **GZT80** ① and **GZM80** ① with clip **GZT80-0040** or **GZM80-0041**; plug-in sockets **GZS80** ① with clip **GZS-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 250)
- plug-in sockets for PCB mounting **EC50** with clip **MP16-2**, MH16-2; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, GD-0016, MH16-2.

① Plug-in sockets **GZT80**, **GZM80** and **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 261).

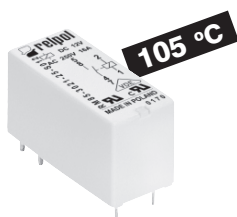
## Ordering codes



Example of ordering code:

**RM85-5021-25-1012**

relay **RM85 inrush**, contact material AgSnO<sub>2</sub> - solid contacts, with one normally open contact, in cover IP 40, for PCB and sockets, voltage version 12 V DC



- For PCB and plug-in sockets
- Accessories: sockets and modules
- DC coils - sensitive
- Ambient temperature up to 105 °C
- Applications: in household equipment, in temperature controllers
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,     

### Contact data

|                                |      |                                                         |
|--------------------------------|------|---------------------------------------------------------|
| Number and type of contacts    |      | 1 NO                                                    |
| Contact material               |      | AgNi, AgNi/Au 5 µm, <b>AgSnO<sub>2</sub></b>            |
| Rated / max. switching voltage | AC   | 250 V / 440 V                                           |
| Min. switching voltage         |      | 5 V AgNi, 5 V AgNi/Au 5 µm, 10 V AgSnO <sub>2</sub>     |
| Rated load (capacity)          | AC1  | 16 A / 250 V AC                                         |
|                                | AC15 | 3 A / 120 V 1,5 A / 240 V (B300)                        |
|                                | AC3  | 750 W (single-phase motor)                              |
|                                | DC1  | 16 A / 24 V DC (see Fig. 2)                             |
|                                | DC13 | 0,22 A / 120 V 0,1 A / 250 V (R300)                     |
| Min. switching current         |      | 5 mA AgNi, 2 mA AgNi/Au 5 µm, 10 mA AgSnO <sub>2</sub>  |
| Max. inrush current            |      | 30 A AgSnO <sub>2</sub>                                 |
| Rated current                  |      | 16 A                                                    |
| Max. breaking capacity         | AC1  | 4 000 VA                                                |
| Min. breaking capacity         |      | 0,3 W AgNi, 0,05 W AgNi/Au 5 µm, 1 W AgSnO <sub>2</sub> |
| Contact resistance             |      | ≤ 100 mΩ                                                |
| Max. operating frequency       |      |                                                         |
| • at rated load                | AC1  | 600 cycles/hour                                         |
| • no load                      |      | 72 000 cycles/hour                                      |

### Coil data

|                                   |    |                          |
|-----------------------------------|----|--------------------------|
| Rated voltage                     | DC | 5 ... 48 V               |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1 and Fig. 3   |
| Rated power consumption           | DC | 0,25 W                   |

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

|                             |  |                                                   |
|-----------------------------|--|---------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                          |
| Rated surge voltage         |  | 4 000 V 1,2 / 50 µs                               |
| Overvoltage category        |  | III                                               |
| Insulation pollution degree |  | 3                                                 |
| Dielectric strength         |  |                                                   |
| • between coil and contacts |  | 5 000 V AC type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                   |
| • clearance                 |  | ≥ 10 mm                                           |
| • creepage                  |  | ≥ 10 mm                                           |

### General data

|                                           |                 |                                                |
|-------------------------------------------|-----------------|------------------------------------------------|
| Operating / release time (typical values) |                 | 8 ms / 3 ms                                    |
| Electrical life                           | • resistive AC1 | > 10 <sup>5</sup> 16 A, 230 V AC, 70 °C        |
| (number of cycles)                        |                 | > 2 x 10 <sup>4</sup> 16 A, 230 V AC, 105 °C   |
|                                           |                 | > 1,7 x 10 <sup>5</sup> 10 A, 230 V AC, 105 °C |
|                                           |                 | > 2,8 x 10 <sup>5</sup> 8 A, 230 V AC, 105 °C  |
|                                           |                 | > 3,2 x 10 <sup>5</sup> 6 A, 230 V AC, 105 °C  |
|                                           | • cos φ         | see Fig. 1                                     |
|                                           | • DC L/R=40 ms  | > 10 <sup>5</sup> 0,15 A, 220 V DC             |
| Mechanical life (cycles)                  |                 | > 3 x 10 <sup>7</sup>                          |
| Dimensions (L x W x H)                    |                 | 29 x 12,7 x 15,7 mm                            |
| Weight                                    |                 | 14 g                                           |
| Ambient temperature                       | • storage       | -40...+105 °C                                  |
|                                           | • operating     | -40...+105 °C                                  |
| Cover protection category                 |                 | IP 40 PN-EN 60529                              |
| Environmental protection                  |                 | RTII PN-EN 116000-3                            |
| Shock resistance                          |                 | 30 g                                           |
| Vibration resistance                      |                 | 10 g 10...150 Hz                               |
| Solder bath temperature                   |                 | max. 270 °C                                    |
| Soldering time                            |                 | max. 5 s                                       |

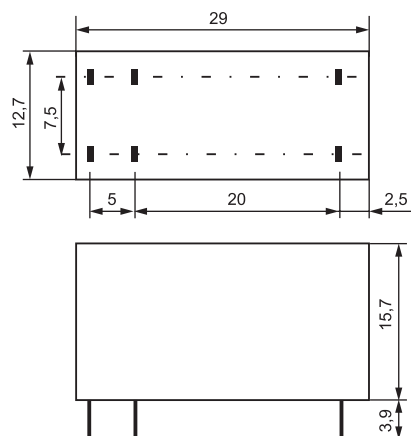
The data in bold type pertain to the standard versions of the relays.

Coil data - DC voltage version, sensitive version

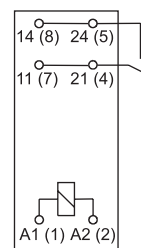
Table 1

| 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 20 °C) |
| S005      | 5                     | 102                                     | $\pm 10\%$               | 3,75                         | 15,0            |
| S006      | 6                     | 144                                     | $\pm 10\%$               | 4,50                         | 18,0            |
| S009      | 9                     | 330                                     | $\pm 10\%$               | 6,75                         | 27,0            |
| S010      | 10                    | 380                                     | $\pm 10\%$               | 7,50                         | 30,0            |
| S012      | 12                    | 580                                     | $\pm 10\%$               | 9,00                         | 36,0            |
| S018      | 18                    | 1 300                                   | $\pm 10\%$               | 13,50                        | 54,0            |
| S024      | 24                    | 2 300                                   | $\pm 10\%$               | 18,00                        | 72,0            |
| S048      | 48                    | 9 340                                   | $\pm 10\%$               | 36,00                        | 144,0           |

## Dimensions



## Connection diagram (pin side view)



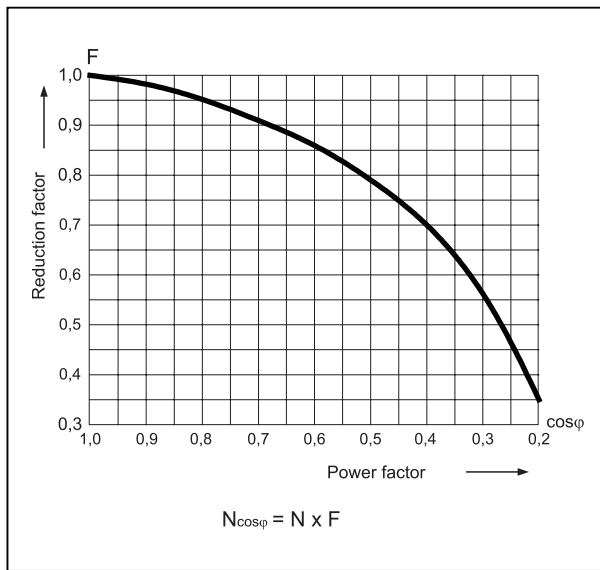
1 NO

| Terminal (pin) | A1(1); A2(2)      | 21(4); 24(5);<br>11(7); 14(8) |
|----------------|-------------------|-------------------------------|
| [mm]           | $\varnothing 0,6$ | $0,5 \times 0,9$              |
| Drilling hole: |                   |                               |
| * for relays   |                   |                               |
| * for sockets  |                   |                               |

**RM85 105 °C sensitive** terminals are doubled for each contact. Both terminals are to be used while connecting to load.

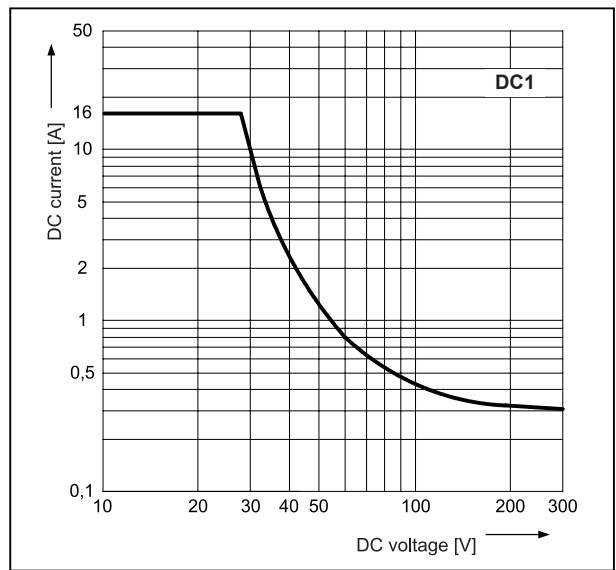
**Electrical life reduction factor at AC inductive load**

Fig. 1



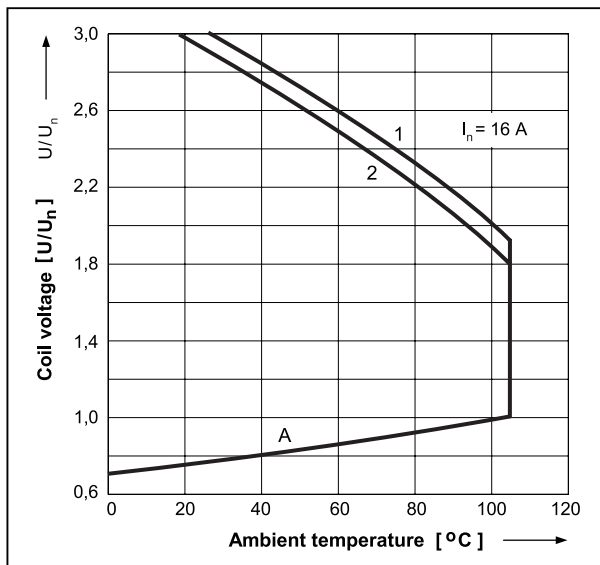
**Max. DC resistive load breaking capacity**

Fig. 2



**Coil operating range - DC**

Fig. 3



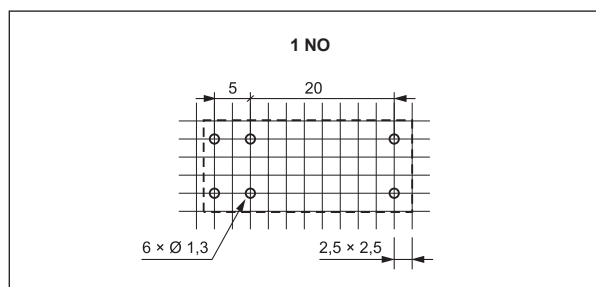
**Description of Fig. 3**

**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).

**1, 2** - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

**1** - no load  
**2** - rated load

### Pinout (solder side view)



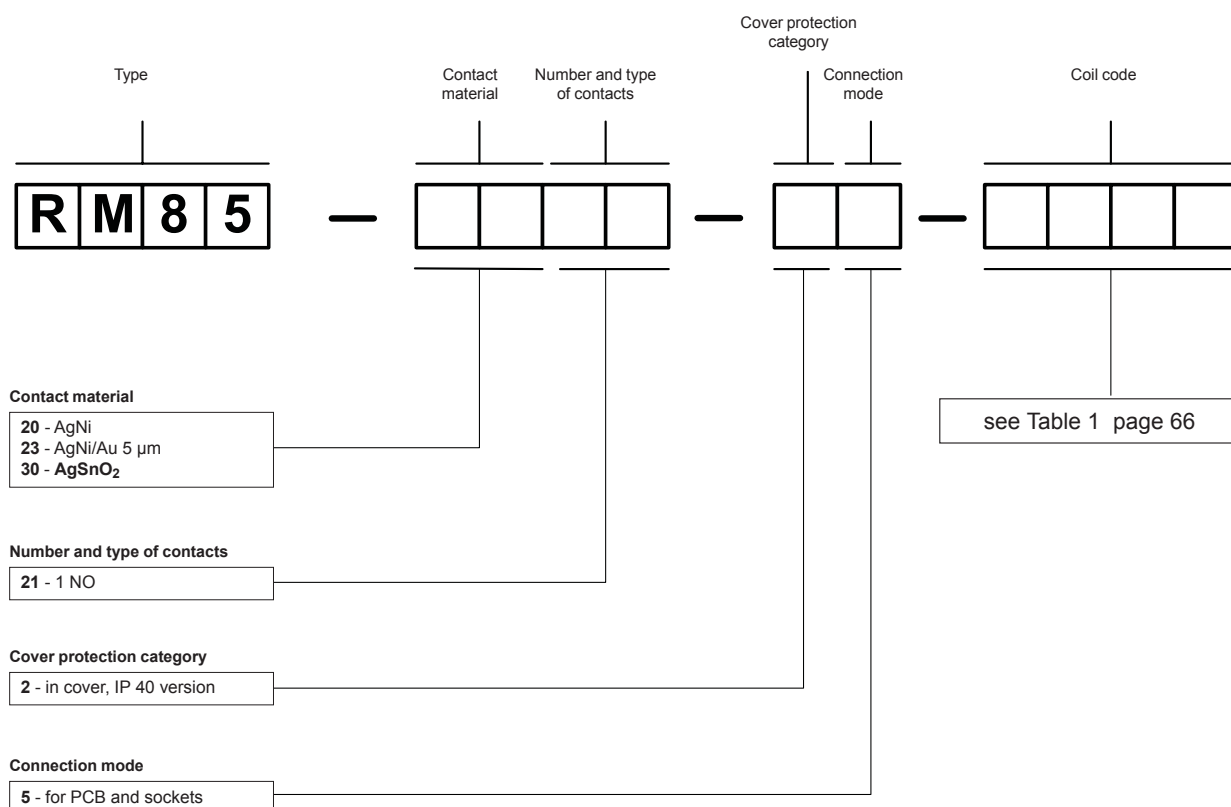
### Mounting

Relays **RM85 105 °C sensitive** are designed for:

- direct PCB mounting • screw terminals plug-in sockets **GZT80** ① and **GZM80** ① with clip **GZT80-0040** or **GZM80-0041**; plug-in sockets **GZS80** ① with clip **GZS-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 250) • plug-in sockets for PCB mounting **EC50** with clip **MP16-2**, MH16-2; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, GD-0016, MH16-2.

① Plug-in sockets **GZT80**, **GZM80** and **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 261).

### Ordering codes



Examples of ordering code:

**RM85-3021-25-S012**

relay **RM85 105 °C sensitive**, contact material AgSnO<sub>2</sub>, with one normally open contact, in cover IP 40, for PCB and sockets, sensitive voltage version 12 V DC

**RM85-2321-25-S005**

relay **RM85 105 °C sensitive**, contact material AgNi/Au 5 µm, with one normally open contact, in cover IP 40, for PCB and sockets, sensitive voltage version 5 V DC



- Cadmium - free contacts
- Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- **For surface mounting SMT**
- AC and DC coils
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,



## Contact data

|                                |                                   |                                                                                                                                                                 |
|--------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number and type of contacts    |                                   | 1 C/O                                                                                                                                                           |
| Contact material               |                                   | <b>AgNi</b> , AgNi/Au 5 µm, AgSnO <sub>2</sub>                                                                                                                  |
| Rated / max. switching voltage | AC                                | 250 V / 440 V                                                                                                                                                   |
| Min. switching voltage         |                                   | 5 V AgNi, 5 V AgNi/Au 5 µm, 10 V AgSnO <sub>2</sub>                                                                                                             |
| Rated load (capacity)          | AC1<br>AC15<br>AC3<br>DC1<br>DC13 | 16 A / 250 V AC<br>3 A / 120 V      1,5 A / 240 V (B300)<br>750 W (single-phase motor)<br>16 A / 24 V DC (see Fig. 3)<br>0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |                                   | 5 mA AgNi, 2 mA AgNi/Au 5 µm, 10 mA AgSnO <sub>2</sub>                                                                                                          |
| Max. inrush current            |                                   | 30 A AgSnO <sub>2</sub>                                                                                                                                         |
| Rated current                  |                                   | 16 A                                                                                                                                                            |
| Max. breaking capacity         | AC1                               | 4 000 VA                                                                                                                                                        |
| Min. breaking capacity         |                                   | 0,3 W AgNi, 0,05 W AgNi/Au 5 µm, 1 W AgSnO <sub>2</sub>                                                                                                         |
| Contact resistance             |                                   | ≤ 100 mΩ                                                                                                                                                        |
| Max. operating frequency       |                                   |                                                                                                                                                                 |
| • at rated load                | AC1                               | 600 cycles/hour                                                                                                                                                 |
| • no load                      |                                   | 72 000 cycles/hour                                                                                                                                              |

## Coil data

|                                   |                   |                                                    |
|-----------------------------------|-------------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC<br>DC | 12 ... 240 V<br>3 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC<br>DC          | 0,75 VA<br>0,4 ... 0,48 W                          |

## Insulation according to PN-EN 60664-1

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 µs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

## General data

|                                           |                          |                                                      |
|-------------------------------------------|--------------------------|------------------------------------------------------|
| Operating / release time (typical values) |                          | 7 ms / 3 ms                                          |
| Electrical life (number of cycles)        |                          |                                                      |
| • resistive AC1                           |                          | > 0,7 x 10 <sup>5</sup> 16 A, 250 V AC               |
| • cos φ                                   |                          | see Fig. 2                                           |
| • DC L/R=40 ms                            |                          | > 10 <sup>5</sup> 0,15 A, 220 V DC                   |
| Mechanical life (cycles)                  |                          | > 3 x 10 <sup>7</sup>                                |
| Dimensions (L x W x H)                    |                          | 29 x 12,7 x 15,7 (17,7) mm                           |
| Weight                                    |                          | 14 g                                                 |
| Ambient temperature                       | • storage<br>• operating | -40...+85 °C<br>AC: -40...+70 °C    DC: -40...+85 °C |
| Cover protection category                 |                          | IP 40      PN-EN 60529                               |
| Environmental protection                  |                          | RTII      PN-EN 116000-3                             |
| Shock resistance                          |                          | 30 g                                                 |
| Vibration resistance                      |                          | 10 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.

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 20 °C) |
| 1003      | 3                     | 22                                      | $\pm 10\%$               | 2,1                          | 7,6             |
| 1005      | 5                     | 60                                      | $\pm 10\%$               | 3,5                          | 12,7            |
| 1006      | 6                     | 90                                      | $\pm 10\%$               | 4,2                          | 15,3            |
| 1009      | 9                     | 200                                     | $\pm 10\%$               | 6,3                          | 22,9            |
| 1012      | 12                    | 360                                     | $\pm 10\%$               | 8,4                          | 30,6            |
| 1018      | 18                    | 710                                     | $\pm 10\%$               | 12,6                         | 45,9            |
| 1024      | 24                    | 1 440                                   | $\pm 10\%$               | 16,8                         | 61,2            |
| 1036      | 36                    | 3 140                                   | $\pm 10\%$               | 25,2                         | 91,8            |
| 1048      | 48                    | 5 700                                   | $\pm 10\%$               | 33,6                         | 122,4           |
| 1060      | 60                    | 7 500                                   | $\pm 10\%$               | 42,0                         | 153,0           |
| 1110      | 110                   | 25 200                                  | $\pm 10\%$               | 77,0                         | 280,0           |

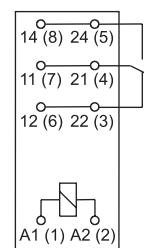
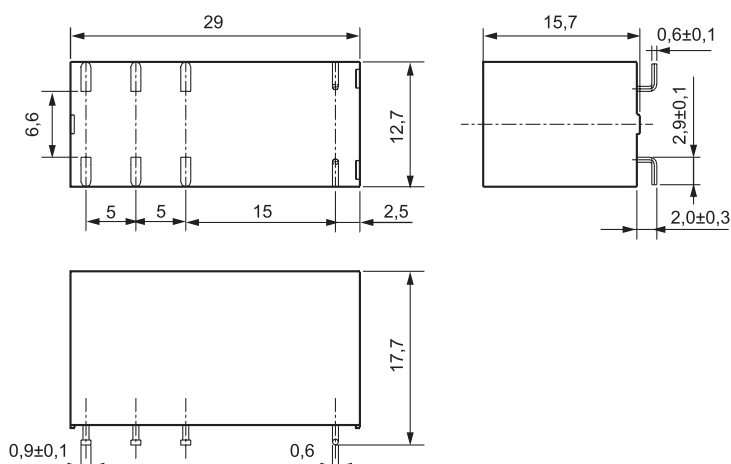
Coil data - AC 50/60 Hz voltage version

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 50 Hz |                 |
|-----------|-----------------------|-----------------------------------------|--------------------------|------------------------------------|-----------------|
|           |                       |                                         |                          | min. (at 20 °C)                    | max. (at 20 °C) |
| 5012      | 12                    | 100                                     | $\pm 10\%$               | 9,6                                | 13,2            |
| 5024      | 24                    | 400                                     | $\pm 10\%$               | 19,2                               | 28,8            |
| 5048      | 48                    | 1 550                                   | $\pm 10\%$               | 38,4                               | 57,6            |
| 5060      | 60                    | 2 600                                   | $\pm 10\%$               | 48,0                               | 72,0            |
| 5110      | 110                   | 8 900                                   | $\pm 10\%$               | 88,0                               | 132,0           |
| 5115      | 115                   | 9 600                                   | $\pm 10\%$               | 92,0                               | 138,0           |
| 5120      | 120                   | 10 200                                  | $\pm 10\%$               | 96,0                               | 144,0           |
| 5220      | 220                   | 35 500                                  | $\pm 10\%$               | 176,0                              | 264,0           |
| 5230      | 230                   | 38 500                                  | $\pm 10\%$               | 184,0                              | 276,0           |
| 5240      | 240                   | 42 500                                  | $\pm 15\%$               | 192,0                              | 288,0           |

## Dimensions

## Connection diagram (pin side view)



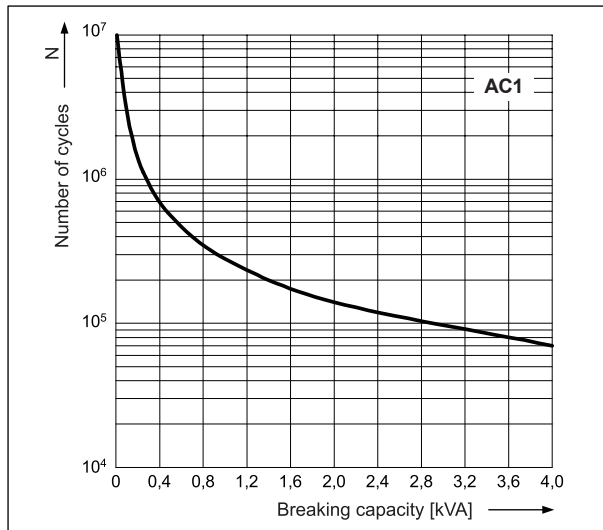
1 C/O

| Terminal (pin) | A1(1);<br>A2(2)   | 22(3); 21(4);<br>24(5); 12(6);<br>11(7); 14(8) |
|----------------|-------------------|------------------------------------------------|
| [mm]           | $\varnothing 0,6$ | $0,5 \times 0,9$                               |

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

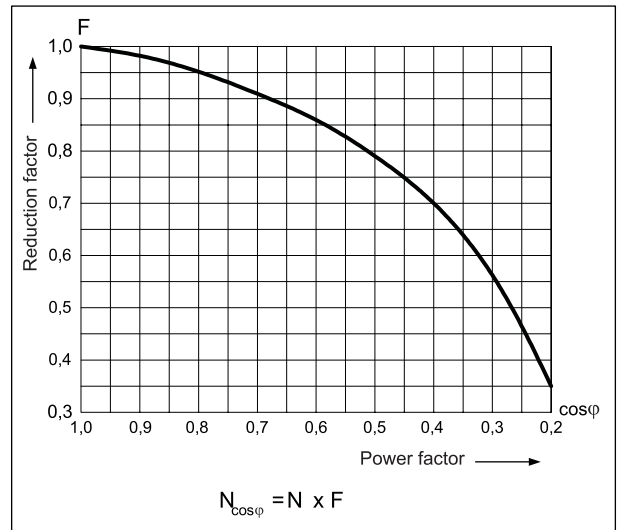
**Electrical life at AC resistive load.**  
Switching frequency: 600 cycles/hour

Fig. 1



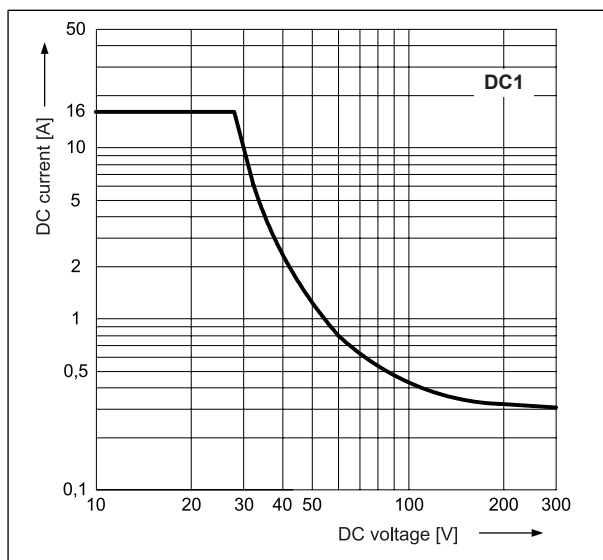
**Electrical life reduction factor at AC inductive load**

Fig. 2



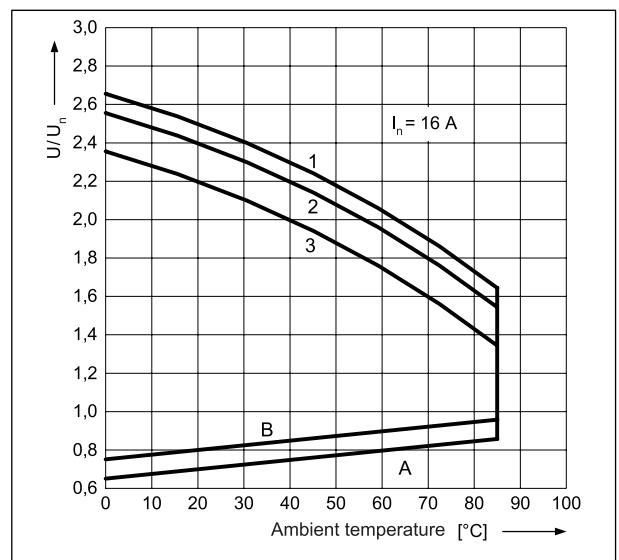
**Max. DC resistive load breaking capacity**

Fig. 3



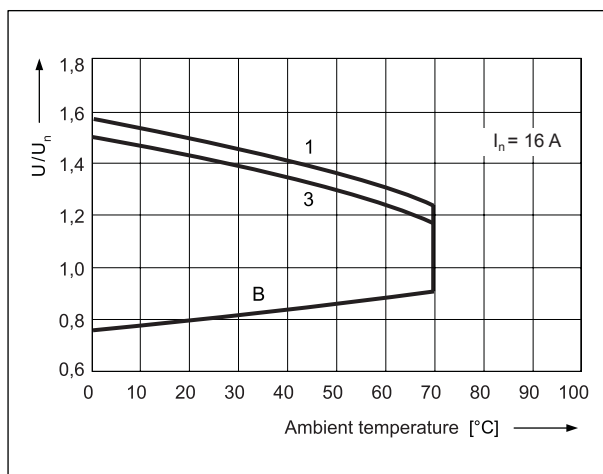
**Coil operating range - DC**

Fig. 4



**Coil operating range - AC 50 Hz**

Fig. 5



**Description of Fig. 4 and 5**

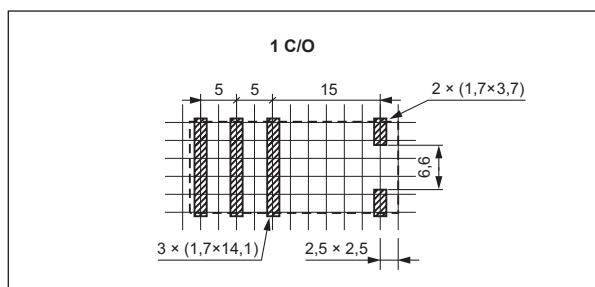
**A** - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

**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

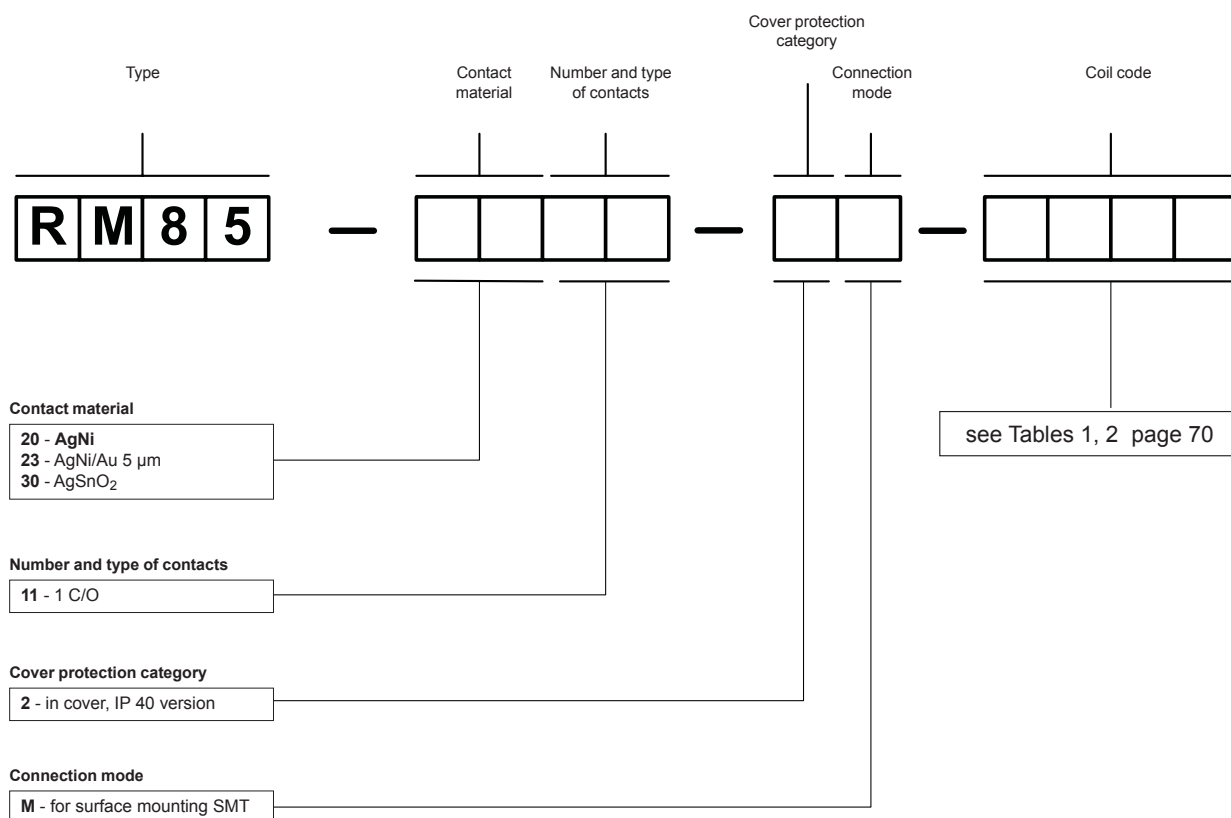
## Soldering areas (solder side view)



## Mounting

Relays **RM85 SMT** are designed for surface mounting SMT.

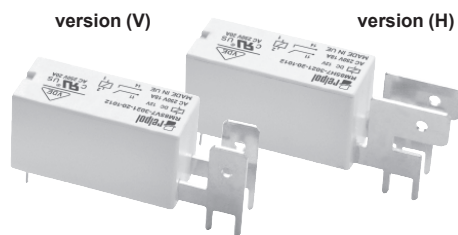
## Ordering codes



Example of ordering code:

**RM85-2011-2M-1012**

relay **RM85 SMT**, contact material AgNi, with one changeover contact, in cover IP 40, for surface mounting SMT, voltage version 12 V DC



• Cadmium - free contacts • Height 15,7 mm • 5000 V / 10 mm reinforced insulation • **Coil terminals for PCB, contacts terminals for PCB and flat insert connectors - faston 250 (6,3 x 0,8 mm), faston arrangement: vertical version (V) and horizontal version (H)** • DC coils - sensitive • Ambient temperature up to 105 °C • Applications: for control of operation of heating elements and motors of household equipment and catering industry devices, for control of electromagnetic valves, in many other applications • Compliance with standard PN-EN 60335-1

• Recognitions, certifications, directives: RoHS,    

### Contact data

|                                |      |                                     |
|--------------------------------|------|-------------------------------------|
| Number and type of contacts    |      | 1 NO                                |
| Contact material               |      | <b>AgSnO<sub>2</sub></b>            |
| Rated / max. switching voltage | AC   | 250 V / 440 V                       |
| Min. switching voltage         |      | 10 V                                |
| Rated load (capacity)          | AC1  | 20 A / 250 V AC                     |
|                                | AC15 | 3 A / 120 V 1,5 A / 240 V (B300)    |
|                                | AC3  | 750 W (single-phase motor)          |
|                                | DC1  | 20 A / 24 V DC                      |
|                                | DC13 | 0,22 A / 120 V 0,1 A / 250 V (R300) |
| Min. switching current         |      | 10 mA                               |
| Max. inrush current            |      | 30 A                                |
| Rated current                  |      | 20 A                                |
| Max. breaking capacity         | AC1  | 5 000 VA                            |
| Min. breaking capacity         |      | 1 W                                 |
| Contact resistance             |      | ≤ 100 mΩ 100 mA, 24 V               |
| Max. operating frequency       |      |                                     |
| • at rated load                | AC1  | 600 cycles/hour                     |
| • no load                      |      | 72 000 cycles/hour                  |

### Coil data

|                                   |    |                          |
|-----------------------------------|----|--------------------------|
| Rated voltage                     | DC | 5 ... 48 V               |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1              |
| Rated power consumption           | DC | 0,25 W                   |

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

|                             |  |                                                   |
|-----------------------------|--|---------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                          |
| Rated surge voltage         |  | 4 000 V 1,2 / 50 μs                               |
| Overvoltage category        |  | III                                               |
| Insulation pollution degree |  | 3                                                 |
| Dielectric strength         |  |                                                   |
| • between coil and contacts |  | 5 000 V AC type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                   |
| • clearance                 |  | ≥ 10 mm                                           |
| • creepage                  |  | ≥ 10 mm                                           |

### General data

|                                           |             |                                                |
|-------------------------------------------|-------------|------------------------------------------------|
| Operating / release time (typical values) |             | 8 ms / 3 ms                                    |
| Electrical life (number of cycles)        |             |                                                |
| • resistive AC1                           |             | > 2 x 10 <sup>4</sup> 20 A, 250 V AC, 85 °C    |
|                                           |             | > 1,5 x 10 <sup>5</sup> 10 A, 250 V AC, 105 °C |
| • cos φ                                   |             | see Fig. 1                                     |
| Mechanical life (cycles)                  |             | > 3 x 10 <sup>7</sup>                          |
| Dimensions (L x W x H)                    |             | vertical version (V): 40,5 x 12,7 x 15,7 mm    |
|                                           |             | horizontal version (H): 44,5 x 12,7 x 15,7 mm  |
| Weight                                    |             | 16 g                                           |
| Ambient temperature                       | • storage   | -40...+105 °C                                  |
|                                           | • operating | -40...+105 °C                                  |
| Cover protection category                 |             | IP 40 PN-EN 60529                              |
| Environmental protection                  |             | RTII PN-EN 116000-3                            |
| Shock resistance                          |             | 30 g                                           |
| Vibration resistance                      |             | 10 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.

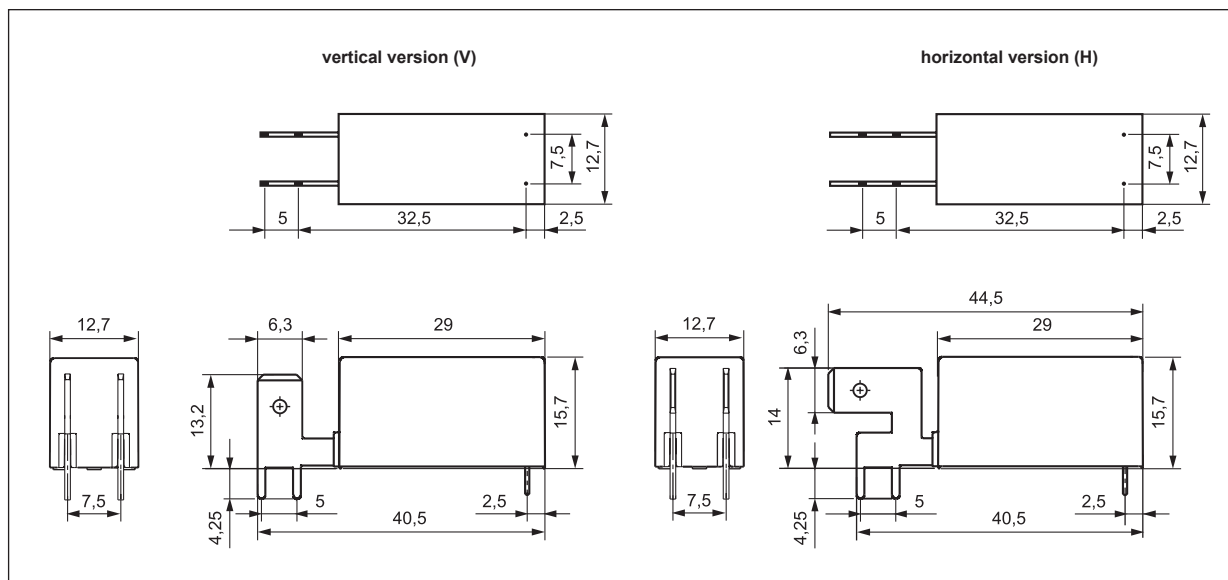
Coil data - DC voltage version, sensitive version

Table 1

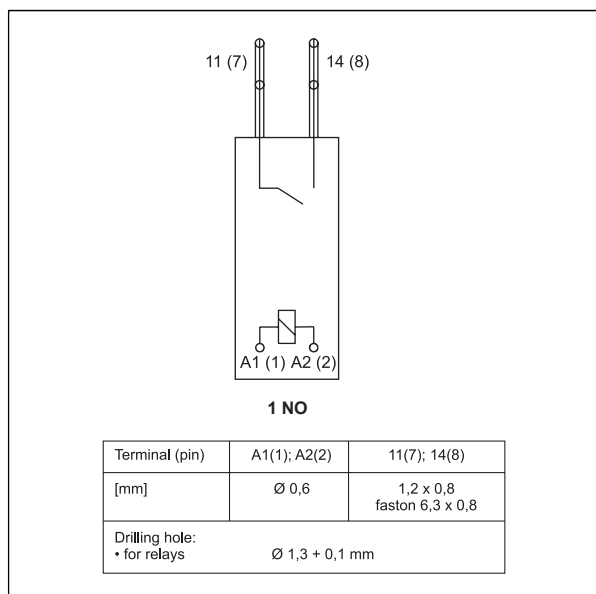
| Coil code   | Rated voltage<br>V DC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V DC |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)              | max. (at 20 °C) |
| S005        | 5                     | 102                                     | $\pm 10\%$                   | 3,75                         | 15,0            |
| S006        | 6                     | 144                                     | $\pm 10\%$                   | 4,50                         | 18,0            |
| S009        | 9                     | 330                                     | $\pm 10\%$                   | 6,75                         | 27,0            |
| S010        | 10                    | 380                                     | $\pm 10\%$                   | 7,50                         | 30,0            |
| <b>S012</b> | <b>12</b>             | <b>580</b>                              | <b><math>\pm 10\%</math></b> | <b>9,00</b>                  | <b>36,0</b>     |
| S018        | 18                    | 1 300                                   | $\pm 10\%$                   | 13,50                        | 54,0            |
| <b>S024</b> | <b>24</b>             | <b>2 300</b>                            | <b><math>\pm 10\%</math></b> | <b>18,00</b>                 | <b>72,0</b>     |
| S048        | 48                    | 9 340                                   | $\pm 10\%$                   | 36,00                        | 144,0           |

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

## Dimensions

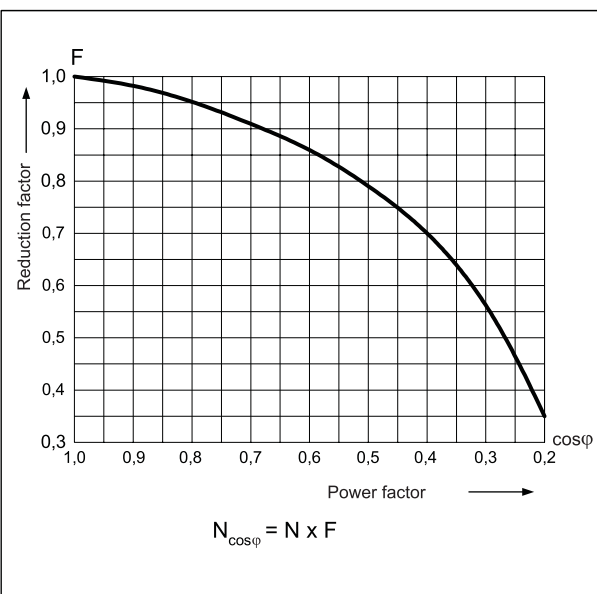


## Connection diagram (pin side view)

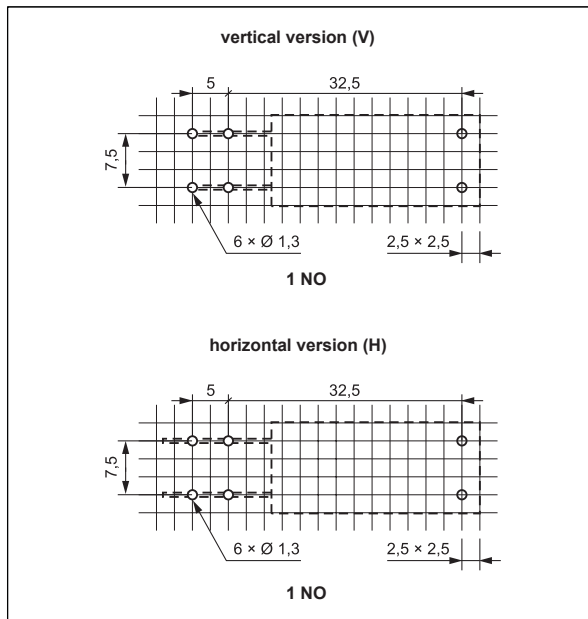


## Electrical life reduction factor at AC inductive load

Fig.1



### Pinout (solder side view)

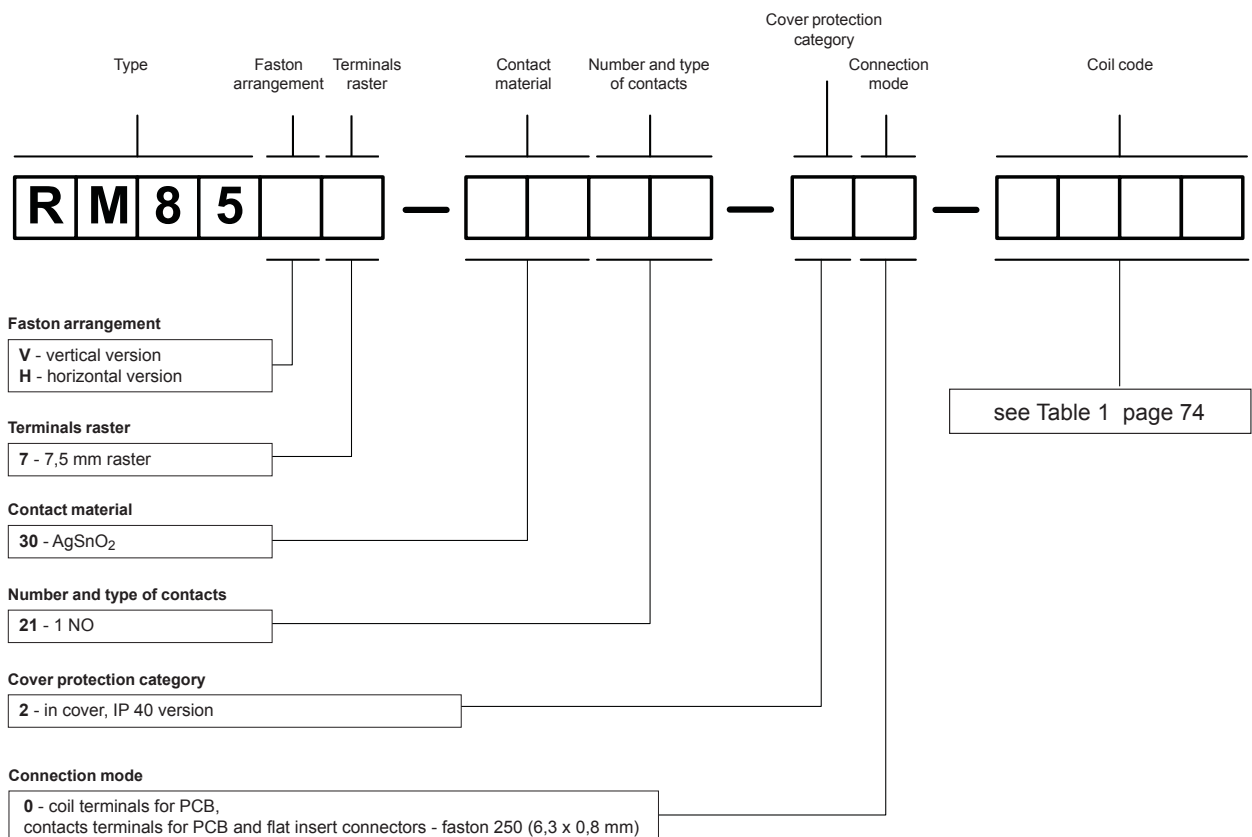


### Mounting

Relays **RM85 faston** are designed for:

- direct PCB mounting
- connection of load with flat insert connectors - faston 250 (6,3 x 0,8 mm).

### Ordering codes



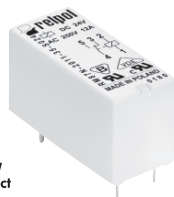
Example of ordering code:

**RM85V7-3021-20-S012**

relay **RM85 faston**, vertical version, 7,5 mm terminals raster, contact material AgSnO<sub>2</sub>, with one normally open contact, in cover IP 40, coil terminals for PCB, contacts terminals for PCB and flat insert connectors - faston 250 (6,3 x 0,8 mm), sensitive voltage version 12 V DC

RM87N-...-01 ①

RM87N sensitive



- Cadmium - free contacts • Height 15,7 mm
- 5000 V / 10 mm reinforced insulation • For PCB and plug-in sockets
- Accessories: sockets and modules • **AC and DC coils - standard (RM87), DC coils - sensitive (RM87 sensitive)**
- Available special versions: with transparent cover ①; with the increased dielectric strength of the contact clearance ②
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,       

### Contact data

|                                |      |                                                         |                                               |
|--------------------------------|------|---------------------------------------------------------|-----------------------------------------------|
| Number and type of contacts    |      | 1 C/O, 1 NO ② standard version                          | 1 NO sensitive version                        |
| Contact material               |      | <b>AgNi</b> , AgNi/Au 5 µm, AgSnO <sub>2</sub>          |                                               |
| Rated / max. switching voltage | AC   | 250 V / 440 V                                           |                                               |
| Min. switching voltage         |      | 5 V AgNi, 5 V AgNi/Au 5 µm, 10 V AgSnO <sub>2</sub>     |                                               |
| Rated load (capacity)          | AC1  | 12 A / 250 V AC standard version                        | 10 A / 250 V AC sensitive version             |
|                                | AC15 | 3 A / 120 V                                             | 1,5 A / 240 V (B300)                          |
|                                | AC3  | 750 W (single-phase motor)                              |                                               |
|                                | DC1  | 12 A / 24 V DC standard version (see Fig. 3)            | 10 A / 24 V DC sensitive version (see Fig. 4) |
|                                | DC13 | 0,22 A / 120 V 0,1 A / 250 V (R300)                     |                                               |
| Min. switching current         |      | 5 mA AgNi, 2 mA AgNi/Au 5 µm, 10 mA AgSnO <sub>2</sub>  |                                               |
| Max. inrush current            |      | 25 A AgSnO <sub>2</sub> standard version                | 20 A AgSnO <sub>2</sub> sensitive version     |
| Rated current                  |      | 12 A standard version                                   | 10 A sensitive version                        |
| Max. breaking capacity         | AC1  | 3 000 VA standard version                               | 2 500 VA sensitive version                    |
| Min. breaking capacity         |      | 0,3 W AgNi, 0,05 W AgNi/Au 5 µm, 1 W AgSnO <sub>2</sub> |                                               |
| Contact resistance             |      | ≤ 100 mΩ                                                |                                               |
| Max. operating frequency       |      |                                                         |                                               |
| • at rated load                | AC1  | 600 cycles/hour                                         |                                               |
| • no load                      |      | 72 000 cycles/hour                                      |                                               |

### Coil data

|                                   |             |                                                                                            |                              |
|-----------------------------------|-------------|--------------------------------------------------------------------------------------------|------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 240 V standard version                                                              |                              |
|                                   | DC          | 3 ... 110 V standard version                                                               | 5 ... 48 V sensitive version |
| 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, 3 and Fig. 5, 7 standard version<br>see Table 2 and Fig. 6 sensitive version |                              |
| Rated power consumption           | AC          | 0,75 VA standard version                                                                   |                              |
|                                   | DC          | 0,4 ... 0,48 W standard version                                                            | 0,25 W sensitive version     |

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

|                             |                                                    |                                                                                                                                                                    |             |
|-----------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Insulation rated voltage    |                                                    | 400 V AC                                                                                                                                                           |             |
| Rated surge voltage         |                                                    | 4 000 V                                                                                                                                                            | 1,2 / 50 µs |
| Overvoltage category        |                                                    | III                                                                                                                                                                |             |
| Insulation pollution degree |                                                    | 3                                                                                                                                                                  |             |
| Dielectric strength         | • between coil and contacts<br>• contact clearance | 5 000 V AC type of insulation: reinforced<br>1 000 V AC type of clearance: micro-disconnection<br>2 000 V AC contact 1 NO, type of clearance: full-disconnection ② |             |
| Contact - coil distance     | • clearance<br>• creepage                          | ≥ 10 mm<br>≥ 10 mm                                                                                                                                                 |             |

### General data

|                                           |                          |                                                   |                                  |
|-------------------------------------------|--------------------------|---------------------------------------------------|----------------------------------|
| Operating / release time (typical values) |                          | 7 ms / 3 ms                                       |                                  |
| Electrical life                           | • resistive AC1          | > 10 <sup>5</sup>                                 | 12 A, 250 V AC standard version  |
| (number of cycles)                        | • cos φ                  | > 1,7 x 10 <sup>5</sup>                           | 10 A, 250 V AC sensitive version |
|                                           | • DC L/R=40 ms           | > 10 <sup>5</sup>                                 | 0,15 A, 220 V DC                 |
| Mechanical life (cycles)                  |                          | > 3 x 10 <sup>7</sup>                             |                                  |
| Dimensions (L x W x H)                    |                          | 29 x 12,7 x 15,7 mm                               |                                  |
| Weight                                    |                          | 14 g                                              |                                  |
| Ambient temperature                       | • storage<br>• operating | -40...+85 °C<br>AC: -40...+70 °C DC: -40...+85 °C |                                  |
| Cover protection category                 |                          | IP 40 or <b>IP 67</b>                             | PN-EN 60529                      |
| Environmental protection                  |                          | RTII or <b>RTIII</b>                              | PN-EN 116000-3                   |
| Shock / vibration resistance              |                          | 30 g / 10 g 10...150 Hz                           |                                  |
| Solder bath temperature / Soldering time  |                          | max. 270 °C / max. 5 s                            |                                  |

The data in bold type pertain to the standard versions of the relays. ① Available special version (only for RM87 - standard version): relays in transparent cover - see "Ordering codes" ② Available special version with contact 1 NO (only for RM87 - standard version): relays with increased contact gap, dielectric strength 2000 V AC - see "Ordering codes"

**Coil data - DC voltage version, RM87 - standard 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 20 °C) |
| 1003        | 3                     | 22                                      | $\pm 10\%$                   | 2,1                          | 7,6             |
| 1005        | 5                     | 60                                      | $\pm 10\%$                   | 3,5                          | 12,7            |
| 1006        | 6                     | 90                                      | $\pm 10\%$                   | 4,2                          | 15,3            |
| 1009        | 9                     | 200                                     | $\pm 10\%$                   | 6,3                          | 22,9            |
| 1012        | 12                    | 360                                     | $\pm 10\%$                   | 8,4                          | 30,6            |
| 1018        | 18                    | 710                                     | $\pm 10\%$                   | 12,6                         | 45,9            |
| <b>1024</b> | <b>24</b>             | <b>1 440</b>                            | <b><math>\pm 10\%</math></b> | <b>16,8</b>                  | <b>61,2</b>     |
| 1036        | 36                    | 3 140                                   | $\pm 10\%$                   | 25,2                         | 91,8            |
| 1048        | 48                    | 5 700                                   | $\pm 10\%$                   | 33,6                         | 122,4           |
| 1060        | 60                    | 7 500                                   | $\pm 10\%$                   | 42,0                         | 153,0           |
| 1110        | 110                   | 25 200                                  | $\pm 10\%$                   | 77,0                         | 280,0           |

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

**Coil data - DC voltage version, RM87 sensitive - sensitive version**

Table 2

| 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 20 °C) |
| S005      | 5                     | 102                                     | $\pm 10\%$               | 3,75                         | 15,0            |
| S006      | 6                     | 144                                     | $\pm 10\%$               | 4,50                         | 18,0            |
| S009      | 9                     | 330                                     | $\pm 10\%$               | 6,75                         | 27,0            |
| S010      | 10                    | 400                                     | $\pm 10\%$               | 7,50                         | 30,0            |
| S012      | 12                    | 580                                     | $\pm 10\%$               | 9,00                         | 36,0            |
| S018      | 18                    | 1 300                                   | $\pm 10\%$               | 13,50                        | 54,0            |
| S024      | 24                    | 2 300                                   | $\pm 10\%$               | 18,00                        | 72,0            |
| S048      | 48                    | 9 340                                   | $\pm 10\%$               | 36,00                        | 144,0           |

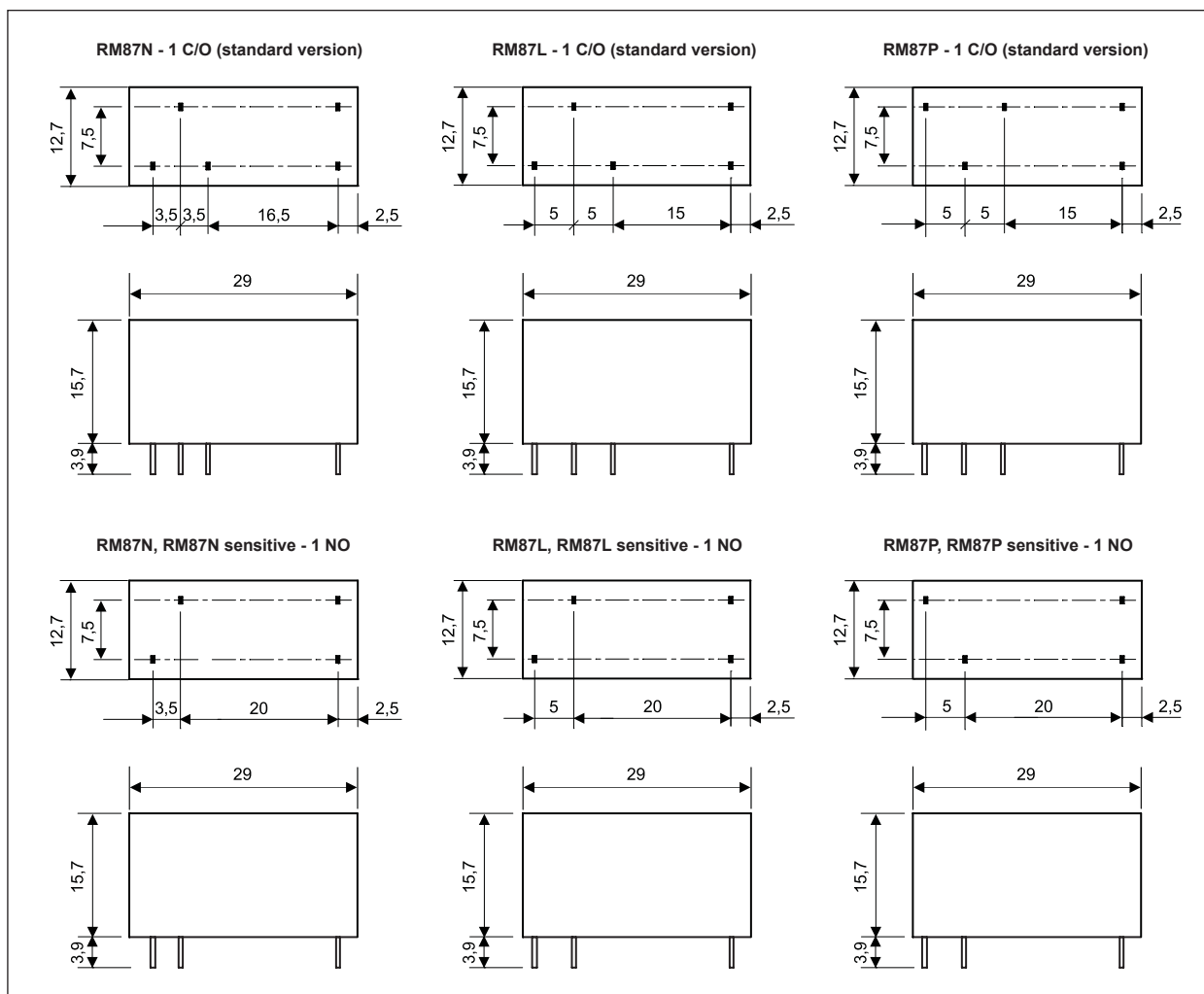
**Coil data - AC 50/60 Hz voltage version, RM87 - standard version**

Table 3

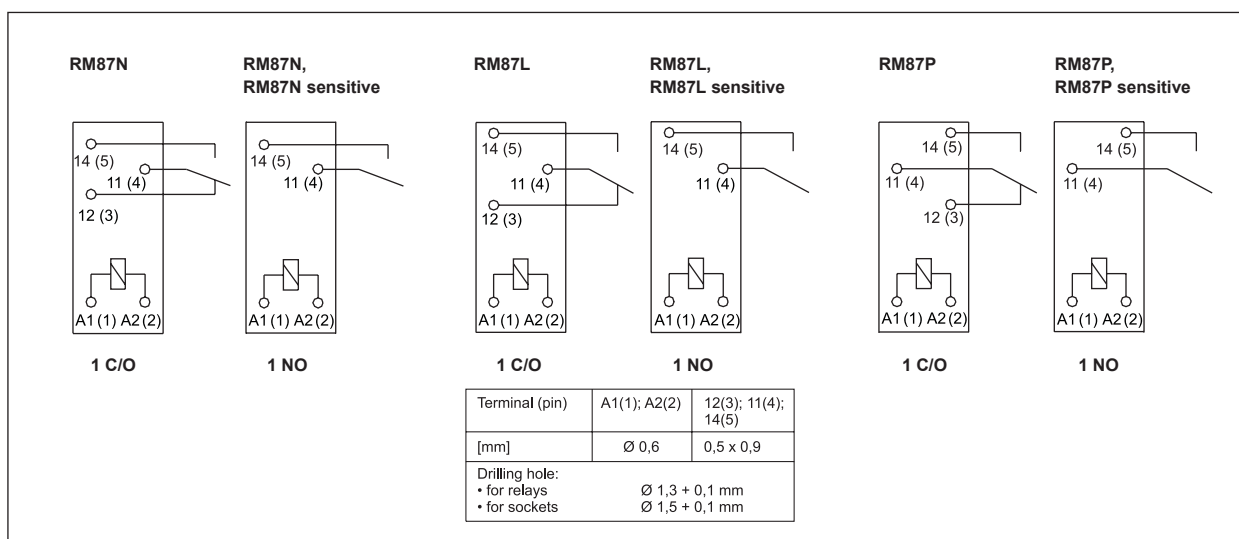
| Coil code   | Rated voltage<br>V AC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance     | Coil operating range<br>V AC 50 Hz |                 |
|-------------|-----------------------|-----------------------------------------|------------------------------|------------------------------------|-----------------|
|             |                       |                                         |                              | min. (at 20 °C)                    | max. (at 20 °C) |
| 5012        | 12                    | 100                                     | $\pm 10\%$                   | 9,6                                | 13,2            |
| <b>5024</b> | <b>24</b>             | <b>400</b>                              | <b><math>\pm 10\%</math></b> | <b>19,2</b>                        | <b>28,8</b>     |
| 5048        | 48                    | 1 550                                   | $\pm 10\%$                   | 38,4                               | 57,6            |
| 5060        | 60                    | 2 600                                   | $\pm 10\%$                   | 48,0                               | 72,0            |
| 5110        | 110                   | 8 900                                   | $\pm 10\%$                   | 88,0                               | 132,0           |
| 5115        | 115                   | 9 600                                   | $\pm 10\%$                   | 92,0                               | 138,0           |
| 5120        | 120                   | 10 200                                  | $\pm 10\%$                   | 96,0                               | 144,0           |
| 5220        | 220                   | 35 500                                  | $\pm 10\%$                   | 176,0                              | 264,0           |
| <b>5230</b> | <b>230</b>            | <b>38 500</b>                           | <b><math>\pm 10\%</math></b> | <b>184,0</b>                       | <b>276,0</b>    |
| 5240        | 240                   | 42 500                                  | $\pm 15\%$                   | 192,0                              | 288,0           |

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

### Dimensions

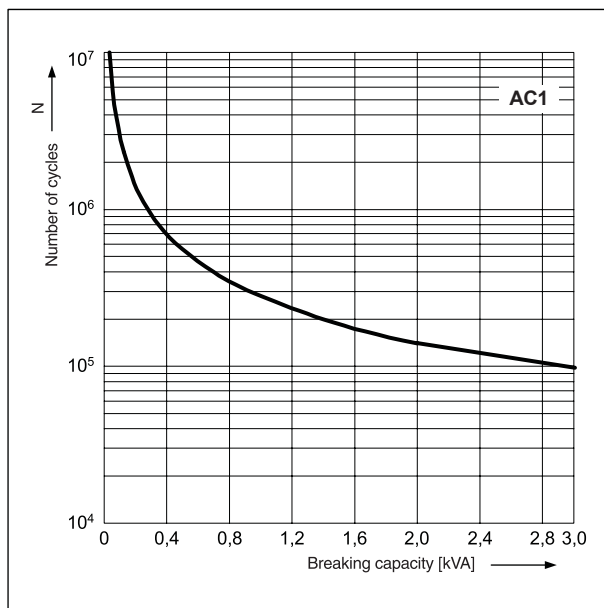


### Connection diagrams (pin side view)



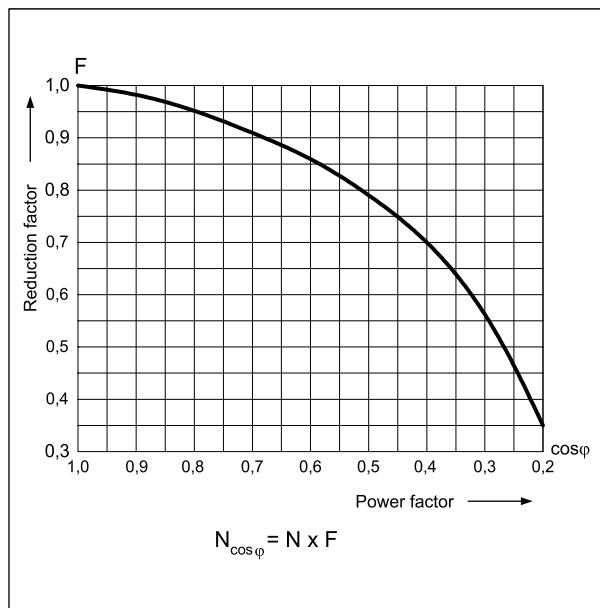
**Electrical life at AC resistive load.**  
Switching frequency: 600 cycles/hour

Fig. 1



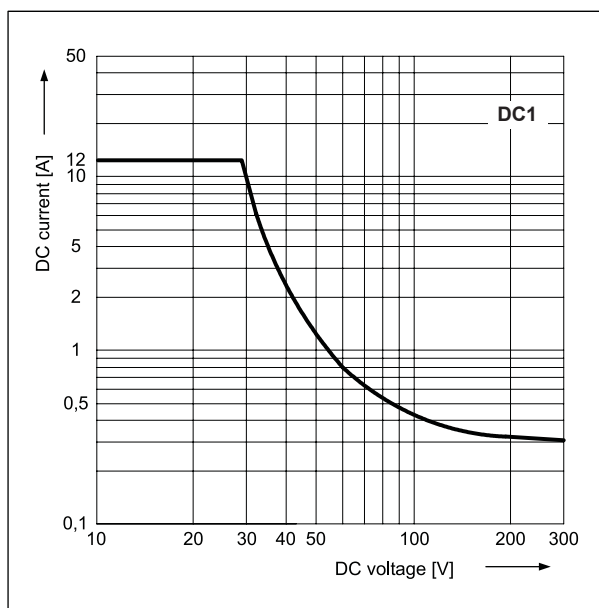
**Electrical life reduction factor at AC inductive load**

Fig. 2



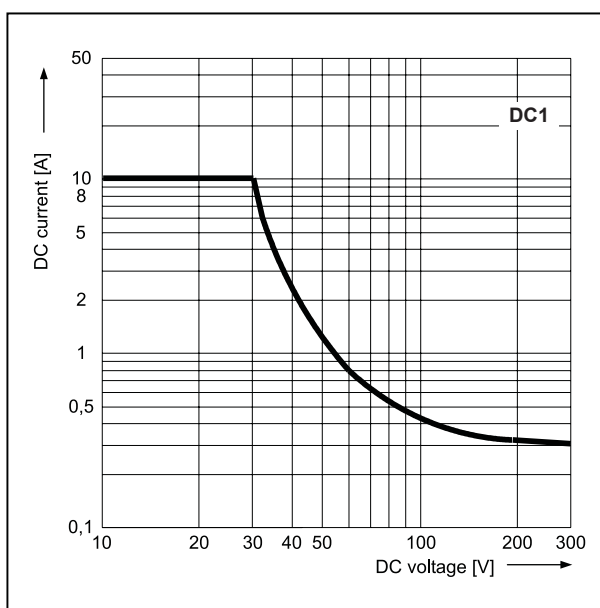
**Max. DC resistive load breaking capacity - standard version**

Fig. 3



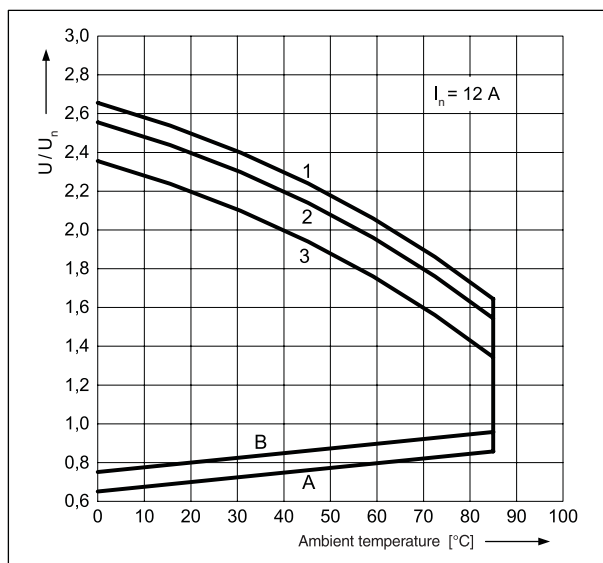
**Max. DC resistive load breaking capacity - sensitive version**

Fig. 4



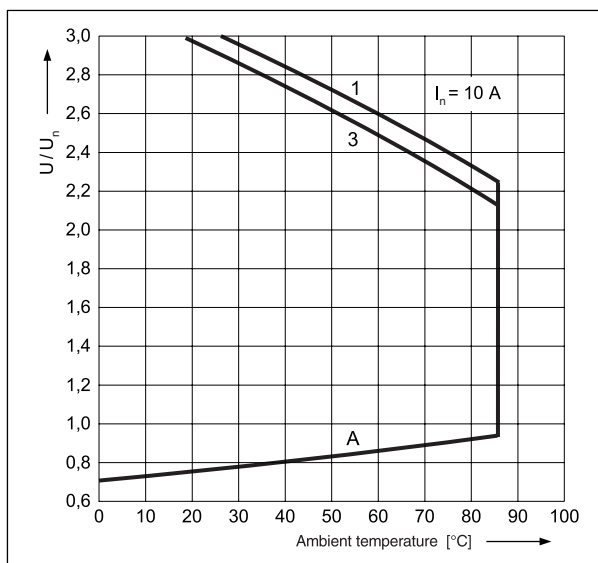
**Coil operating range - DC  
- standard version**

Fig. 5



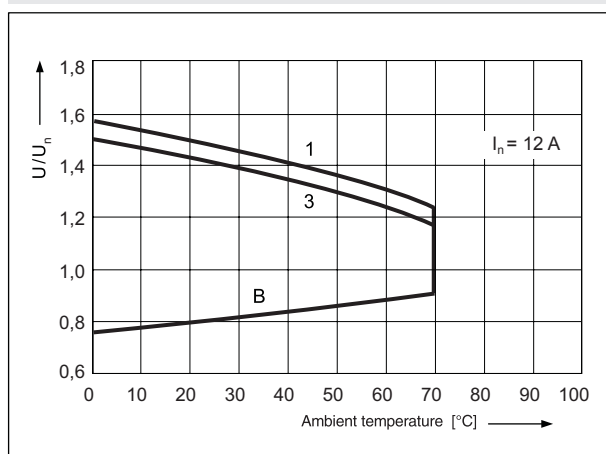
**Coil operating range - DC  
- sensitive version**

Fig. 6



**Coil operating range - AC 50 Hz**

Fig. 7



**Description of Fig. 5, 6 and 7**

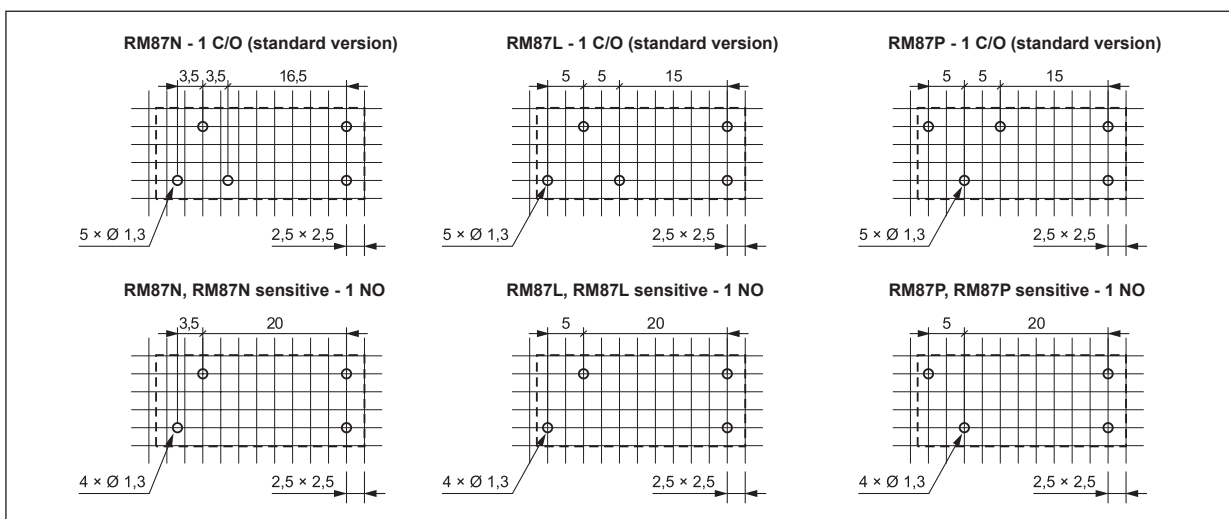
**A** - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

**B** - relations between make voltage and ambient temperature after initial coil heating up with  $1,1 U_n$  at continuous 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

### Pinout (solder side view)



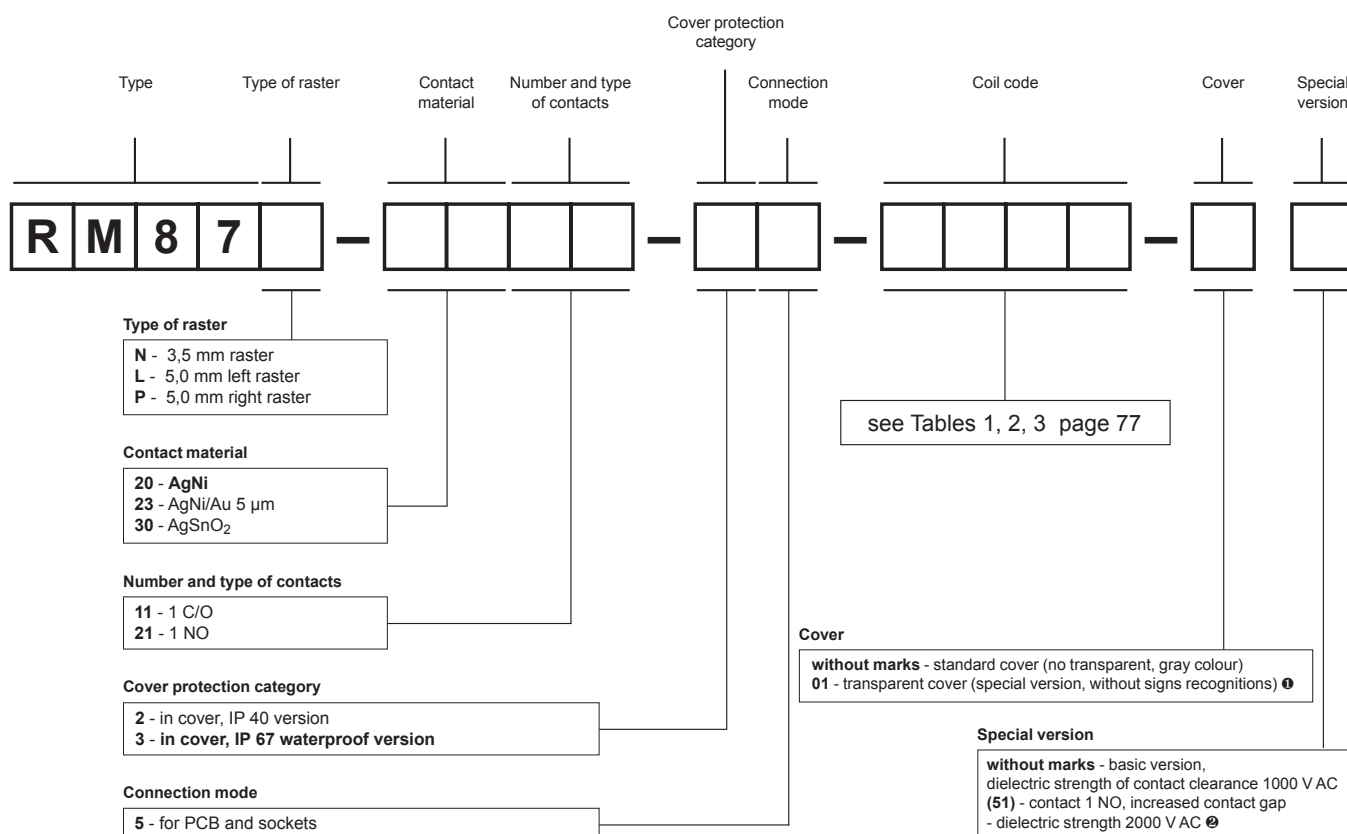
### Mounting

Relays **RM87N**, **RM87N sensitive** are designed for: • direct PCB mounting • screw terminals plug-in sockets **GZT92** ② and **GZM92** ② with clip **GZT80-0040** or **GZM80-0041**; plug-in sockets **GZS92** ② with clip **GZS-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 250) • plug-in sockets for PCB mounting **EC35** with clip **MP16-2**, MH16-2; plug-in sockets **GD35** with clip **MP16-2**, GD-0016, MH16-2.

Relays **RM87L**, **RM87L sensitive**, **RM87P**, **RM87P sensitive** are designed for: • direct PCB mounting • screw terminals plug-in sockets **GZT80** ② and **GZM80** ② with clip **GZT80-0040** or **GZM80-0041**; plug-in sockets **GZS80** ② with clip **GZS-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 250) • plug-in sockets for PCB mounting **EC50** with clip **MP16-2**, MH16-2; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, GD-0016, MH16-2.

② Plug-in sockets **GZT92**, **GZM92**, **GZS92** and **GZT80**, **GZM80**, **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 261).

### Ordering codes



Examples of ordering code:

- RM87N-2011-25-1012-01** relay **RM87N**, 3,5 mm raster, contact material AgNi, with one changeover contact, in transparent cover (special version, without signs recognitions) ① IP 40, for PCB and sockets, voltage version 12 V DC
- RM87N-2021-35-1024 (51)** relay **RM87N**, 3,5 mm raster, contact material AgNi, with one normally open contact, special version ② with increased contact gap, in standard cover (no transparent, gray colour) IP 67, for PCB and sockets, voltage version 24 V DC
- RM87P-3021-25-S012** relay **RM87P sensitive**, 5 mm right raster, contact material AgSnO<sub>2</sub>, with one normally open contact, in standard cover (no transparent, gray colour) IP 40, for PCB and sockets, sensitive voltage version 12 V DC



- Cadmium - free contacts
- Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- **For surface mounting SMT**
- AC and DC coils
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,     

## Contact data

|                                |      |                                                         |
|--------------------------------|------|---------------------------------------------------------|
| Number and type of contacts    |      | 1 C/O                                                   |
| Contact material               |      | <b>AgNi</b> , AgNi/Au 5 µm, AgSnO <sub>2</sub>          |
| Rated / max. switching voltage | AC   | 250 V / 440 V                                           |
| Min. switching voltage         |      | 5 V AgNi, 5 V AgNi/Au 5 µm, 10 V AgSnO <sub>2</sub>     |
| Rated load (capacity)          | AC1  | 12 A / 250 V AC                                         |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)                   |
|                                | AC3  | 750 W (single-phase motor)                              |
|                                | DC1  | 12 A / 24 V DC (see Fig. 3)                             |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300)                  |
| Min. switching current         |      | 5 mA AgNi, 2 mA AgNi/Au 5 µm, 10 mA AgSnO <sub>2</sub>  |
| Max. inrush current            |      | 25 A AgSnO <sub>2</sub>                                 |
| Rated current                  |      | 12 A                                                    |
| Max. breaking capacity         | AC1  | 3 000 VA                                                |
| Min. breaking capacity         |      | 0,3 W AgNi, 0,05 W AgNi/Au 5 µm, 1 W AgSnO <sub>2</sub> |
| Contact resistance             |      | ≤ 100 mΩ                                                |
| Max. operating frequency       |      |                                                         |
| • at rated load                | AC1  | 600 cycles/hour                                         |
| • no load                      |      | 72 000 cycles/hour                                      |

## Coil data

|                                   |             |                                                    |
|-----------------------------------|-------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 240 V                                       |
|                                   | DC          | 3 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC          | 0,75 VA                                            |
|                                   | DC          | 0,4 ... 0,48 W                                     |

## Insulation according to PN-EN 60664-1

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 µs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

## General data

|                                           |             |                                      |
|-------------------------------------------|-------------|--------------------------------------|
| Operating / release time (typical values) |             | 7 ms / 3 ms                          |
| Electrical life (number of cycles)        |             |                                      |
| • resistive AC1                           |             | > 10 <sup>5</sup> 12 A, 250 V AC     |
| • cos φ                                   |             | see Fig. 2                           |
| • DC L/R=40 ms                            |             | > 10 <sup>5</sup> 0,15 A, 220 V DC   |
| Mechanical life (cycles)                  |             | > 3 x 10 <sup>7</sup>                |
| Dimensions (L x W x H)                    |             | 29 x 12,7 x 15,7 (17,7) mm           |
| Weight                                    |             | 14 g                                 |
| Ambient temperature                       | • storage   | -40...+85 °C                         |
|                                           | • operating | AC: -40...+70 °C    DC: -40...+85 °C |
| Cover protection category                 |             | IP 40    PN-EN 60529                 |
| Environmental protection                  |             | RTII    PN-EN 116000-3               |
| Shock resistance                          |             | 30 g                                 |
| Vibration resistance                      |             | 10 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.

**Coil data - DC voltage version**

**Table 1**

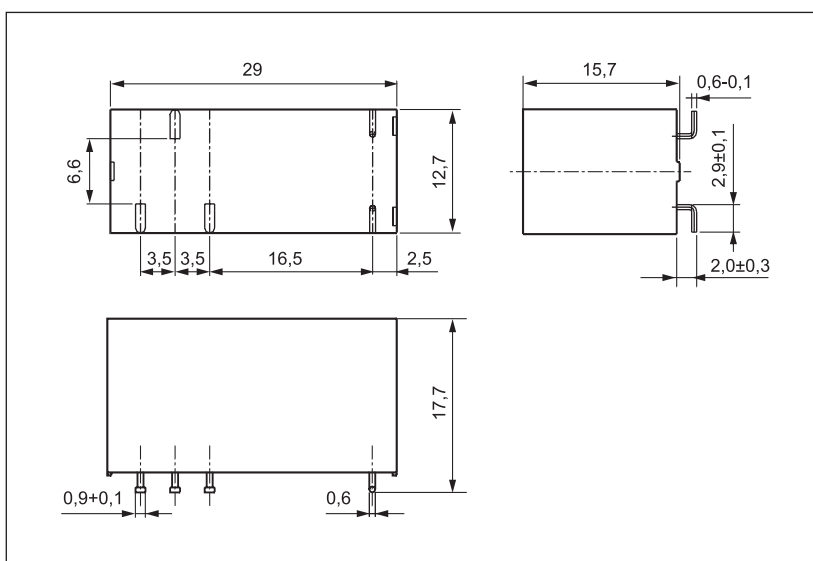
| Coil code | Rated voltage<br>V DC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance | Coil operating range<br>V DC |                 |
|-----------|-----------------------|-----------------------------------------|--------------------------|------------------------------|-----------------|
|           |                       |                                         |                          | min. (at 20 °C)              | max. (at 20 °C) |
| 1003      | 3                     | 22                                      | $\pm 10\%$               | 2,1                          | 7,6             |
| 1005      | 5                     | 60                                      | $\pm 10\%$               | 3,5                          | 12,7            |
| 1006      | 6                     | 90                                      | $\pm 10\%$               | 4,2                          | 15,3            |
| 1009      | 9                     | 200                                     | $\pm 10\%$               | 6,3                          | 22,9            |
| 1012      | 12                    | 360                                     | $\pm 10\%$               | 8,4                          | 30,6            |
| 1018      | 18                    | 710                                     | $\pm 10\%$               | 12,6                         | 45,9            |
| 1024      | 24                    | 1 440                                   | $\pm 10\%$               | 16,8                         | 61,2            |
| 1036      | 36                    | 3 140                                   | $\pm 10\%$               | 25,2                         | 91,8            |
| 1048      | 48                    | 5 700                                   | $\pm 10\%$               | 33,6                         | 122,4           |
| 1060      | 60                    | 7 500                                   | $\pm 10\%$               | 42,0                         | 153,0           |
| 1110      | 110                   | 25 200                                  | $\pm 10\%$               | 77,0                         | 280,0           |

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

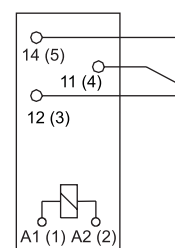
**Table 2**

| Coil code | Rated voltage<br>V AC | Coil resistance<br>at 20 °C<br>$\Omega$ | Acceptable<br>resistance | Coil operating range<br>V AC 50 Hz |                 |
|-----------|-----------------------|-----------------------------------------|--------------------------|------------------------------------|-----------------|
|           |                       |                                         |                          | min. (at 20 °C)                    | max. (at 20 °C) |
| 5012      | 12                    | 100                                     | $\pm 10\%$               | 9,6                                | 13,2            |
| 5024      | 24                    | 400                                     | $\pm 10\%$               | 19,2                               | 28,8            |
| 5048      | 48                    | 1 550                                   | $\pm 10\%$               | 38,4                               | 57,6            |
| 5060      | 60                    | 2 600                                   | $\pm 10\%$               | 48,0                               | 72,0            |
| 5110      | 110                   | 8 900                                   | $\pm 10\%$               | 88,0                               | 132,0           |
| 5115      | 115                   | 9 600                                   | $\pm 10\%$               | 92,0                               | 138,0           |
| 5120      | 120                   | 10 200                                  | $\pm 10\%$               | 96,0                               | 144,0           |
| 5220      | 220                   | 35 500                                  | $\pm 10\%$               | 176,0                              | 264,0           |
| 5230      | 230                   | 38 500                                  | $\pm 10\%$               | 184,0                              | 276,0           |
| 5240      | 240                   | 42 500                                  | $\pm 15\%$               | 192,0                              | 288,0           |

## Dimensions



## Connection diagram (pin side view)

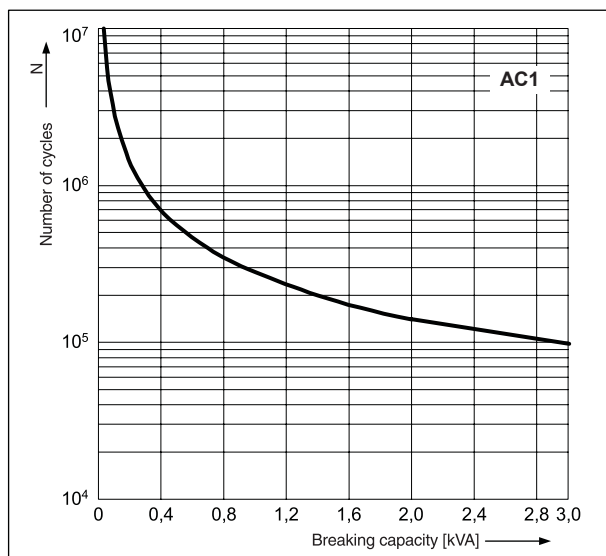


**RM87N  
1 C/O**

| Terminal (pin) | A1 (1);<br>A2 (2) | 12 (3); 11 (4);<br>14 (5) |
|----------------|-------------------|---------------------------|
| [mm]           | Ø 0,6             | 0,5 x 0,9                 |

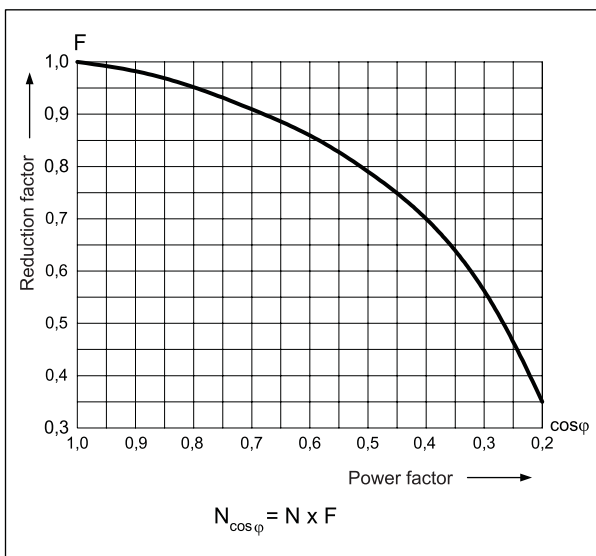
**Electrical life at AC resistive load.**  
Switching frequency: 600 cycles/hour

Fig. 1



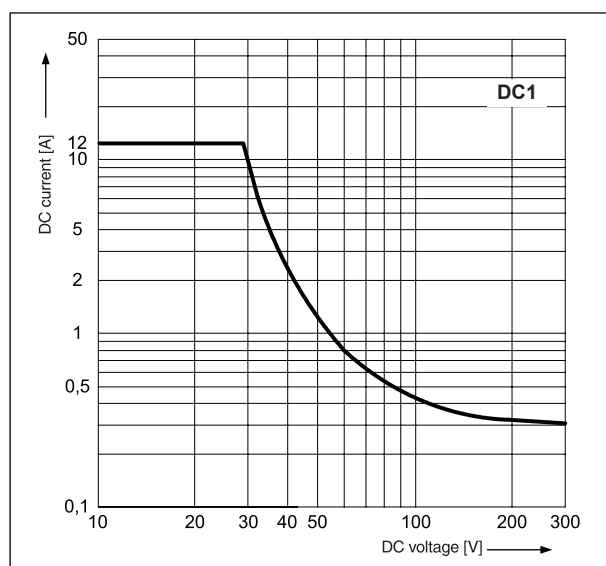
**Electrical life reduction factor at AC inductive load**

Fig. 2



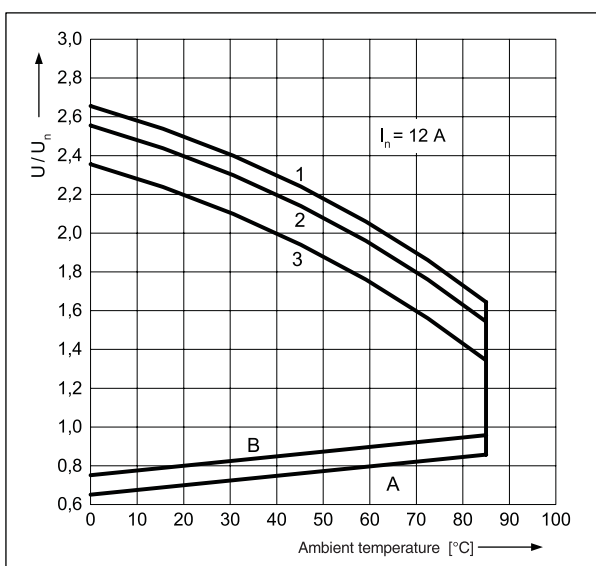
**Max. DC resistive load breaking capacity**

Fig. 3



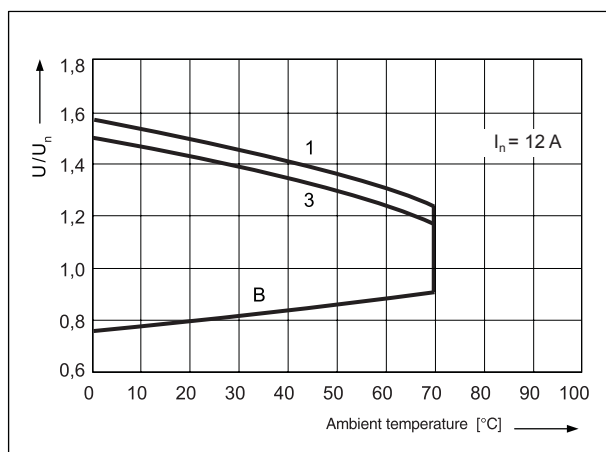
**Coil operating range - DC**

Fig. 4



**Coil operating range - AC 50 Hz**

Fig. 5



**Description of Fig. 4 and 5**

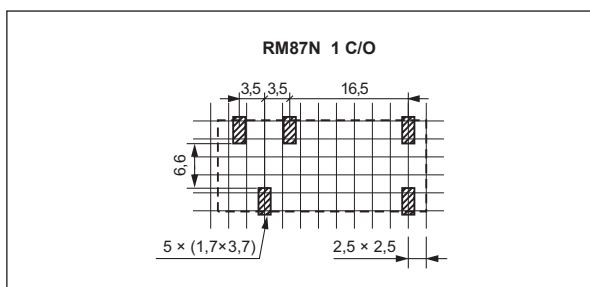
**A** - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

**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

## Soldering areas (solder side view)



## Mounting

Relays **RM87N SMT** are designed for surface mounting SMT.

## Ordering codes

| Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Type of raster | Contact material | Number and type of contacts | Cover protection category | Connection mode | Coil code |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|-----------------------------|---------------------------|-----------------|-----------|
| <b>R</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>M</b>       | <b>8</b>         | <b>7</b>                    | <b>N</b>                  |                 |           |
| <div> <div>Type of raster</div> <div>N - 3,5 mm raster</div> </div> <div> <div>Contact material</div> <div>                     20 - AgNi<br/>                     23 - AgNi/Au 5 µm<br/>                     30 - AgSnO<sub>2</sub> </div> </div> <div> <div>Number and type of contacts</div> <div>11 - 1 C/O</div> </div> <div> <div>Cover protection category</div> <div>2 - in cover, IP 40 version</div> </div> <div> <div>Connection mode</div> <div>M - for surface mounting SMT</div> </div> <div> <div>Coil code</div> <div>see Tables 1, 2 page 83</div> </div> |                |                  |                             |                           |                 |           |

Example of ordering code:

**RM87N-2011-2M-1012** relay **RM87N SMT**, 3,5 mm raster, contact material AgNi, with one changeover contact, in cover IP 40, for surface mounting SMT, voltage version 12 V DC



- Height 16,2 mm • IP 40 and IP 67
- For PCB (1 C/O, 1 NO, 1 NC) and plug-in sockets (1 C/O)
- Accessories: sockets and modules for 1 C/O
- DC coils
- Recyclable packing
- Terminals: 3,2 mm for version 1 C/O,  
5,0 mm for version 1 NO and 1 NC
- Recognitions, certifications, directives: RoHS,    

## Contact data

|                                |      |                                                                          |
|--------------------------------|------|--------------------------------------------------------------------------|
| Number and type of contacts    |      | 1 C/O, 1 NO, 1 NC                                                        |
| Contact material               |      | <b>AgSnO<sub>2</sub></b> , AgSnO <sub>2</sub> /Au 3 µm, AgCdO            |
| Rated / max. switching voltage | AC   | 250 V / 440 V                                                            |
| Min. switching voltage         |      | 10 V AgSnO <sub>2</sub> , 5 V AgSnO <sub>2</sub> /Au 3 µm, 10 V AgCdO    |
| Rated load (capacity)          | AC1  | 8 A / 250 V AC                                                           |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)                                    |
|                                | AC3  | 370 W (single-phase motor, 1/2 HP / 250 V AC UL 508)                     |
|                                | DC1  | 8 A / 24 V DC (see Fig. 1)                                               |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300)                                   |
| Min. switching current         |      | 10 mA AgSnO <sub>2</sub> , 2 mA AgSnO <sub>2</sub> /Au 3 µm, 5 mA AgCdO  |
| Max. inrush current            |      | 15 A                                                                     |
| Rated current                  |      | 8 A                                                                      |
| Max. breaking capacity         | AC1  | 2 000 VA                                                                 |
| Min. breaking capacity         |      | 1 W AgSnO <sub>2</sub> , 0,05 W AgSnO <sub>2</sub> /Au 3 µm, 0,5 W AgCdO |
| Contact resistance             |      | ≤ 100 mΩ                                                                 |
| Max. operating frequency       |      |                                                                          |
| • at rated load                | AC1  | 600 cycles/hour                                                          |
| • no load                      |      | 72 000 cycles/hour                                                       |

## Coil data

|                                   |    |                          |
|-----------------------------------|----|--------------------------|
| Rated voltage                     | DC | 5 ... 48 V               |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1              |
| Rated power consumption           | DC | 0,22...0,3 W             |

## Insulation according to PN-EN 60664-1

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 µs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 4 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 8 mm                                               |
| • creepage                  |  | ≥ 8 mm                                               |

## General data

|                                           |             |                                                              |
|-------------------------------------------|-------------|--------------------------------------------------------------|
| Operating / release time (typical values) |             | 10 ms / 5 ms                                                 |
| Electrical life                           |             |                                                              |
| • resistive AC1                           |             | > 10 <sup>5</sup> 8 A, 250 V AC                              |
| • cos φ                                   |             | see Fig. 3                                                   |
| Mechanical life (cycles)                  |             | > 2 x 10 <sup>7</sup>                                        |
| Motor load according to UL 508            |             | 1/4 HP    120 V AC, single-phase motor                       |
| Dimensions (L x W x H)                    |             | 1 C/O:    30 x 10 x 16,2 mm<br>1 NO, 1 NC: 28 x 10 x 16,2 mm |
| Weight                                    |             | 11 g                                                         |
| Ambient temperature                       | • storage   | -40...+85 °C                                                 |
|                                           | • operating | -40...+80 °C                                                 |
| Cover protection category                 |             | IP 40 or <b>IP 67</b> PN-EN 60529                            |
| Environmental protection                  |             | RTII      PN-EN 116000-3                                     |
| Shock resistance                          |             | 20 g                                                         |
| Vibration resistance                      |             | 10 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.

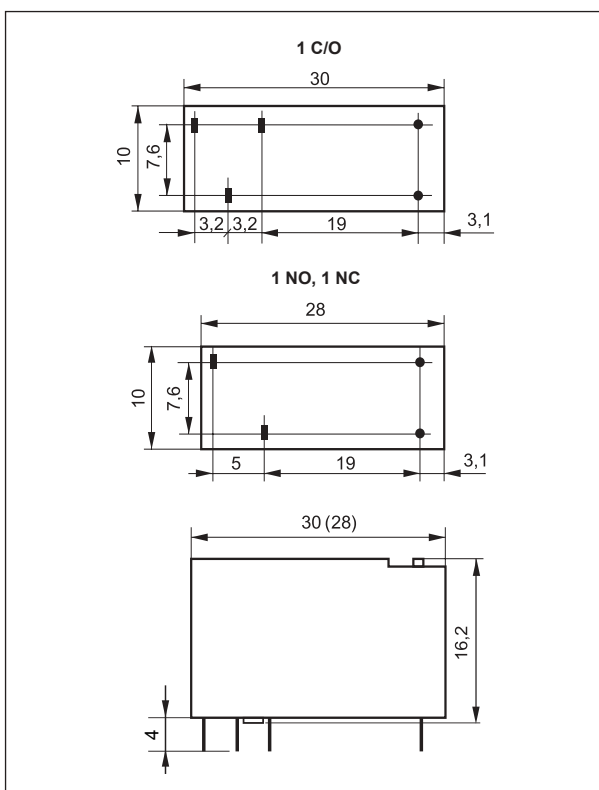
Coil data - DC voltage version

Table 1

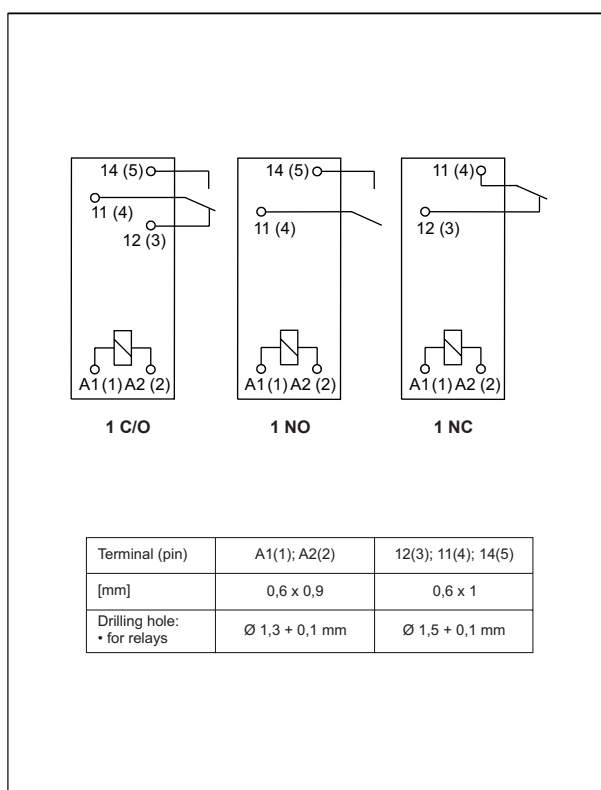
| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|-------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|             |                       |                                                    | min.                                  | max.        |
| 1005        | 5                     | 110                                                | 3,5                                   | 12,0        |
| 1006        | 6                     | 160                                                | 4,2                                   | 14,5        |
| 1009        | 9                     | 360                                                | 6,3                                   | 22,0        |
| <b>1012</b> | <b>12</b>             | <b>660</b>                                         | <b>8,4</b>                            | <b>29,5</b> |
| 1018        | 18                    | 1 500                                              | 12,6                                  | 44,0        |
| <b>1024</b> | <b>24</b>             | <b>2 200</b>                                       | <b>16,8</b>                           | <b>54,0</b> |
| 1048        | 48                    | 8 000                                              | 33,6                                  | 102,0       |

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

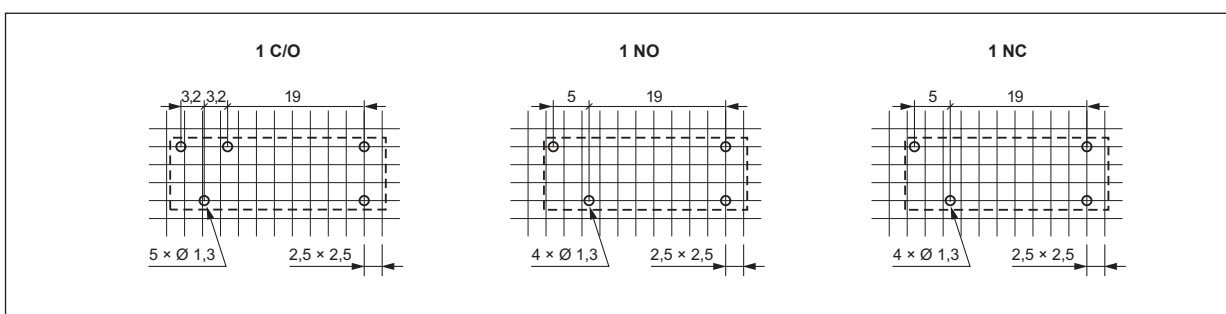
## Dimensions



## Connection diagrams (pin side view)

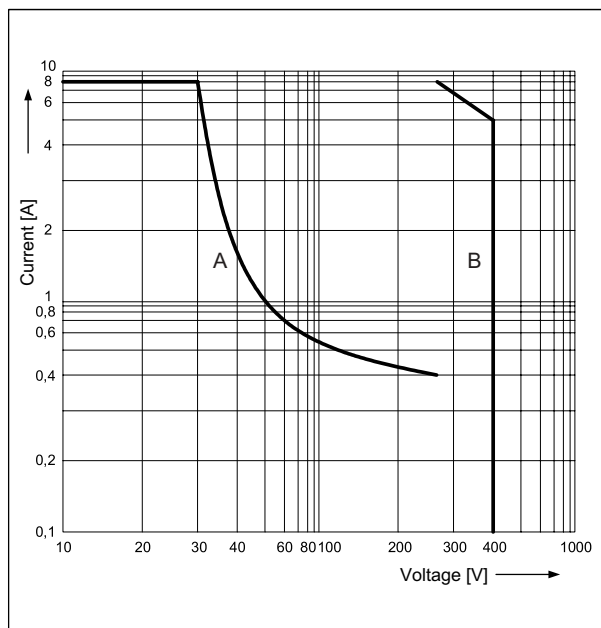


## Pinout (solder side view)



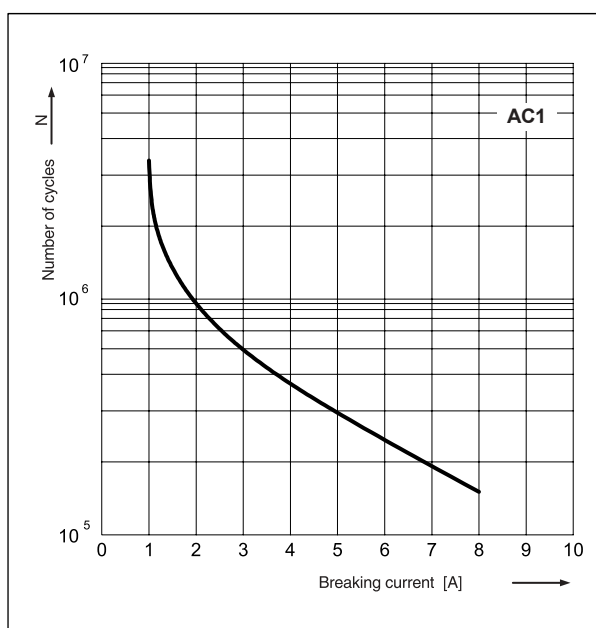
**Max. breaking capacity**  
**A - resistive load DC1**  
**B - resistive load AC1**

Fig. 1



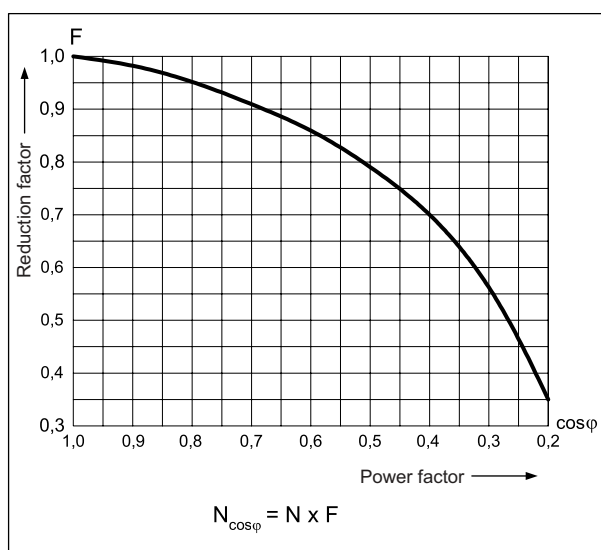
**Electrical life at AC1 resistive load for version 1 NO**

Fig. 2



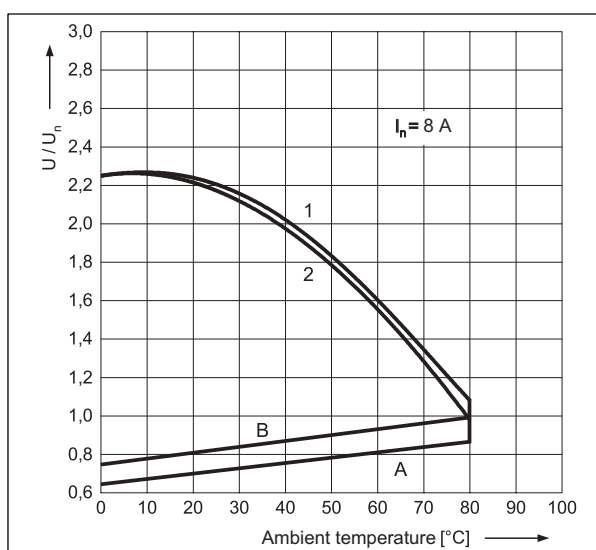
**Electrical life reduction factor at AC inductive load**

Fig. 3



**Coil operating range - DC**

Fig. 4



### Description of Fig. 4

**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** - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

- 1** - no load
- 2** - rated load

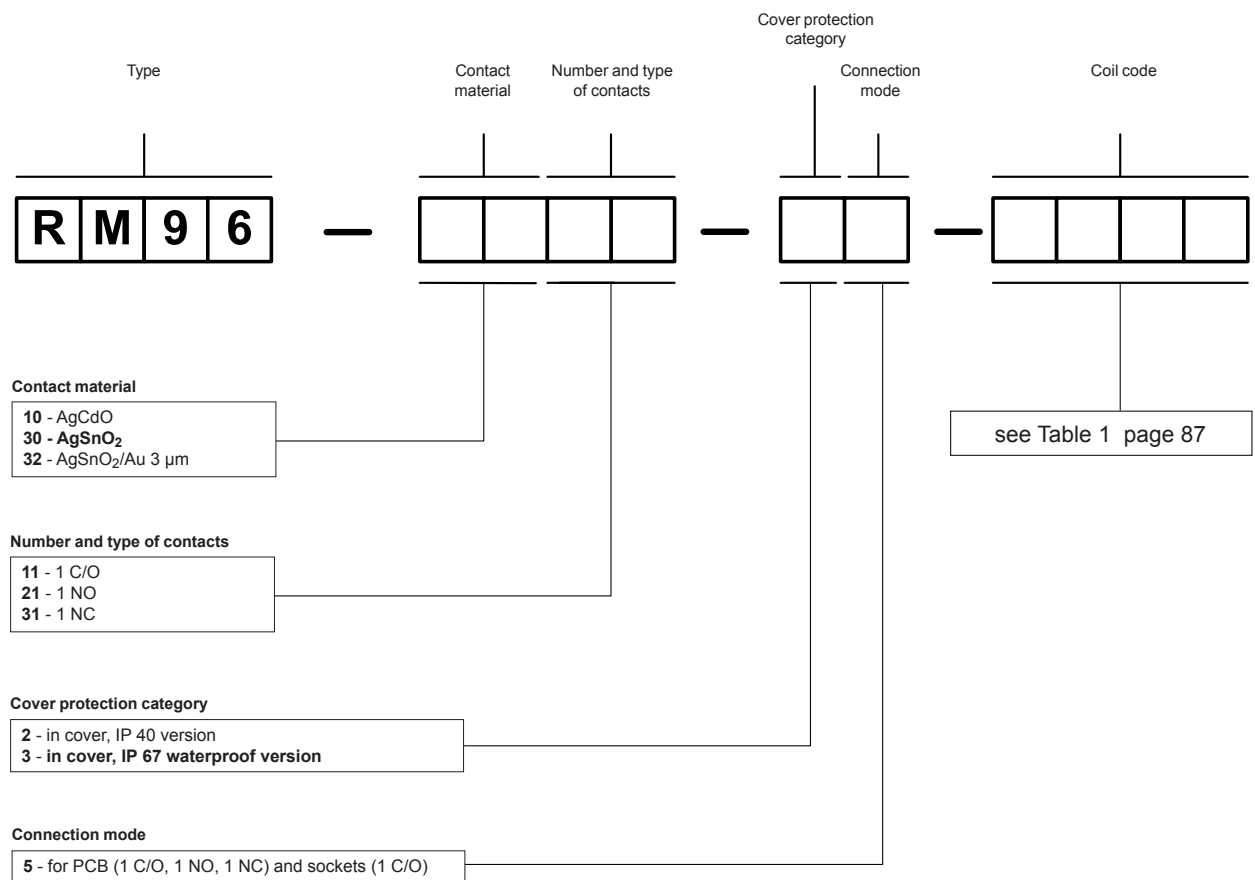
## Mounting

Relays **RM96 1 C/O** (one changeover contact) are designed for: • direct PCB mounting • screw terminals plug-in sockets **ES 32** with clip **MS16** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 250).

Relays **RM96 1 NO** (one normally open contact) and **RM96 1 NC** (one normally closed contact) are designed for direct PCB mounting.

Plug-in sockets **ES 32** may be linked with interconnection strip type **ZGGZ80** (see page 261).

## Ordering codes



Examples of ordering codes:

**RM96-3011-35-1012** relay **RM96**, contact material AgSnO<sub>2</sub>, with one changeover contact, in cover IP 67, for PCB and sockets, voltage version 12 V DC

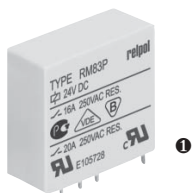
**RM96-3031-25-1024** relay **RM96**, contact material AgSnO<sub>2</sub>, with one normally closed contact, in cover IP 40, for PCB, voltage version 24 V DC

## Print on relay cover

Type marking on relays cover **RM96** do not match the ordering codes.

Example of marking:

**RM96P-24-W** **RM96P** - relay **RM96**, with one changeover contact  
**24** - voltage version 24 V DC  
**W** - in cover, IP 67 waterproof version



- Miniature dimensions • General purpose relays

- **Version 1 NO AgSnO<sub>2</sub> for special loads:**  
**resistance to inrush current 120 A (20 ms)**

- Protection category IP 40 or IP 67

- For PCB and plug-in sockets

- DC coils - standard and sensitive

- Recognitions, certifications, directives: RoHS,     

## Contact data

|                                |                                   |                                                                                                                                                               |
|--------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number and type of contacts    |                                   | 1 C/O, 1 NO, 1 NC                                                                                                                                             |
| Contact material               |                                   | <b>AgSnO<sub>2</sub></b> , AgCdO, AgCdO/Au 0,2 µm                                                                                                             |
| Rated / max. switching voltage | AC                                | 250 V / 440 V                                                                                                                                                 |
| Min. switching voltage         |                                   | 10 V AgSnO <sub>2</sub> , 10 V AgCdO, 10 V AgCdO/Au 0,2 µm                                                                                                    |
| Rated load (capacity)          | AC1<br>AC15<br>AC3<br>DC1<br>DC13 | 16 A / 250 V AC<br>6 A / 120 V      3 A / 240 V (A300)<br>550 W (single-phase motor)<br>16 A / 24 V DC (see Fig. 3)<br>0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |                                   | 10 mA AgSnO <sub>2</sub> , 5 mA AgCdO, 5 mA AgCdO/Au 0,2 µm                                                                                                   |
| Max. inrush current            |                                   | 30 A 1 NO, AgSnO <sub>2</sub>                                                                                                                                 |
| Rated current                  |                                   | 16 A                                                                                                                                                          |
| Max. breaking capacity         | AC1                               | 4 000 VA                                                                                                                                                      |
| Min. breaking capacity         |                                   | 1 W AgSnO <sub>2</sub> , 0,5 W AgCdO, 0,5 W AgCdO/Au 0,2 µm                                                                                                   |
| Contact resistance             |                                   | ≤ 100 mΩ                                                                                                                                                      |
| Max. operating frequency       |                                   |                                                                                                                                                               |
| • at rated load                | AC1                               | 600 cycles/hour                                                                                                                                               |
| • no load                      |                                   | 72 000 cycles/hour                                                                                                                                            |

## Coil data

|                                   |    |                                                                                                    |
|-----------------------------------|----|----------------------------------------------------------------------------------------------------|
| Rated voltage                     | DC | 5 ... 110 V standard version    110 V sensitive version                                            |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub>                                                                           |
| Operating range of supply voltage |    | see Table 1                                                                                        |
| Rated power consumption           | DC | 0,6 W 5 ... 60 V standard version<br>0,6 W 110 V sensitive version<br>0,9 W 110 V standard version |

## Insulation according to PN-EN 60664-1

|                             |  |                                                   |
|-----------------------------|--|---------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                          |
| Dielectric strength         |  |                                                   |
| • between coil and contacts |  | 4 000 V AC type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                   |
| • clearance                 |  | ≥ 8 mm                                            |
| • creepage                  |  | ≥ 8 mm                                            |

## General data

|                                           |                          |                                                                    |
|-------------------------------------------|--------------------------|--------------------------------------------------------------------|
| Operating / release time (typical values) |                          | 7 ms / 3 ms                                                        |
| Electrical life                           |                          |                                                                    |
| • resistive AC1                           |                          | > 10 <sup>5</sup> 16 A, 250 V AC                                   |
| • at incandescent lamp load               |                          | > 10 <sup>5</sup> 1000 W, 230 V AC    1 NO, AgSnO <sub>2</sub>     |
|                                           |                          | > 3 x 10 <sup>4</sup> 3000 W, 230 V AC    1 NO, AgSnO <sub>2</sub> |
| • at halogen lamp load                    |                          | > 10 <sup>4</sup> 2500 W, 230 V AC    1 NO, AgSnO <sub>2</sub>     |
| • cos φ                                   |                          | see Fig. 2                                                         |
| • L/R=40 ms                               |                          | > 10 <sup>5</sup> 0,12 A, 220 V DC                                 |
| Mechanical life (cycles)                  |                          | > 3 x 10 <sup>7</sup>                                              |
| Dimensions (L x W x H)                    |                          | IP 40: 29,2 x 13,1 x 25,1 mm<br>IP 67: 29,2 x 13,1 x 25,6 mm       |
| Weight                                    |                          | 18 g                                                               |
| Ambient temperature                       | • storage<br>• operating | -40...+85 °C<br>-40...+70 °C                                       |
| Cover protection category                 |                          | <b>IP 40</b> or IP 67      PN-EN 60529                             |
| Shock resistance                          |                          | 20 g                                                               |
| Vibration resistance                      |                          | 10 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.

❶ Special version available: relays in transparent cover - see "Ordering codes".

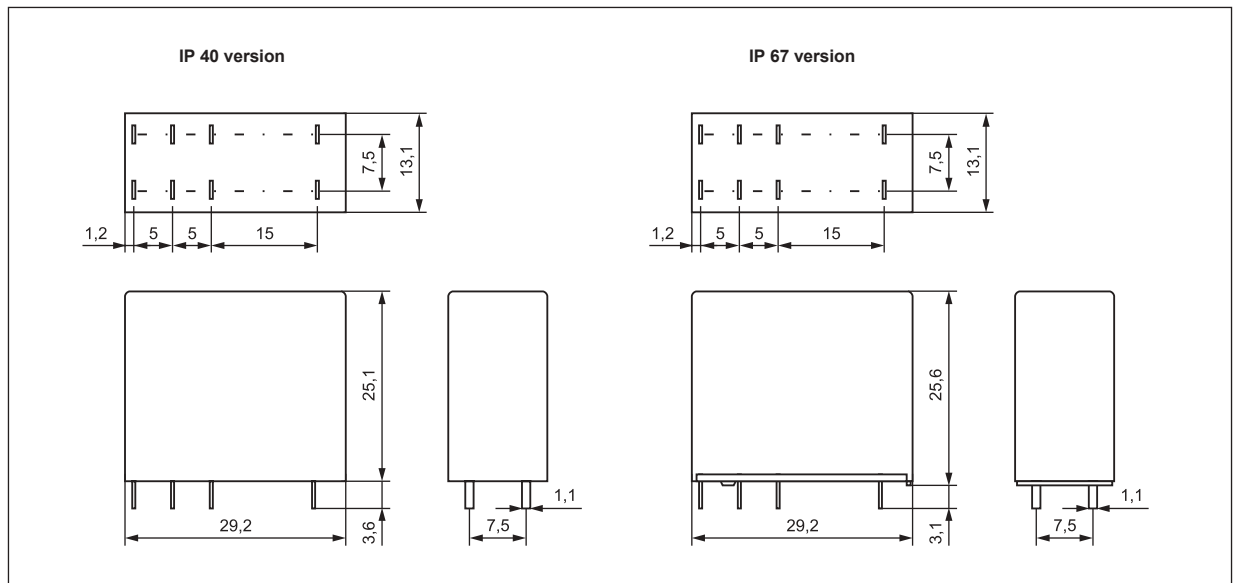
Coil data - DC voltage version

Table 1

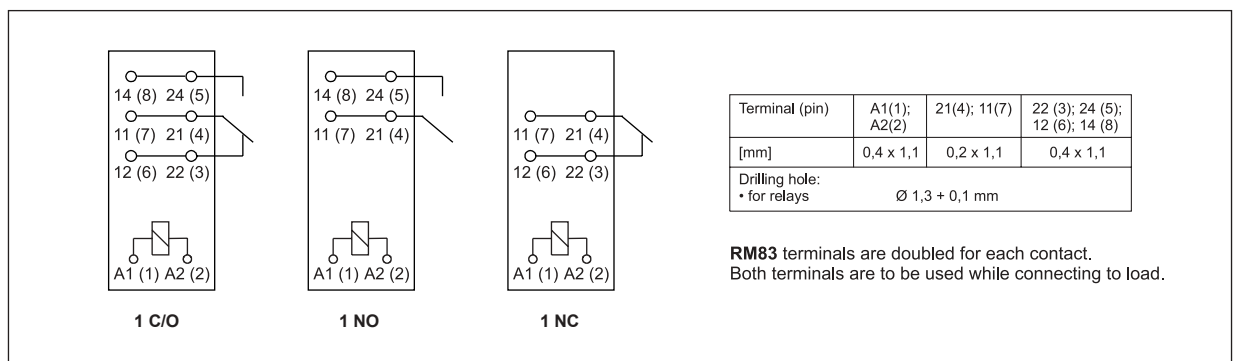
| Coil code           |                      | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|---------------------|----------------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
| standard<br>version | sensitive<br>version |                       |                                                    | min.                                  | max.        |
| 1005                | —                    | 5                     | 49                                                 | 3,5                                   | 8,9         |
| 1006                | —                    | 6                     | 68                                                 | 4,2                                   | 10,6        |
| 1009                | —                    | 9                     | 110                                                | 6,3                                   | 15,9        |
| <b>1012</b>         | —                    | <b>12</b>             | <b>260</b>                                         | <b>8,4</b>                            | <b>21,2</b> |
| 1018                | —                    | 18                    | 550                                                | 12,6                                  | 31,8        |
| <b>1024</b>         | —                    | <b>24</b>             | <b>1 100</b>                                       | <b>16,8</b>                           | <b>42,5</b> |
| 1036                | —                    | 36                    | 2 100                                              | 25,2                                  | 63,7        |
| 1048                | —                    | 48                    | 4 400                                              | 33,6                                  | 85,0        |
| 1060                | —                    | 60                    | 7 000                                              | 42,0                                  | 106,2       |
| 1110                | —                    | 110                   | 13 000                                             | 77,0                                  | 140,0       |
| —                   | S110                 | 110                   | 20 500                                             | 77,0                                  | 188,0       |

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

## Dimensions

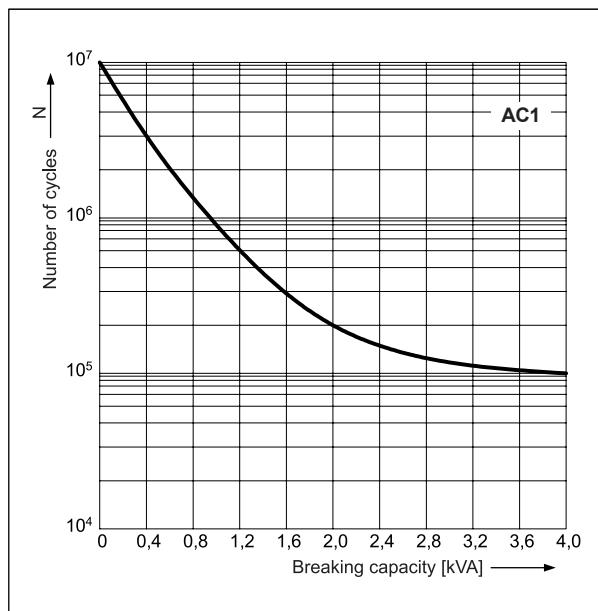


## Connection diagrams (pin side view)



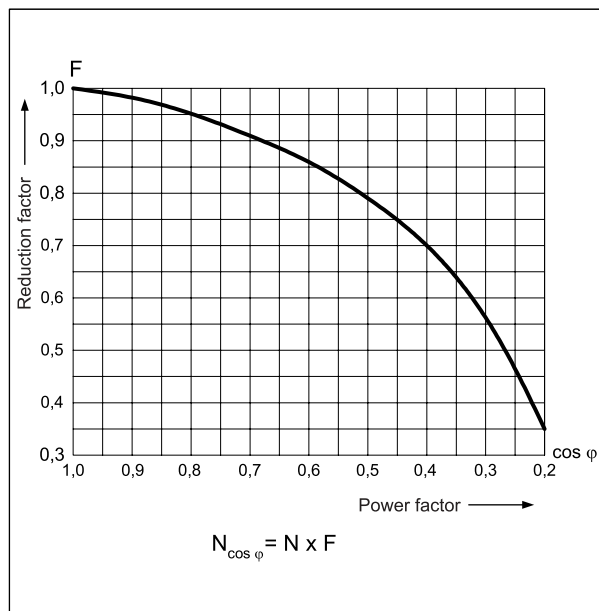
Electrical life at AC resistive load.  
Switching frequency: 600 cycles/hour

Fig. 1



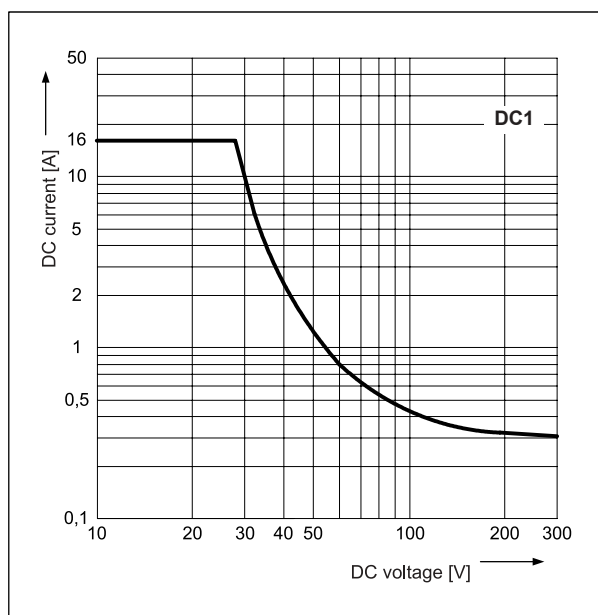
Electrical life reduction factor  
at AC inductive load

Fig. 2



Max. DC resistive load breaking capacity

Fig. 3

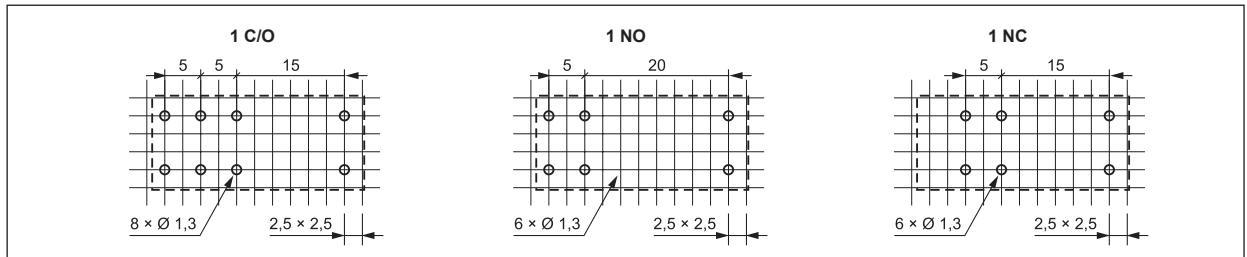


## Mounting

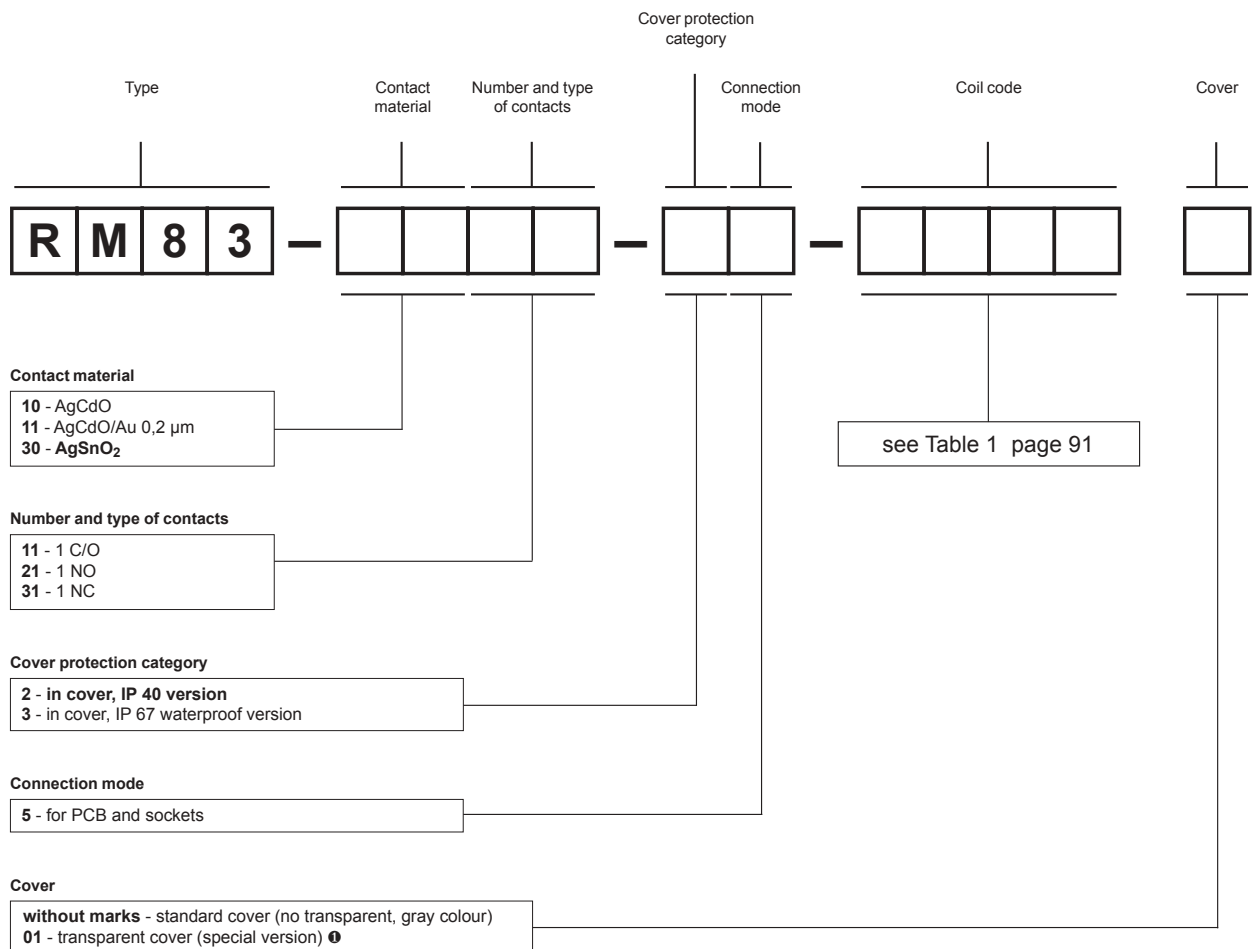
Relays **RM83** are designed for:

- direct PCB mounting
- plug-in sockets for PCB mounting **EC50** with clip **MP25-2**, MH25-2, GD-0025, RM81-0001; plug-in sockets **PW80** with clip **MH25-2**, GD-0025, RM81-0001; plug-in sockets **GD50** with clip **MP25-2**, GD-0025, MH25-2, RM81-0001.

## Pinout (solder side view)

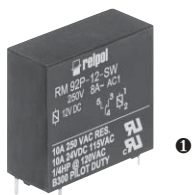


## Ordering codes



Examples of ordering code:

- RM83-3011-25-1024** relay **RM83**, contact material AgSnO<sub>2</sub>, with one changeover contact, in standard cover (no transparent, gray colour) IP 40, for PCB and sockets, voltage version 24 V DC
- RM83-3011-25-S110** relay **RM83**, contact material AgSnO<sub>2</sub>, with one changeover contact, in standard cover (no transparent, gray colour) IP 40, for PCB and sockets, sensitive voltage version 110 V DC
- RM83-3021-35-1012-01** relay **RM83**, contact material AgSnO<sub>2</sub>, with one normally open contact, in transparent cover (special version) ① IP 67, for PCB and sockets, voltage version 12 V DC



- Miniature dimensions
- General purpose relays
- Protection category IP 40 or IP 67
- For PCB and plug-in sockets
- DC coils - standard and sensitive
- Recognitions, certifications, directives: RoHS,  

## Contact data

|                                |            |                                                         |
|--------------------------------|------------|---------------------------------------------------------|
| Number and type of contacts    |            | 1 C/O, 1 NO, 1 NC                                       |
| Contact material               |            | <b>AgCu/Au 0,2 µm</b> , AgCdO, AgCdO/Au 3 µm            |
| Rated / max. switching voltage | AC         | 250 V / 440 V                                           |
| Min. switching voltage         |            | 10 V AgCu/Au 0,2 µm, 10 V AgCdO, 5 V AgCdO/Au 3 µm      |
| Rated load                     | AC1<br>DC1 | 8 A / 250 V AC<br>8 A / 24 V DC                         |
| Min. switching current         |            | 5 mA AgCu/Au 0,2 µm, 5 mA AgCdO, 2 mA AgCdO/Au 3 µm     |
| Rated current                  |            | 8 A                                                     |
| Max. breaking capacity         | AC1        | 2 000 VA                                                |
| Min. breaking capacity         |            | 0,5 W AgCu/Au 0,2 µm, 0,5 W AgCdO, 0,05 W AgCdO/Au 3 µm |
| Contact resistance             |            | ≤ 100 mΩ                                                |
| Max. operating frequency       |            |                                                         |
| • at rated load                | AC1        | 600 cycles/hour                                         |
| • no load                      |            | 72 000 cycles/hour                                      |

## Coil data

|                                   |    |                                                             |
|-----------------------------------|----|-------------------------------------------------------------|
| Rated voltage                     | DC | 6 ... 80 V standard version    5 ... 60 V sensitive version |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub>                                    |
| Operating range of supply voltage |    | see Tables 1, 2                                             |
| Rated power consumption           | DC | 0,8 W standard version<br>0,5 W sensitive version           |

## Insulation according to PN-EN 60664-1

|                             |  |                                                   |
|-----------------------------|--|---------------------------------------------------|
| Insulation rated voltage    |  | 400 V AC                                          |
| Dielectric strength         |  |                                                   |
| • between coil and contacts |  | 4 000 V AC type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                   |
| • clearance                 |  | ≥ 8 mm                                            |
| • creepage                  |  | ≥ 8 mm                                            |

## General data

|                                           |                          |                                                        |
|-------------------------------------------|--------------------------|--------------------------------------------------------|
| Operating / release time (typical values) |                          | 6 ms / 2 ms                                            |
| Electrical life                           |                          |                                                        |
| • resistive AC1                           |                          | > 2 x 10 <sup>5</sup> 8 A, 250 V AC                    |
| • cos φ                                   |                          | see Fig. 2                                             |
| Mechanical life (cycles)                  |                          | > 3 x 10 <sup>7</sup>                                  |
| Motor load according to UL 508            |                          | 1/4 HP 120 V AC, single-phase motor                    |
| Dimensions (L x W x H)                    |                          | IP 40: 28 x 11,5 x 26 mm<br>IP 67: 28 x 11,5 x 26,5 mm |
| Weight                                    |                          | 17 g                                                   |
| Ambient temperature                       | • storage<br>• operating | -40...+85 °C<br>-40...+70 °C                           |
| Cover protection category                 |                          | <b>IP 40</b> or IP 67    PN-EN 60529                   |
| Shock resistance                          |                          | 20 g                                                   |
| Vibration resistance                      |                          | 10 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.

❶ Special version available: relays in transparent cover - see "Ordering codes".

**Coil data - standard DC voltage version**

**Table 1**

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|-------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|             |                       |                                                    | min.                                  | max.        |
| 1006        | 6                     | 58                                                 | 4,0                                   | 9,4         |
| 1012        | 12                    | 170                                                | 7,4                                   | 16,2        |
| <b>1024</b> | <b>24</b>             | <b>740</b>                                         | <b>15,4</b>                           | <b>33,6</b> |
| 1036        | 36                    | 1 600                                              | 23,5                                  | 50,0        |
| 1048        | 48                    | 3 200                                              | 31,0                                  | 70,0        |
| 1060        | 60                    | 5 000                                              | 38,0                                  | 87,0        |
| 1080        | 80                    | 10 000                                             | 55,0                                  | 125,0       |

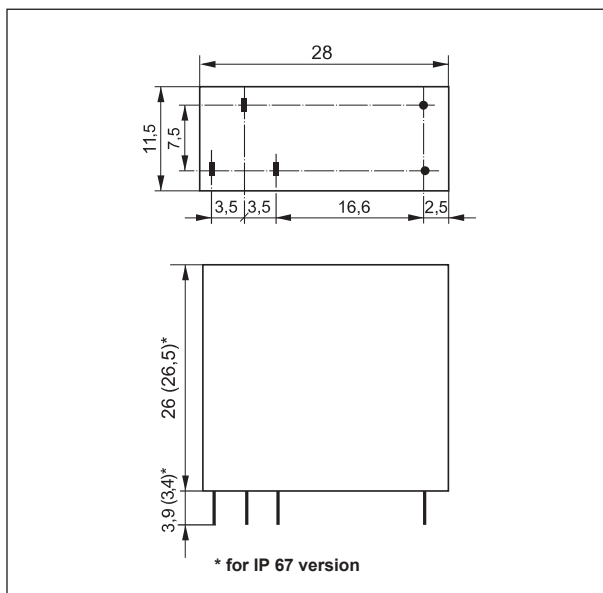
The data in bold type pertain to the standard versions of the relays.

**Coil data - sensitive DC voltage version**

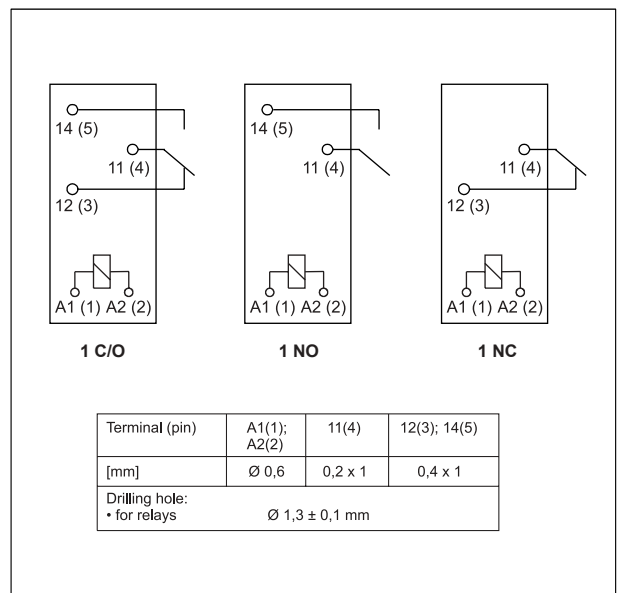
**Table 2**

| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |       |
|-----------|-----------------------|----------------------------------------------------|---------------------------------------|-------|
|           |                       |                                                    | min.                                  | max.  |
| S005      | 5                     | 47                                                 | 3,2                                   | 8,5   |
| S006      | 6                     | 80                                                 | 4,2                                   | 11,0  |
| S012      | 12                    | 330                                                | 8,3                                   | 22,5  |
| S024      | 24                    | 1 200                                              | 16,8                                  | 43,0  |
| S036      | 36                    | 2 700                                              | 25,0                                  | 64,0  |
| S048      | 48                    | 4 700                                              | 32,8                                  | 85,0  |
| S060      | 60                    | 7 200                                              | 42,0                                  | 105,0 |

## Dimensions



## Connection diagrams (pin side view)

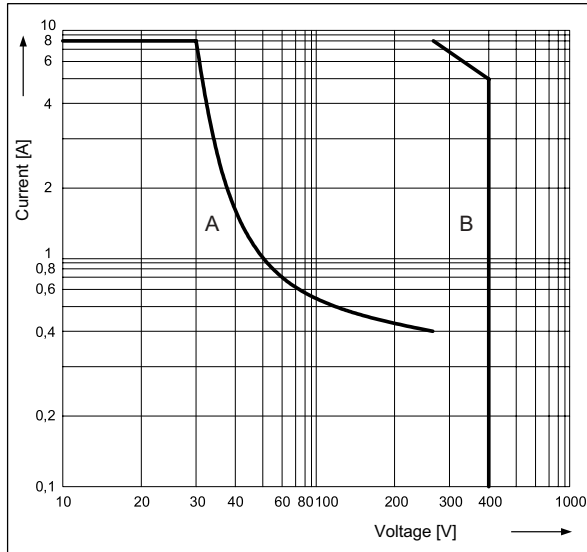


## Mounting

Relays **RM92** are designed for: • direct PCB mounting • plug-in sockets for PCB mounting **EC35** with clip **MP25-2**, MH25-2, GD-0025, RM81-0001; plug-in sockets **GD35** with clip **MP25-2**, GD-0025, MH25-2, RM81-0001.

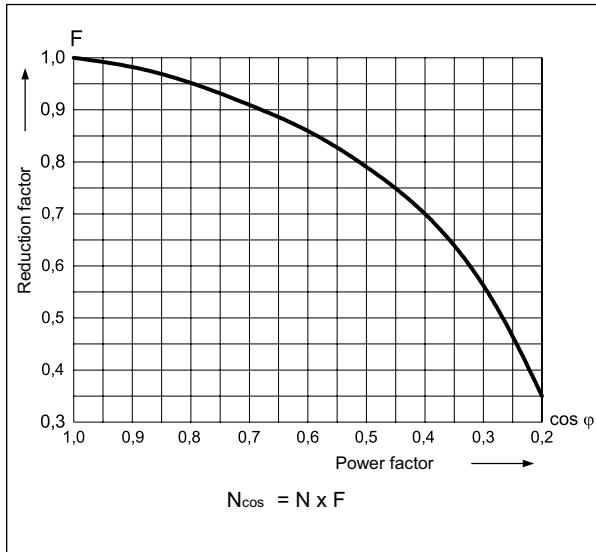
**Max. breaking capacity**  
**A - resistive load DC1**  
**B - resistive load AC1**

Fig. 1



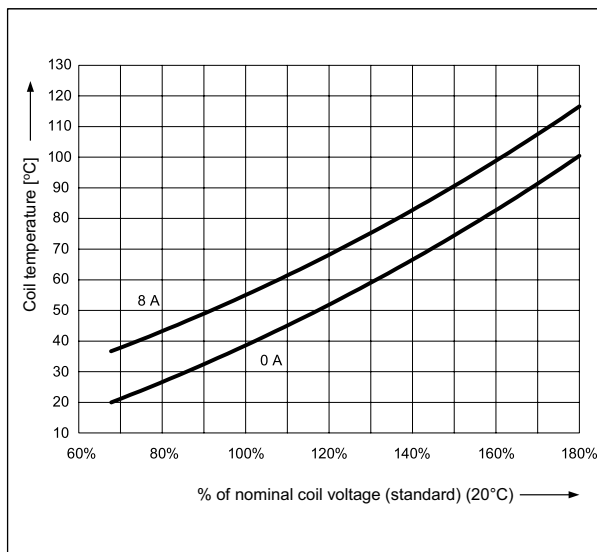
**Electrical life reduction factor**  
**at AC inductive load**

Fig. 2



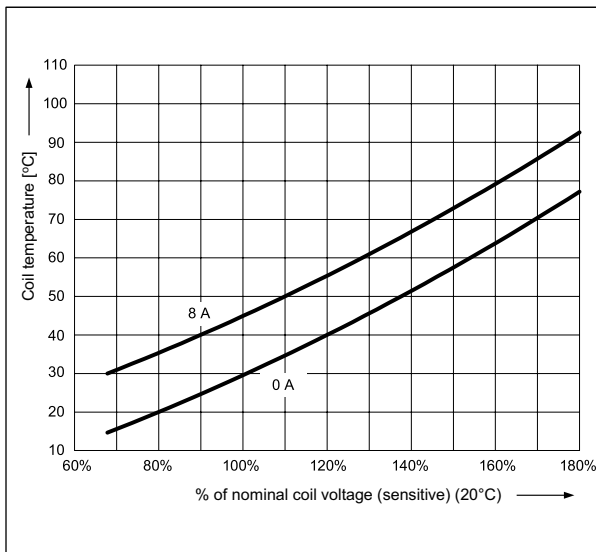
**Coil temperature rise - standard version**

Fig. 3

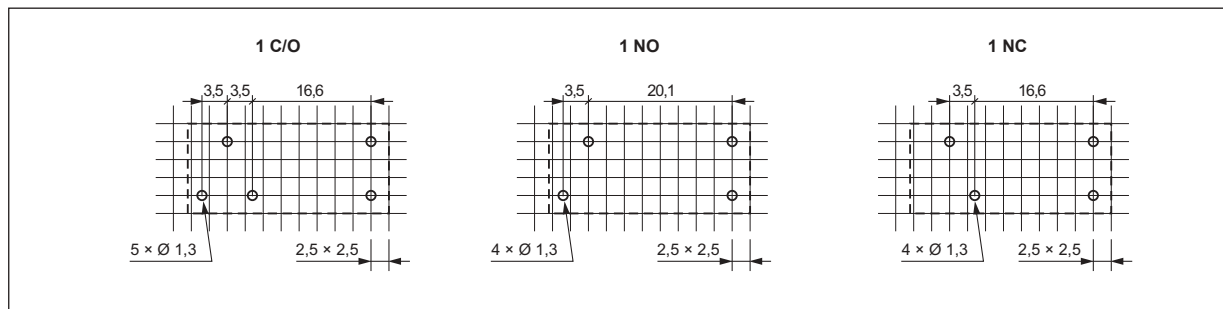


**Coil temperature rise - sensitive version**

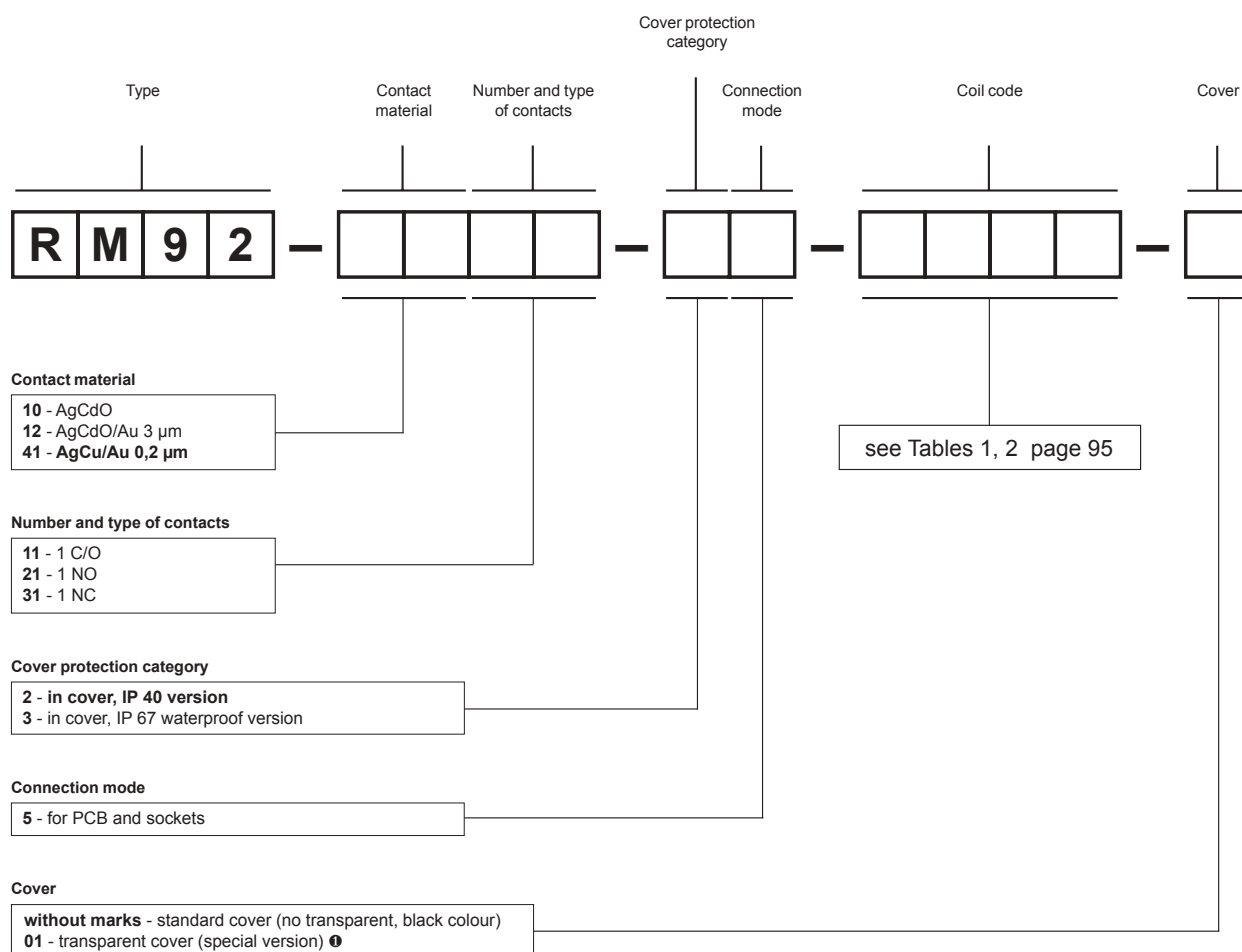
Fig. 4



**Pinout (solder side view)**



## Ordering codes



Examples of ordering codes:

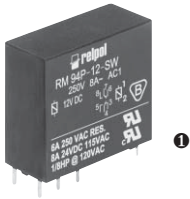
|                             |                                                                                                                                                                                                     |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>RM92-4111-25-1024</b>    | relay <b>RM92</b> , contact material AgCu/Au 0,2 µm, with one changeover contact, in standard cover (no transparent, black colour) IP 40, for PCB and sockets, voltage version 24 V DC              |
| <b>RM92-4121-35-S024</b>    | relay <b>RM92</b> , contact material AgCu/Au 0,2 µm, with one normally open contact, in standard cover (no transparent, black colour) IP 67, for PCB and sockets, sensitive voltage version 24 V DC |
| <b>RM92-4131-35-1012-01</b> | relay <b>RM92</b> , contact material AgCu/Au 0,2 µm, with one normally closed contact, in transparent cover (special version) ❶ IP 67, for PCB and sockets, voltage version 12 V DC                 |

## Print on relay cover

Type marking on relays cover **RM92** do not match the ordering codes.

Examples of marking:

|                     |                                                                |
|---------------------|----------------------------------------------------------------|
| <b>RM92P-24-W</b>   | <b>RM92P</b> - relay <b>RM92</b> , with one changeover contact |
|                     | <b>24</b> - voltage version 24 V DC                            |
|                     | <b>W</b> - in cover, IP 67 waterproof version                  |
| <b>RM92P-24-S-W</b> | <b>RM92P</b> - relay <b>RM92</b> , with one changeover contact |
|                     | <b>24</b> - voltage version 24 V DC                            |
|                     | <b>S</b> - sensitive version                                   |
|                     | <b>W</b> - in cover, IP 67 waterproof version                  |



- Miniature dimensions
- General purpose relays
- Protection category IP 40 or IP 67
- For PCB and plug-in sockets
- DC coils - standard and sensitive
- Recognitions, certifications, directives: RoHS,    

## Contact data

|                                |     |                                                         |
|--------------------------------|-----|---------------------------------------------------------|
| Number and type of contacts    |     | 2 C/O, 2 NO, 2 NC                                       |
| Contact material               |     | <b>AgCu/Au 0,2 µm</b> , AgCdO, AgCdO/Au 3 µm            |
| Rated / max. switching voltage | AC  | 250 V / 440 V                                           |
| Min. switching voltage         |     | 10 V AgCu/Au 0,2 µm, 10 V AgCdO, 5 V AgCdO/Au 3 µm      |
| Rated load                     | AC1 | 8 A / 250 V AC                                          |
|                                | DC1 | 8 A / 24 V DC                                           |
| Min. switching current         |     | 5 mA AgCu/Au 0,2 µm, 5 mA AgCdO, 2 mA AgCdO/Au 3 µm     |
| Rated current                  |     | 8 A                                                     |
| Max. breaking capacity         | AC1 | 2 000 VA                                                |
| Min. breaking capacity         |     | 0,5 W AgCu/Au 0,2 µm, 0,5 W AgCdO, 0,05 W AgCdO/Au 3 µm |
| Contact resistance             |     | ≤ 100 mΩ                                                |
| Max. operating frequency       |     |                                                         |
| • at rated load                | AC1 | 600 cycles/hour                                         |
| • no load                      |     | 72 000 cycles/hour                                      |

## Coil data

|                                   |    |                                                               |
|-----------------------------------|----|---------------------------------------------------------------|
| Rated voltage                     | DC | 6 ... 110 V standard version    5 ... 110 V sensitive version |
| Must release voltage              |    | DC: ≥ 0,1 U <sub>n</sub>                                      |
| Operating range of supply voltage |    | see Tables 1, 2                                               |
| Rated power consumption           | DC | 0,8 W standard version<br>0,5 W sensitive version             |

## Insulation according to PN-EN 60664-1

|                             |            |                                        |
|-----------------------------|------------|----------------------------------------|
| Insulation rated voltage    |            | 400 V AC                               |
| Dielectric strength         |            |                                        |
| • between coil and contacts | 4 000 V AC | type of insulation: reinforced         |
| • contact clearance         | 1 000 V AC | type of clearance: micro-disconnection |
| • pole - pole               | 2 500 V AC | type of insulation: basic              |
| Contact - coil distance     |            |                                        |
| • clearance                 | ≥ 8 mm     |                                        |
| • creepage                  | ≥ 8 mm     |                                        |

## General data

|                                           |             |                                                        |
|-------------------------------------------|-------------|--------------------------------------------------------|
| Operating / release time (typical values) |             | 7 ms / 2 ms                                            |
| Electrical life                           |             |                                                        |
| • resistive AC1                           |             | > 2 x 10 <sup>5</sup> 8 A, 250 V AC                    |
| • cos φ                                   |             | see Fig. 2                                             |
| Mechanical life (cycles)                  |             | > 3 x 10 <sup>7</sup>                                  |
| Motor load according to UL 508            |             | 1/8 HP 120 V AC, single-phase motor                    |
| Dimensions (L x W x H)                    |             | IP 40: 28 x 12,5 x 26 mm<br>IP 67: 28 x 12,5 x 26,5 mm |
| Weight                                    |             | 20 g                                                   |
| Ambient temperature                       | • storage   | -40...+85 °C                                           |
|                                           | • operating | -40...+70 °C                                           |
| Cover protection category                 |             | <b>IP 40</b> or IP 67    PN-EN 60529                   |
| Shock resistance                          |             | 20 g                                                   |
| Vibration resistance                      | (2 NO/2 NC) | 10 g / 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.

**i** Special version available: relays in transparent cover - see "Ordering codes".

**Coil data - standard DC voltage version**

**Table 1**

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|-------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|             |                       |                                                    | min.                                  | max.        |
| 1006        | 6                     | 47                                                 | 3,9                                   | 8,5         |
| <b>1012</b> | <b>12</b>             | <b>170</b>                                         | <b>7,9</b>                            | <b>16,2</b> |
| <b>1024</b> | <b>24</b>             | <b>740</b>                                         | <b>16,8</b>                           | <b>33,6</b> |
| 1036        | 36                    | 1 350                                              | 22,0                                  | 45,5        |
| 1048        | 48                    | 3 200                                              | 34,0                                  | 70,0        |
| 1060        | 60                    | 5 000                                              | 42,0                                  | 87,0        |
| 1096        | 96                    | 10 000                                             | 61,0                                  | 125,0       |
| 1110        | 110                   | 13 000                                             | 77,0                                  | 140,0       |

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

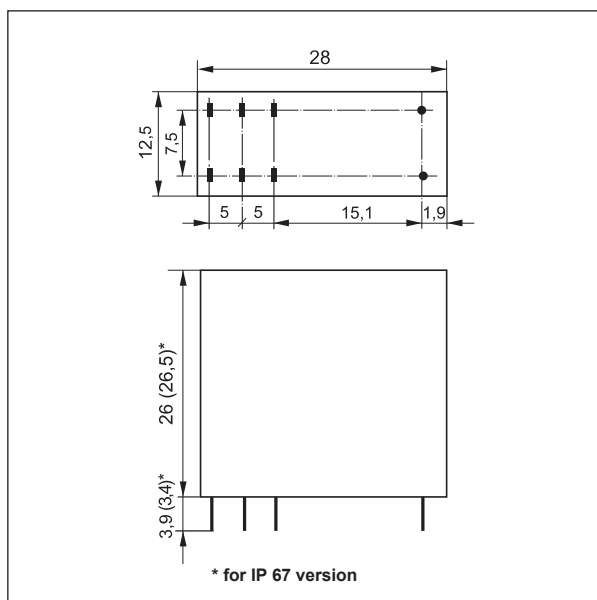
**Coil data - sensitive DC voltage version**

**Table 2**

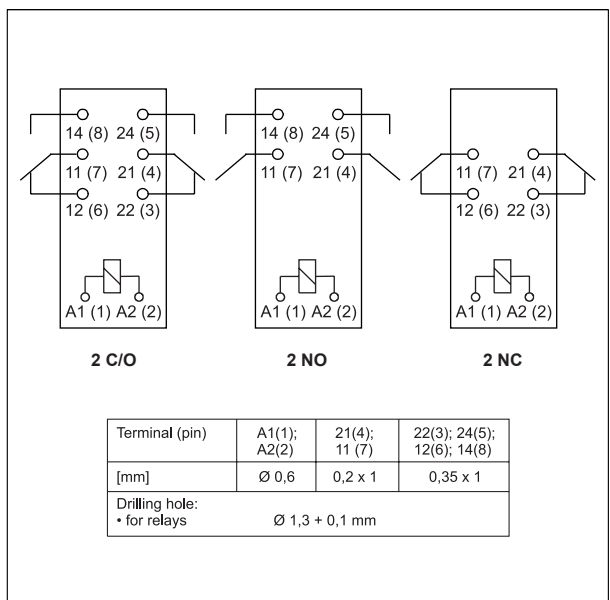
| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|-------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|             |                       |                                                    | min.                                  | max.        |
| S005        | 5                     | 47                                                 | 3,5                                   | 8,5         |
| S006        | 6                     | 70                                                 | 4,4                                   | 10,3        |
| <b>S012</b> | <b>12</b>             | <b>270</b>                                         | <b>8,8</b>                            | <b>20,3</b> |
| <b>S024</b> | <b>24</b>             | <b>1 100</b>                                       | <b>17,5</b>                           | <b>41,0</b> |
| S036        | 36                    | 2 000                                              | 24,0                                  | 55,0        |
| S048        | 48                    | 4 400                                              | 35,0                                  | 82,0        |
| S060        | 60                    | 6 500                                              | 44,0                                  | 100,0       |
| S110        | 110                   | 20 000                                             | 88,0                                  | 188,0       |

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

## Dimensions



## Connection diagrams (pin side view)

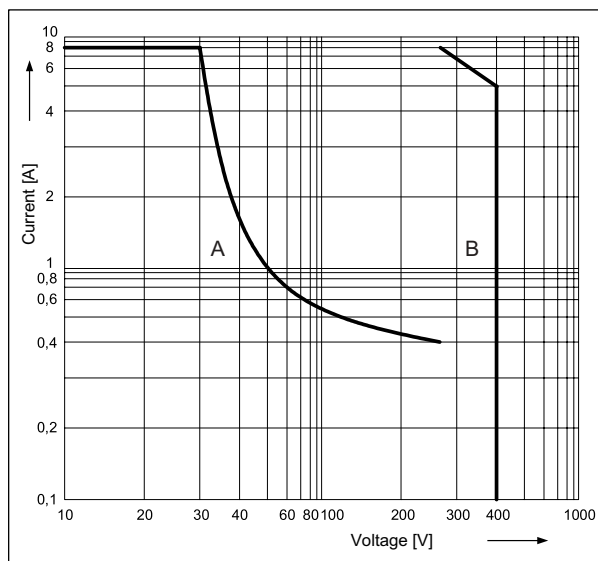


## Mounting

Relays **RM94** are designed for: • direct PCB mounting • plug-in sockets for PCB mounting **EC50** with clip **MP25-2**, MH25-2, GD-0025, RM81-0001; plug-in sockets **PW80** with clip **MH25-2**, GD-0025, RM81-0001; plug-in sockets **GD50** with clip **MP25-2**, GD-0025, MH25-2, RM81-0001.

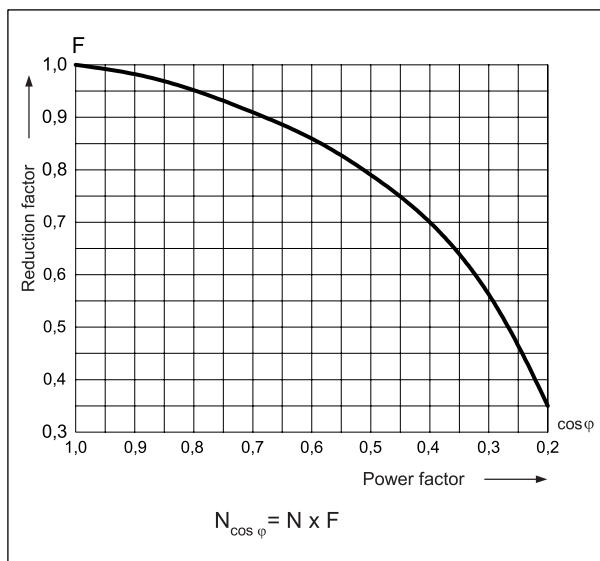
**Max. breaking capacity**  
**A - resistive load DC1**  
**B - resistive load AC1**

Fig. 1



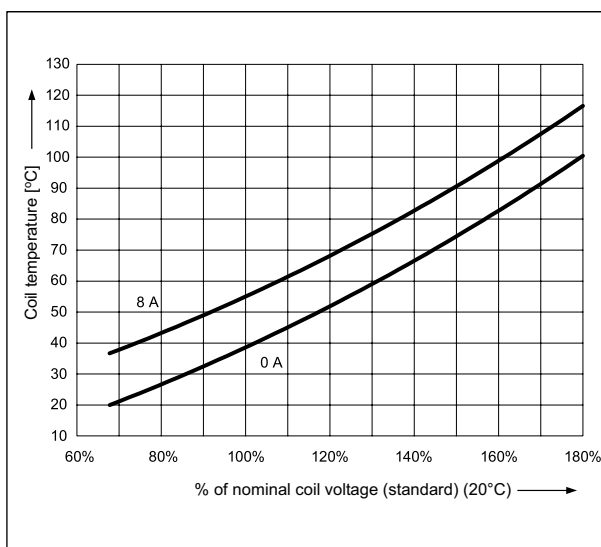
**Electrical life reduction factor at AC inductive load**

Fig. 2



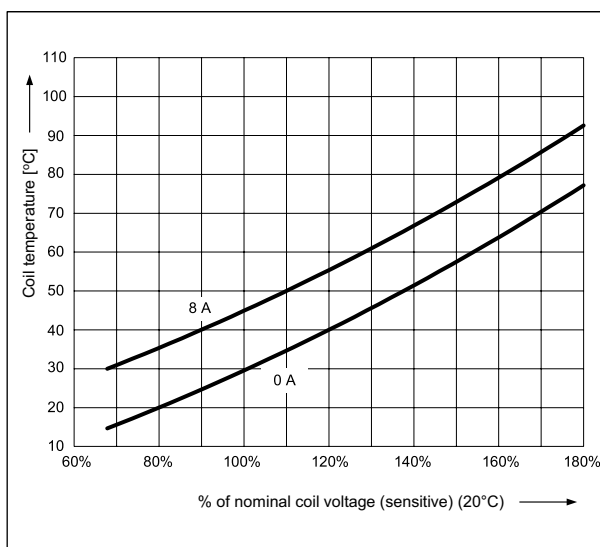
**Coil temperature rise - standard version**

Fig. 3

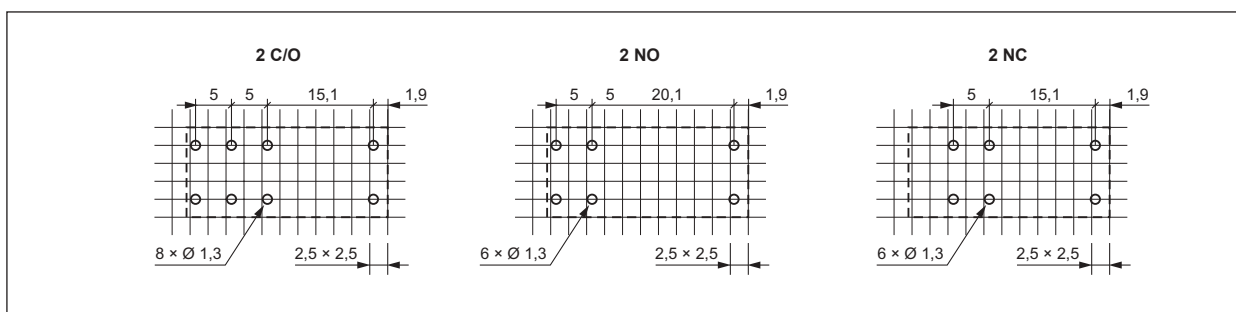


**Coil temperature rise - sensitive version**

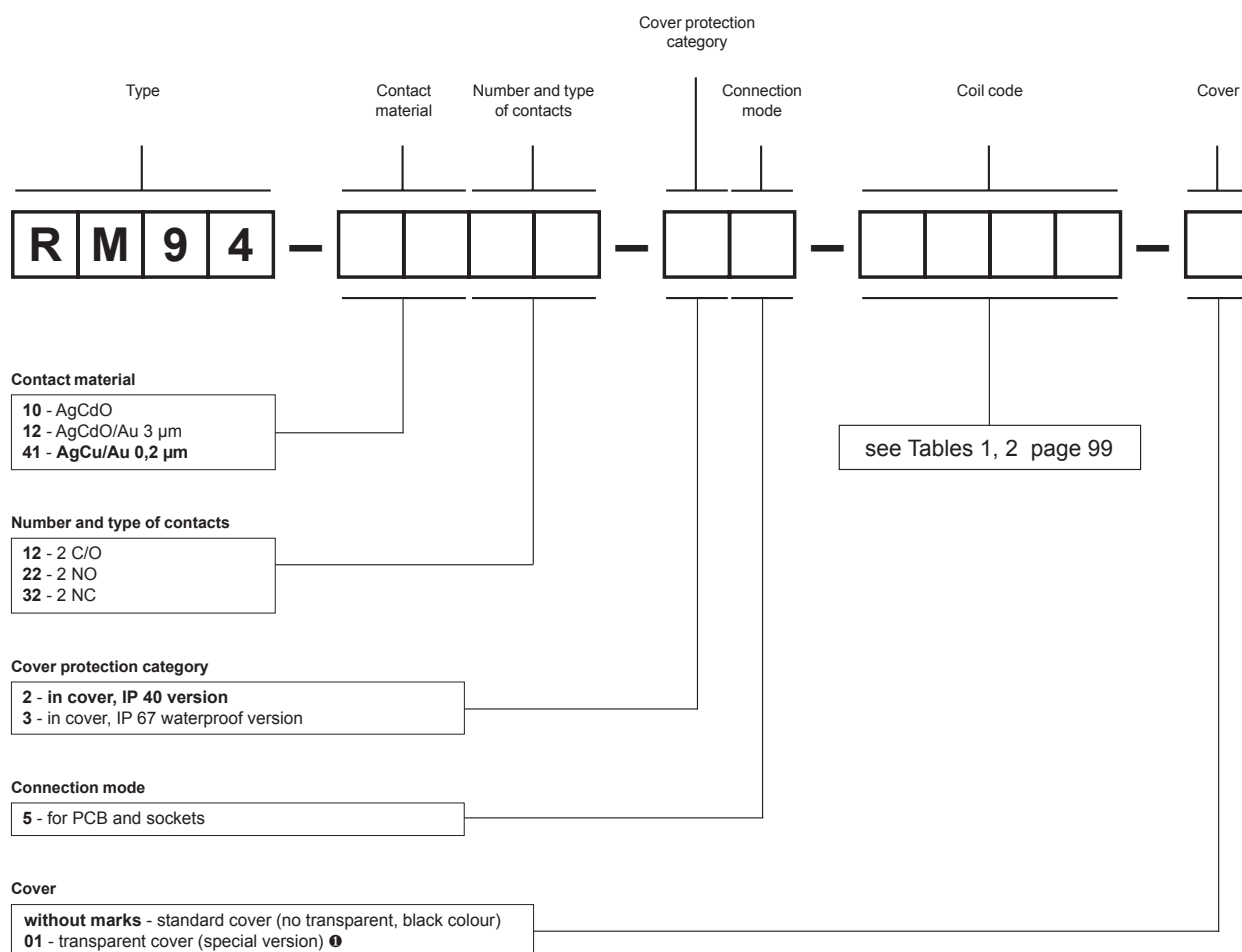
Fig. 4



**Pinout (solder side view)**



## Ordering codes



Examples of ordering codes:

- RM94-4112-25-1024** relay **RM94**, contact material AgCu/Au 0,2 µm, with two changeover contacts, in standard cover (no transparent, black colour) IP 40, for PCB and sockets, voltage version 24 V DC
- RM94-4122-35-S024** relay **RM94**, contact material AgCu/Au 0,2 µm, with two normally open contacts, in standard cover (no transparent, black colour) IP 67, for PCB and sockets, sensitive voltage version 24 V DC
- RM94-4132-35-1012-01** relay **RM94**, contact material AgCu/Au 0,2 µm, with two normally closed contacts, in transparent cover (special version) ❶ IP 67, for PCB and sockets, voltage version 12 V DC

## Print on relay cover

Type marking on relays cover **RM94** do not match the ordering codes.

Examples of marking:

- RM94P-24-W** **RM94P** - relay **RM94**, with two changeover contacts  
**24** - voltage version 24 V DC  
**W** - in cover, IP 67 waterproof version
- RM94P-24-S-W** **RM94P** - relay **RM94**, with two changeover contacts  
**24** - voltage version 24 V DC  
**S** - sensitive version  
**W** - in cover, IP 67 waterproof version



- Cadmium - free contacts • Miniature dimensions
- Automotive applications
- High resistance to inrush current
- For PCB
- Following relays versions are available:
  - RA2** - standard design
  - RAW2** - narrow pin layout design
- Recognitions, certifications, directives: RoHS,

## Contact data

|                                |     |                                                                      |                   |
|--------------------------------|-----|----------------------------------------------------------------------|-------------------|
| Number and type of contacts    |     | 1 C/O, 1 NO, 2 NO                                                    |                   |
| Contact material               |     | <b>AgSnO<sub>2</sub></b>                                             |                   |
| Rated / max. switching voltage | DC  | 60 V / 60 V                                                          |                   |
| Min. switching voltage         |     | 1 V                                                                  |                   |
| Min. switching current         |     | 10 mA                                                                |                   |
| Max. inrush current            |     | 1 C/O: 110 A / 50 A (NO/NC)<br>1 NO: 110 A          2 NO: 2 x 110 A  |                   |
| Rated current                  |     | 1 C/O: 20 A / 12 A (NO/NC)<br>1 NO: 20 A          2 NO: 2 x 12,5 A   |                   |
| Max. breaking capacity         |     | 1 C/O: 270 W / 162 W (NO/NC)<br>1 NO: 270 W          2 NO: 2 x 168 W |                   |
| Min. breaking capacity         |     | 1 W                                                                  |                   |
| Contact resistance             |     | ≤ 3 mΩ                                                               |                   |
| Max. operating frequency       | AC1 |                                                                      |                   |
| • at rated load                |     | 900 cycles/hour                                                      | 2 s ON / 2 s OFF  |
| • at motor load                |     | 450 cycles/hour                                                      | 2 s ON / 6 s OFF  |
| • at incandescent lamp load    |     | 120 cycles/hour                                                      | 2 s ON / 30 s OFF |
| • no load                      |     | 36 000 cycles/hour                                                   |                   |

## Coil data

|                                   |                           |            |
|-----------------------------------|---------------------------|------------|
| Rated voltage                     | DC                        | 5 ... 48 V |
| Must release voltage              | DC: ≥ 0,15 U <sub>n</sub> |            |
| Operating range of supply voltage | see Table 1               |            |
| Must operate voltage              | ≤ 0,6 U <sub>n</sub>      |            |
| Rated power consumption           | DC                        | 1,44 W     |

## Insulation

|                             |          |  |
|-----------------------------|----------|--|
| Insulation rated voltage    | 60 V AC  |  |
| Dielectric strength         |          |  |
| • between coil and contacts | 500 V AC |  |
| • contact clearance         | 500 V AC |  |
| Contact - coil distance     |          |  |
| • clearance                 | ≥ 1 mm   |  |
| • creepage                  | ≥ 1 mm   |  |

## General data

|                                           |                                                                                                                                                     |               |             |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|
| Operating / release time (typical values) | 10 ms / 3 ms                                                                                                                                        |               |             |
| Electrical life                           |                                                                                                                                                     |               |             |
| • resistive DC1                           | 1 C/O: > 10 <sup>5</sup> 20 A / 12 A (NO/NC), 13,5 V DC<br>1 NO: > 10 <sup>5</sup> 20 A, 13,5 V DC<br>2 NO: > 10 <sup>5</sup> 2 x 12,5 A, 13,5 V DC |               |             |
| Mechanical life (cycles)                  | > 10 <sup>7</sup>                                                                                                                                   |               |             |
| Dimensions (L x W x H)                    | IP 00: 18,6 x 13,0 x 18,5 mm<br>IP 40: 20,5 x 15,3 x 19,7 mm                                                                                        |               |             |
| Weight                                    | 12 g                                                                                                                                                |               |             |
| Ambient temperature                       | • storage                                                                                                                                           | -40...+100 °C |             |
|                                           | • operating                                                                                                                                         | -40...+85 °C  |             |
| Cover protection category                 | IP 40 or <b>IP 00 (without cover)</b>                                                                                                               |               | PN-EN 60529 |
| Solder bath temperature                   | max. 270 °C                                                                                                                                         |               |             |
| Soldering time                            | max. 5 s                                                                                                                                            |               |             |

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

Coil data - DC voltage version

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 85 °C<br>V DC |             |
|-------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|             |                       |                                                    | min.                                  | maks.       |
| 1005        | 5                     | 18                                                 | 4,0                                   | 6,6         |
| 1006        | 6                     | 24                                                 | 4,8                                   | 8,0         |
| 1009        | 9                     | 55                                                 | 7,2                                   | 12,0        |
| <b>1012</b> | <b>12</b>             | <b>100</b>                                         | <b>9,6</b>                            | <b>16,0</b> |
| 1015        | 15                    | 152                                                | 12,0                                  | 20,0        |
| 1018        | 18                    | 230                                                | 14,4                                  | 23,9        |
| 1024        | 24                    | 390                                                | 19,2                                  | 31,9        |
| 1048        | 48                    | 1 590                                              | 38,4                                  | 63,8        |

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

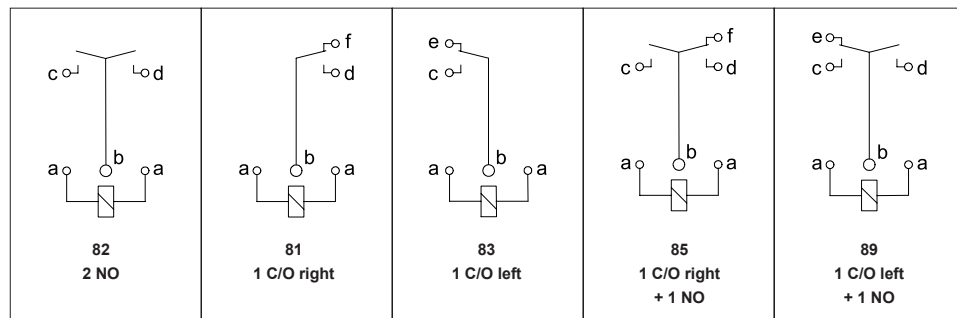
## Connection diagrams (pin side view)

Relay terminals:

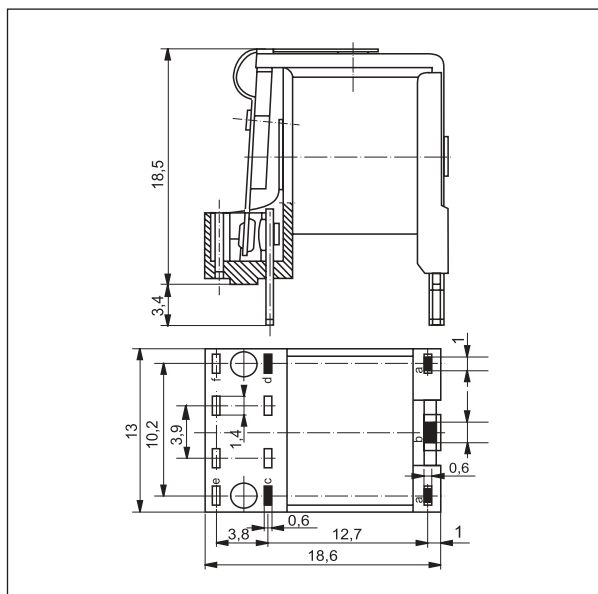
c, d, e, f - 0,6 x 1,4 mm

a - 0,6 x 1,0 mm

b - 1,0 x 1,5 mm

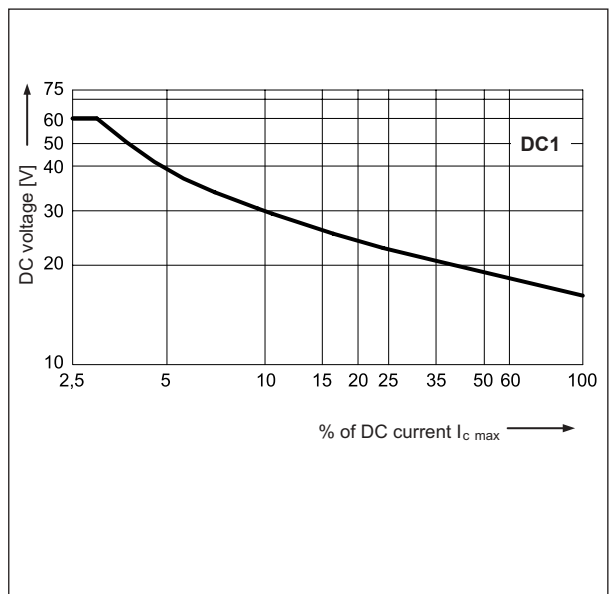


## Dimensions



## Max. DC resistive load breaking capacity

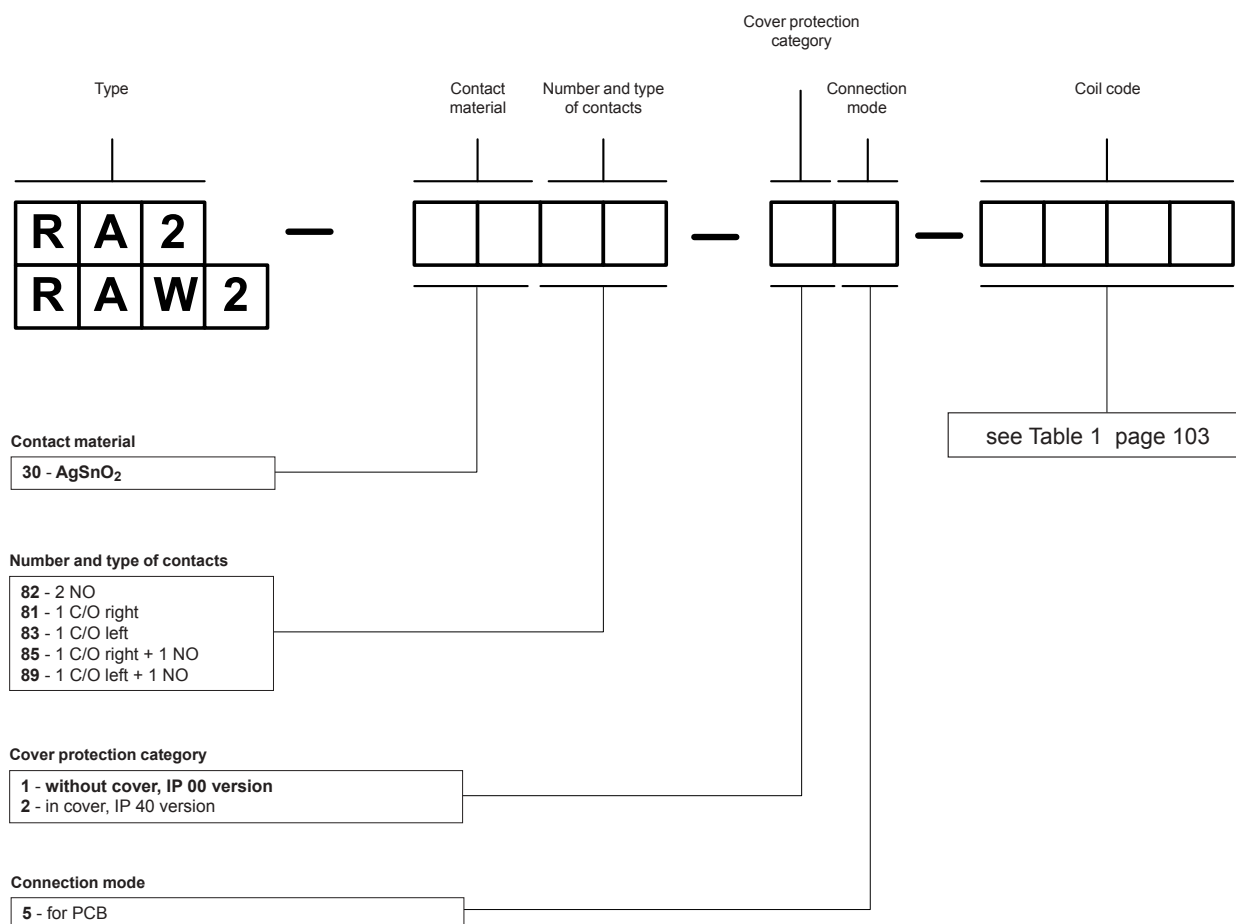
Fig. 1



## Mounting

Relays **RA2** are designed for direct PCB mounting.

## Ordering codes



Examples of ordering codes:

**RA2-3081-15-1012**

relay **RA2**, contact material AgSnO<sub>2</sub>, with one right changeover contact, without cover IP 00, for PCB, voltage version 12 V DC

**RAW2-3082-25-1024**

relay **RAW2** with narrow pin layout design, contact material AgSnO<sub>2</sub>, with two normally open contacts, in cover IP 40, for PCB, voltage version 24 V DC

## Industrial relays

### Miniature industrial relays

|           |     |
|-----------|-----|
| R2 .....  | 106 |
| R3 .....  | 111 |
| R4 .....  | 115 |
| RY2 ..... | 120 |
| R2M ..... | 124 |

### Industrial relays of small dimensions

|                                                          |     |
|----------------------------------------------------------|-----|
| R15 2 C/O, 3 C/O, 4 C/O ..                               | 128 |
| R15 2 C/O, R15 3 C/O<br>in cover, for plug-in sockets .. | 132 |
| R15 4 C/O<br>in cover, for plug-in sockets ..            | 134 |
| RUC .....                                                | 135 |
| RUC-M .....                                              | 140 |
| RG25 .....                                               | 144 |
| R20 .....                                                | 148 |
| R30 .....                                                | 151 |
| RS35, RS50 .....                                         | 154 |

Industrial relays are applied mainly in industrial and power automation systems, in signaling and protection systems, in other control and electric drives systems.

The basic features of industrial relays are:

- contact number: from 1 to 4,
- rated contact switching currents up to 30 A /depending on the relay type/ ,
- versions with coil overvoltage suppression,
- versions with flag indicators and manual relay test pushbuttons with the possibility of latching the normally open contacts closed,
- mounting on PCB, plug-in sockets, 35 mm rails, screw-terminals of plug-in sockets and via flat connecting inserts.

The main products of Relpol S.A. have been successfully applied in industrial automation for many years. Their reliability and quality have been acknowledged by numerous prizes and awards, and by the Customers' satisfaction.

R2, R3 and R4 relays are the basis for the interface relays of PIR2, PIR3 and PIR4 types which are described in the section of "Interface relays".

The relays are recognized and certified by:          
They meet the requirements of RoHS Directive.



12 A / 250 V AC

- Miniature dimensions • Cadmium - free contacts • AC and DC coils
- For plug-in sockets, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting • For PCB and soldering connections - option • Relays of general application • 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 - page 251
- Recognitions, certifications, directives: RoHS, AUCOTEAM GmbH Berlin - railway standards,      

### Contact data

|                                |                                                      |                                                |
|--------------------------------|------------------------------------------------------|------------------------------------------------|
| Number and type of contacts    | 2 C/O                                                |                                                |
| 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         | 5 V                                                  |                                                |
| Rated load (capacity)          | AC1                                                  | 12 A / 250 V AC ❶ 10 A / 250 V AC ❷            |
|                                | AC15                                                 | 3 A / 120 V 1,5 A / 240 V (B300)               |
|                                | AC3                                                  | 370 W (single-phase motor)                     |
|                                | DC1                                                  | 12 A / 24 V DC (see Fig. 3) ❶ 10 A / 24 V DC ❷ |
|                                | DC13                                                 | 0,22 A / 120 V 0,1 A / 250 V (R300)            |
| Min. switching current         | 5 mA AgNi, 5 mA AgNi/Au 0,2 µm, 2 mA AgNi/Au 5 µm    |                                                |
| Max. inrush current            | 24 A                                                 |                                                |
| Rated current                  | 12 A ❶ 10 A ❷                                        |                                                |
| Max. breaking capacity         | AC1                                                  | 3 000 VA ❶ 2 500 VA ❷                          |
| Min. breaking capacity         | 0,3 W AgNi, 0,3 W AgNi/Au 0,2 µm, 0,1 W AgNi/Au 5 µm |                                                |
| 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                                       | 6 ... 240 V |
|                                   | DC                                                | 5 ... 220 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                                                | 1,6 VA      |
|                                   | DC                                                | 0,9 W       |

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

|                             |                     |                                        |
|-----------------------------|---------------------|----------------------------------------|
| Insulation rated voltage    | 250 V AC            |                                        |
| Rated surge voltage         | 4 000 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               | 2 500 V AC          | type of insulation: basic              |
| Contact - coil distance     |                     |                                        |
| • clearance                 | ≥ 2,5 mm            |                                        |
| • creepage                  | ≥ 4 mm              |                                        |

### General data

|                                           |                                                 |                                   |
|-------------------------------------------|-------------------------------------------------|-----------------------------------|
| Operating / release time (typical values) | AC: 10 ms / 8 ms                                | DC: 13 ms / 3 ms                  |
| Electrical life                           |                                                 |                                   |
| • resistive AC1                           | ≥ 10 <sup>5</sup> 12 A, 250 V AC                |                                   |
| • cos φ                                   | see Fig. 2                                      |                                   |
| Mechanical life (cycles)                  | ≥ 2 x 10 <sup>7</sup>                           |                                   |
| Dimensions (L x W x H)                    | 27,5 x 21,2 x 35,6 mm ❶ 27,5 x 21,1 x 33,5 mm ❷ |                                   |
|                                           | 27,5 x 21,2 x 33 mm ❸                           |                                   |
| Weight                                    | 35 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                          | (NO/NC)                                         | 10 g / 5 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.

❶ For plug-in sockets version: standard (WT) ❷ For PCB version ❸ For version with threaded bolt

**Coil data - DC voltage version**

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                 |
|-------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|             |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 1005        | 5                     | 28                                                     | 4,0                          | 5,5             |
| 1006        | 6                     | 40                                                     | 4,8                          | 6,6             |
| 1012        | 12                    | 160                                                    | 9,6                          | 13,2            |
| <b>1024</b> | <b>24</b>             | <b>640</b>                                             | <b>19,2</b>                  | <b>26,4</b>     |
| 1048        | 48                    | 2 600                                                  | 38,4                         | 52,8            |
| 1060        | 60                    | 4 000                                                  | 48,0                         | 66,0            |
| 1080        | 80                    | 7 100                                                  | 64,0                         | 88,0            |
| 1110        | 110                   | 13 600                                                 | 88,0                         | 121,0           |
| 1125        | 125                   | 16 000                                                 | 100,0                        | 137,5           |
| <b>1220</b> | <b>220</b>            | <b>54 000</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**

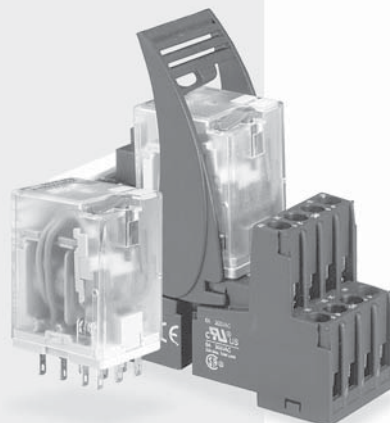
Table 2

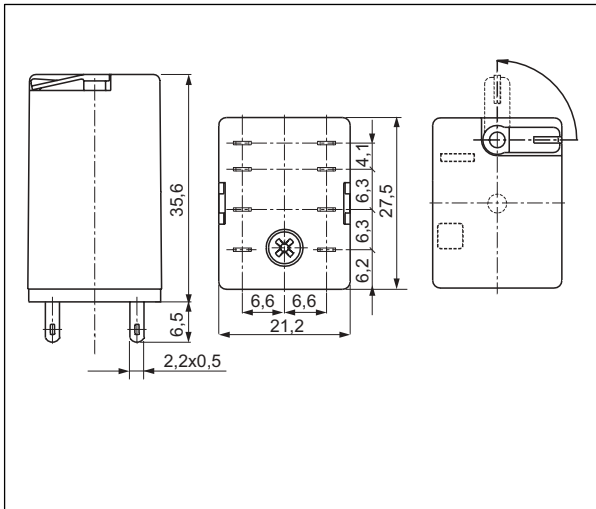
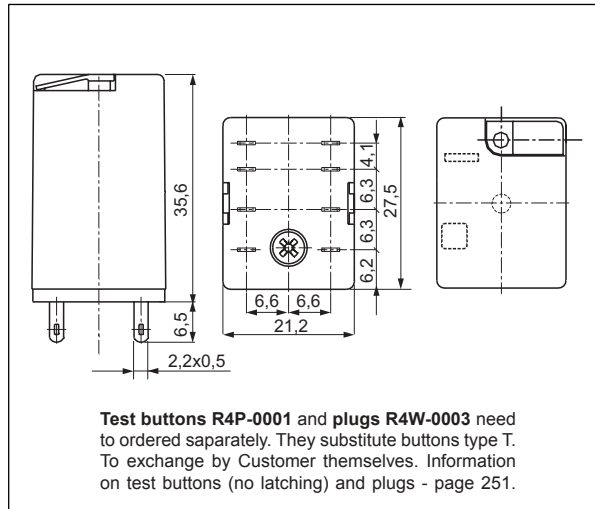
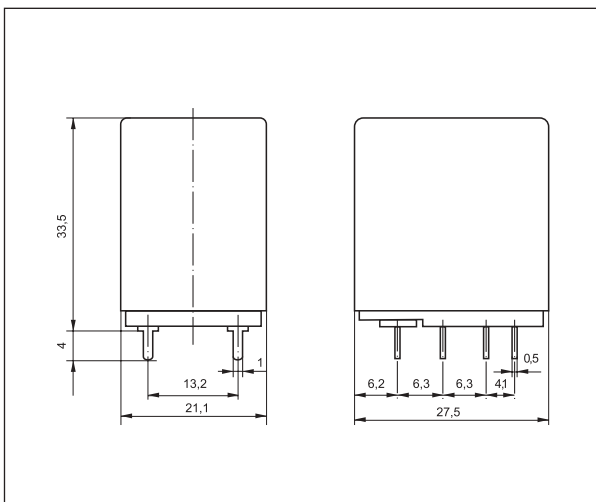
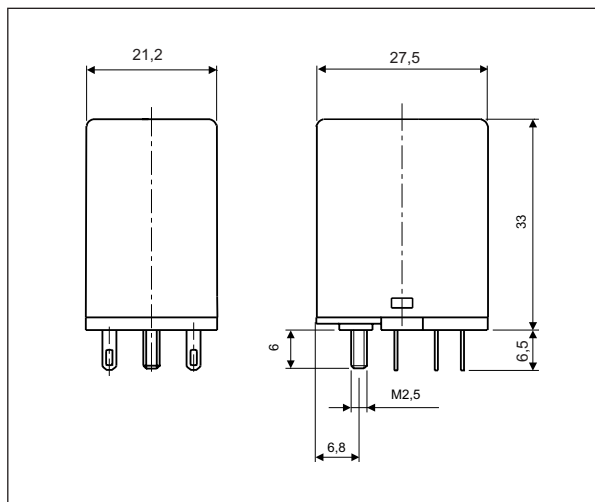
| Coil code   | Rated voltage<br>V AC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                 |
|-------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|             |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 5006        | 6                     | 9,8                                                    | 4,8                          | 6,6             |
| 5012        | 12                    | 39,5                                                   | 9,6                          | 13,2            |
| <b>5024</b> | <b>24</b>             | <b>158,0</b>                                           | <b>19,2</b>                  | <b>26,4</b>     |
| 5042        | 42                    | 470,0                                                  | 33,6                         | 46,2            |
| 5048        | 48                    | 640,0                                                  | 38,4                         | 52,8            |
| 5060        | 60                    | 930,0                                                  | 48,0                         | 66,0            |
| 5080        | 80                    | 1 720,0                                                | 64,0                         | 88,0            |
| 5110        | 110                   | 3 450,0                                                | 88,0                         | 121,0           |
| 5115        | 115                   | 3 610,0                                                | 92,0                         | 127,0           |
| 5120        | 120                   | 3 770,0                                                | 96,0                         | 132,0           |
| 5127        | 127                   | 4 000,0                                                | 101,6                        | 139,0           |
| 5220        | 220                   | 15 400,0                                               | 176,0                        | 242,0           |
| <b>5230</b> | <b>230</b>            | <b>16 100,0</b>                                        | <b>184,0</b>                 | <b>253,0</b>    |
| 5240        | 240                   | 16 800,0                                               | 192,0                        | 264,0           |

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

**EUROPRODUCT 2002**  
for electromagnetic relays  
**R2...WT, R3...WT, R4...WT**  
with sockets **GZT2, GZT3, GZT4**

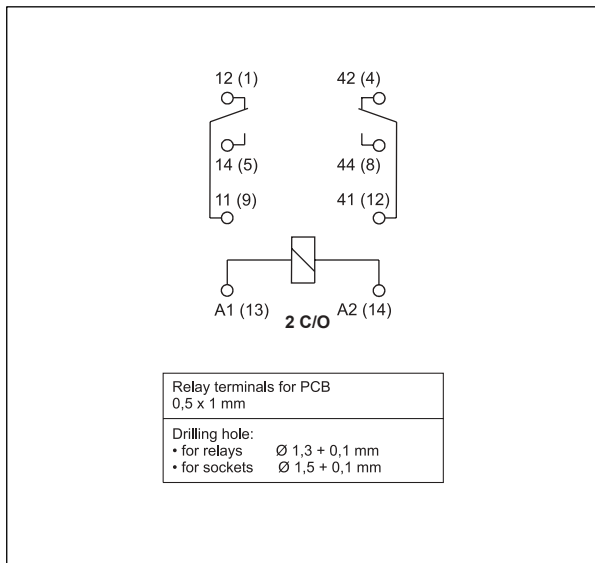
**ELECTROPRODUCT 2003**  
for electromagnetic relays  
**R2, R3, R4**



**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  
(without WT)****Dimensions - version with threaded bolt****Mounting**

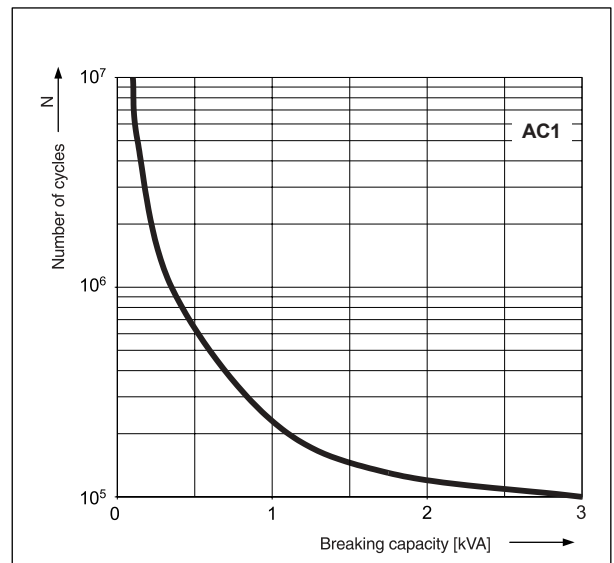
**Relays R2 are offered in versions:** • standard WT (mechanical indicator + lockable front test button), for plug-in sockets. **In standard version of relays (WT) is possibility self-exchange of button type T for test button R4P-0001 (no latching) or plug R4W-0003 (no manual operation). Test buttons (no latching) and plugs need to be ordered separately** • for PCB (without WT) • with threaded bolt.

Connection diagram (pin side view)



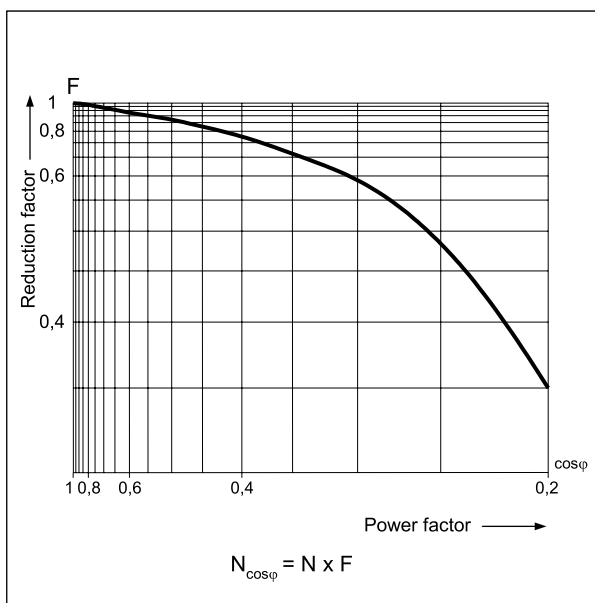
Electrical life at AC resistive load.  
Switching frequency: 1 200 cycles/hour

Fig. 1



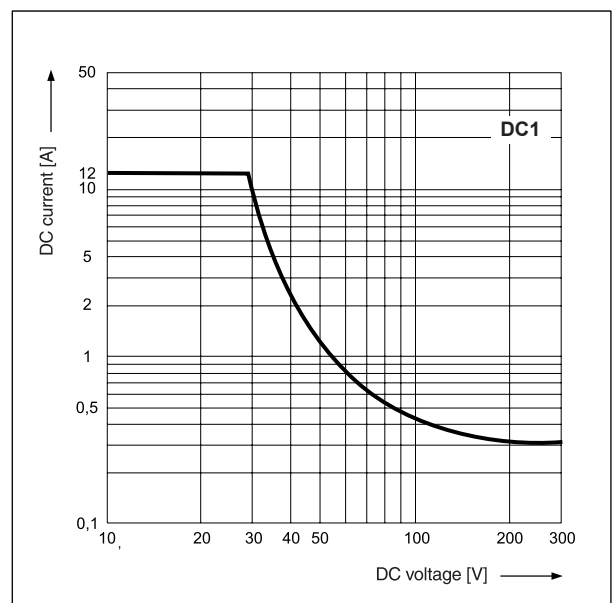
Electrical life reduction factor  
at AC inductive load

Fig. 2



Max. DC resistive load breaking capacity

Fig. 3



## Mounting

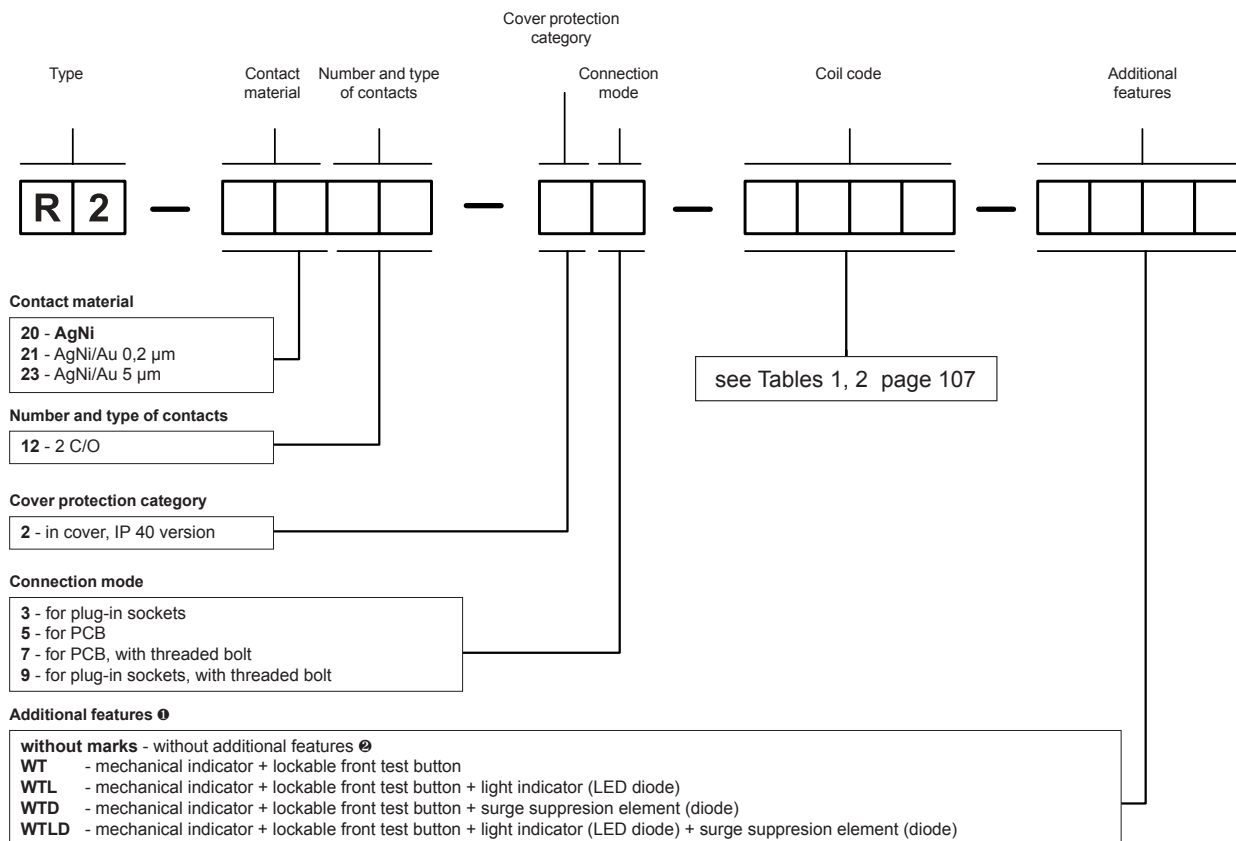
Relays **R2** are designed for: • screw terminals plug-in sockets **GZT2** ❶ and **GZM2** ❶ with clip **GZT4-0040** or **G4 1052**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. Signalling / protecting modules **type M...** are available with sockets (see page 250) • plug-in sockets for PCB mounting **SU4/2D** with clip **G4 1053** (WT) or **G4 1050** (without WT) • solder terminals sockets **SU4/2L** with clip **G4 1053** (WT) or **G4 1050** (without WT) and spring clamp **G4 1040** • solder terminals sockets **G4/2** with clip **G4 1053** (WT) or **G4 1050** (without WT) • direct PCB mounting.

❶ Plug-in sockets **GZT2** and **GZM2** may be linked with interconnection strip type **ZGGZ4** (see page 262).

## Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au 0,2 µm** - contact surface protection against oxidation during storage,
- **AgNi/Au 5 µm** - for small resistive loads in control circuits.

## Ordering codes



① WT - standard features of relays for plug-in sockets. WTD, WTLD - only for DC coils

② Refer relays for PCB and with threaded bolt

**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 251.

- 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:

For relays with DC coils and additional features inclusive: **D** - surge suppression element (diode) and **L** - light indicator (LED diode) coil supply polarization is fixed. Terminal A1 (13) "+"; terminal A2 (14) "-". Supply polarization is marked on relay cover. Colour of lockable front test button type T represents type of coil supply current: orange - AC coil, green - DC coil.

Examples of ordering codes:

- R2-2012-23-1024-WT** relay **R2**, contact material AgNi, with two changeover contacts, in cover IP 40, for plug-in sockets, voltage version 24 V DC, with mechanical indicator and lockable front test button
- R2-2012-25-1024** relay **R2**, contact material AgNi, with two changeover contacts, in cover IP 40, for PCB, voltage version 24 V DC



10 A / 250 V AC

• Miniature dimensions • Cadmium - free contacts • AC and DC coils  
 • For plug-in sockets, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting • Relays of general application • 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 - page 251 • Recognitions, certifications, directives: RoHS, AUCOTEAM GmbH Berlin - railway standards,



### Contact data

|                                |      |                                                      |
|--------------------------------|------|------------------------------------------------------|
| Number and type of contacts    |      | 3 C/O                                                |
| 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         |      | 5 V                                                  |
| Rated load (capacity)          | AC1  | 10 A / 250 V AC                                      |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)                |
|                                | AC3  | 370 W (single-phase motor)                           |
|                                | DC1  | 10 A / 24 V DC (see Fig. 3)                          |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300)               |
| Min. switching current         |      | 5 mA AgNi, 5 mA AgNi/Au 0,2 µm, 2 mA AgNi/Au 5 µm    |
| 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, 0,1 W AgNi/Au 5 µm |
| 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 | 6 ... 240 V                                       |
|                                   | DC          | 5 ... 220 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          | 1,6 VA                                            |
|                                   | DC          | 0,9 W                                             |

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

|                             |  |                                                                                |
|-----------------------------|--|--------------------------------------------------------------------------------|
| Insulation rated voltage    |  | 250 V AC                                                                       |
| Rated surge voltage         |  | with AC coils: 2 500 V    1,2 / 50 µs<br>with DC coils: 4 000 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               |  | 2 500 V AC    type of insulation: basic                                        |
| Contact - coil distance     |  |                                                                                |
| • clearance                 |  | ≥ 2,5 mm                                                                       |
| • creepage                  |  | ≥ 4 mm                                                                         |

### General data

|                                           |             |                                                  |
|-------------------------------------------|-------------|--------------------------------------------------|
| Operating / release time (typical values) |             | AC: 10 ms / 8 ms      DC: 13 ms / 3 ms           |
| Electrical life                           |             |                                                  |
| • resistive AC1                           |             | ≥ 10 <sup>5</sup> 10 A, 250 V AC                 |
| • cos φ                                   |             | see Fig. 2                                       |
| Mechanical life (cycles)                  |             | ≥ 2 x 10 <sup>7</sup>                            |
| Dimensions (L x W x H)                    |             | 27,5 x 21,2 x 35,6 mm ❶    27,5 x 21,2 x 33 mm ❷ |
| Weight                                    |             | 35 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                          | (NO/NC)     | 10 g / 5 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. ❶ For plug-in sockets version: standard (WT) ❷ For version with threaded bolt

Coil data - DC voltage version

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                 |
|-------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|             |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 1005        | 5                     | 28                                                     | 4,0                          | 5,5             |
| 1006        | 6                     | 40                                                     | 4,8                          | 6,6             |
| 1012        | 12                    | 160                                                    | 9,6                          | 13,2            |
| <b>1024</b> | <b>24</b>             | <b>640</b>                                             | <b>19,2</b>                  | <b>26,4</b>     |
| 1048        | 48                    | 2 600                                                  | 38,4                         | 52,8            |
| 1060        | 60                    | 4 000                                                  | 48,0                         | 66,0            |
| 1080        | 80                    | 7 100                                                  | 64,0                         | 88,0            |
| 1110        | 110                   | 13 600                                                 | 88,0                         | 121,0           |
| 1125        | 125                   | 16 000                                                 | 100,0                        | 137,5           |
| <b>1220</b> | <b>220</b>            | <b>54 000</b>                                          | <b>176,0</b>                 | <b>242,0</b>    |

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

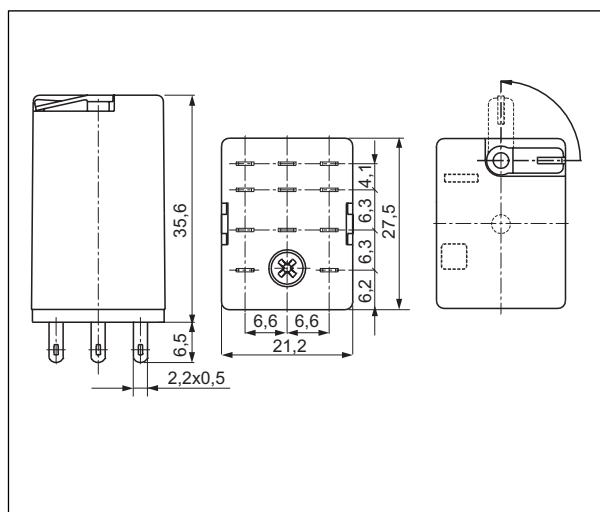
Coil data - AC 50/60 Hz voltage version

Table 2

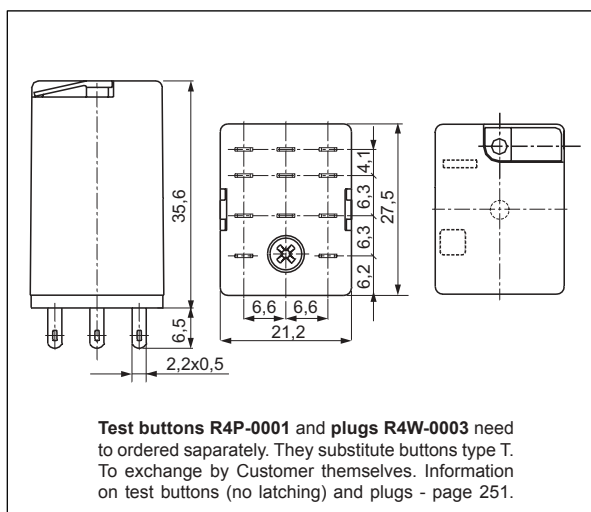
| Coil code   | Rated voltage<br>V AC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                 |
|-------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|             |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 5006        | 6                     | 9,8                                                    | 4,8                          | 6,6             |
| 5012        | 12                    | 39,5                                                   | 9,6                          | 13,2            |
| <b>5024</b> | <b>24</b>             | <b>158,0</b>                                           | <b>19,2</b>                  | <b>26,4</b>     |
| 5042        | 42                    | 470,0                                                  | 33,6                         | 46,2            |
| 5048        | 48                    | 640,0                                                  | 38,4                         | 52,8            |
| 5060        | 60                    | 930,0                                                  | 48,0                         | 66,0            |
| 5080        | 80                    | 1 720,0                                                | 64,0                         | 88,0            |
| 5110        | 110                   | 3 450,0                                                | 88,0                         | 121,0           |
| 5115        | 115                   | 3 610,0                                                | 92,0                         | 127,0           |
| 5120        | 120                   | 3 770,0                                                | 96,0                         | 132,0           |
| 5127        | 127                   | 4 000,0                                                | 101,6                        | 139,0           |
| 5220        | 220                   | 15 400,0                                               | 176,0                        | 242,0           |
| <b>5230</b> | <b>230</b>            | <b>16 100,0</b>                                        | <b>184,0</b>                 | <b>253,0</b>    |
| 5240        | 240                   | 16 800,0                                               | 192,0                        | 264,0           |

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

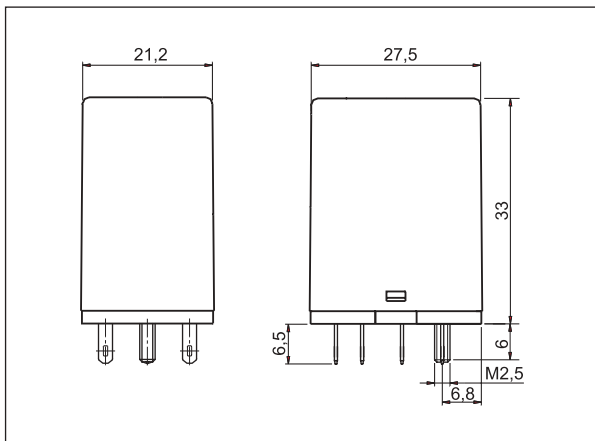
### Dimensions - plug-in version (WT), with lockable front test button type T



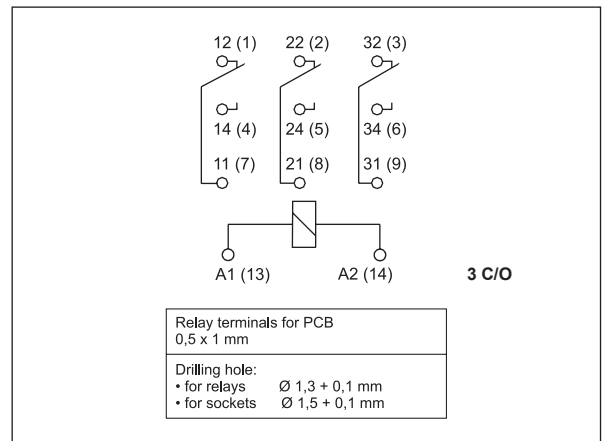
### Dimensions - plug-in version, with test button (no latching) or with plug (no manual operation)



## Dimensions - version with threaded bolt

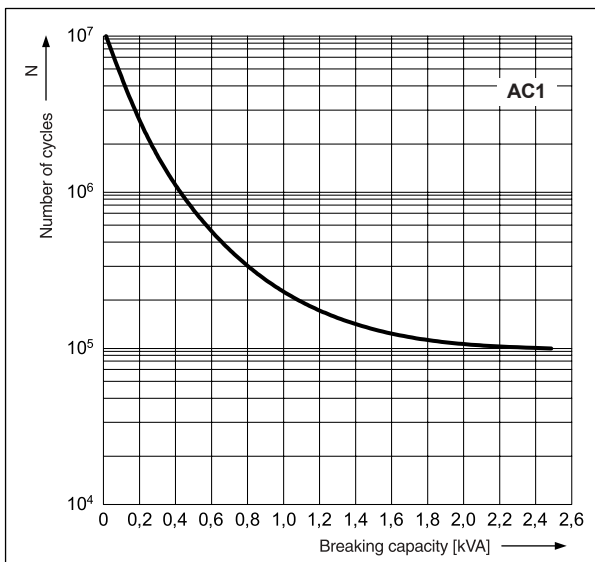


## Connection diagram (pin side view)



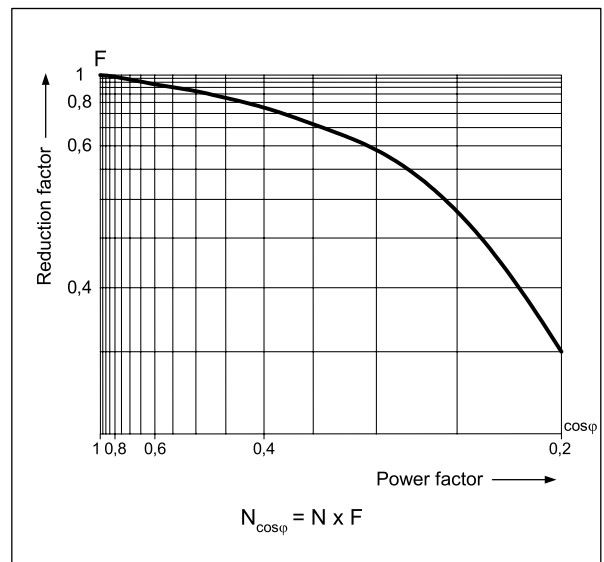
## Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour

Fig. 1



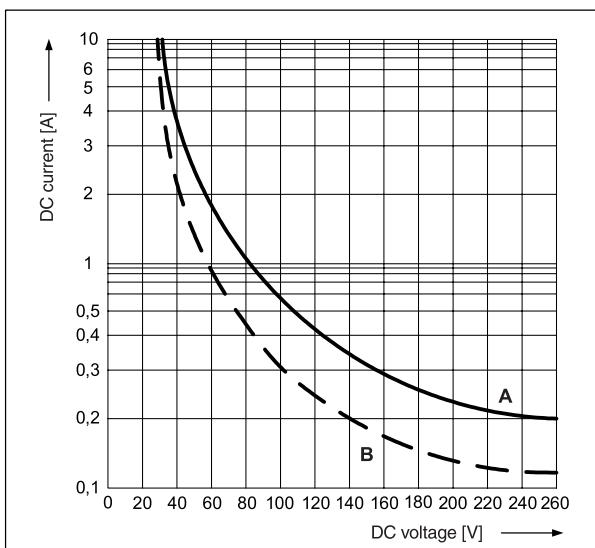
## Electrical life reduction factor at AC inductive load

Fig. 2



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

Fig. 3



## Mounting

**Relays R3 are offered in versions:** • 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 R4P-0001 (no latching) or plug R4W-0003 (no manual operation). Test buttons (no latching) and plugs need to ordered separately** • with threaded bolt.

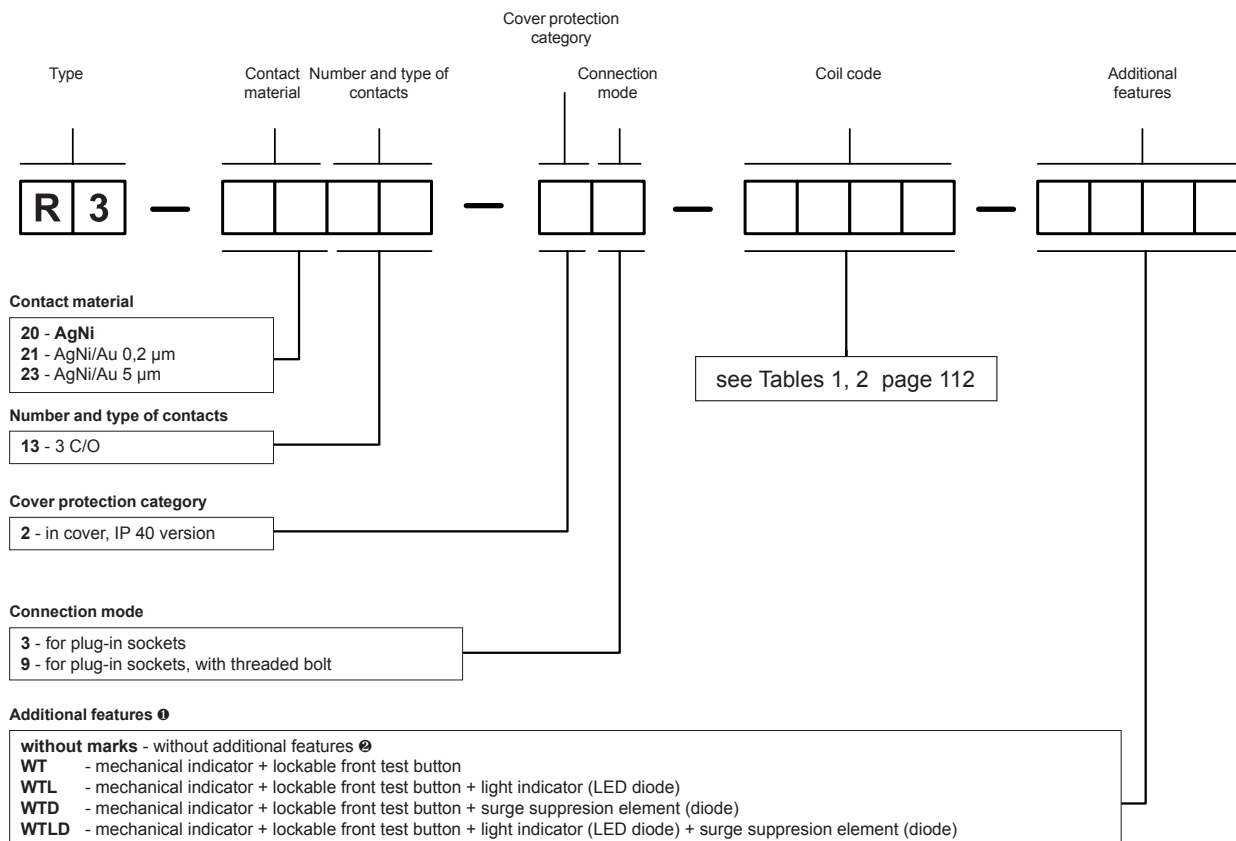
Relays **R3** are designed for: • screw terminals plug-in sockets **GZT3** ① and **GZM3** ① with clip **GZT4-0040** or **G4 1052**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. Signalling / protecting modules **type M...** are available with sockets (see page 250).

① Plug-in sockets **GZT3** and **GZM3** may be linked with interconnection strip type **ZGGZ4** (see page 262).

## Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au 0,2 µm** - contact surface protection against oxidation during storage,
- **AgNi/Au 5 µm** - for small resistive loads in control circuits.

## Ordering codes



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

❷ Refer relays with threaded bolt

**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 251.

- 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:

For relays with DC coils and additional features inclusive: **D** - surge suppression element (diode) and **L** - light indicator (LED diode) coil supply polarization is fixed. Terminal A1 (13) "+"; terminal A2 (14) "-". Supply polarization is marked on relay cover. Colour of lockable front test button type T represents type of coil supply current: orange - AC coil, green - DC coil.

Example of ordering code:

**R3-2013-23-1024-WT** relay **R3**, contact material AgNi, with three changeover contacts, in cover IP 40, for plug-in sockets, voltage version 24 V DC, with mechanical indicator and lockable front test button



6 A / 250 V AC

• Miniature dimensions • Cadmium - free contacts • AC and DC coils • For plug-in sockets, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting • For PCB and for soldering connections - option • Relays of general application • 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 - page 251 • **Have obtained LR Type Approval Certificate (Lloyd's Register) - R4...WT** • Recognitions, certifications, directives: RoHS, AUCOTEAM GmbH Berlin - railway standards,     

### Contact data

|                                |      |                                                      |
|--------------------------------|------|------------------------------------------------------|
| Number and type of contacts    |      | 4 C/O                                                |
| Contact material               |      | <b>AgNi</b> , AgNi/Au 0,2 µm, AgNi/Au 5 µm           |
| Rated / max. switching voltage | AC   | 250 V / 250 V                                        |
| Min. switching voltage         |      | 5 V                                                  |
| Rated load (capacity)          | AC1  | 6 A / 250 V AC                                       |
|                                | AC15 | 1,5 A / 120 V    0,75 A / 240 V (C300)               |
|                                | AC3  | 125 W (single-phase motor)                           |
|                                | DC1  | 6 A / 24 V DC (see Fig. 3)                           |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300)               |
| Min. switching current         |      | 5 mA AgNi, 5 mA AgNi/Au 0,2 µm, 2 mA AgNi/Au 5 µm    |
| Max. inrush current            |      | 12 A                                                 |
| Rated current                  |      | 6 A                                                  |
| Max. breaking capacity         | AC1  | 1 500 VA                                             |
| Min. breaking capacity         |      | 0,3 W AgNi, 0,3 W AgNi/Au 0,2 µm, 0,1 W AgNi/Au 5 µm |
| 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 | 6 ... 240 V                                       |
|                                   | DC          | 5 ... 220 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          | 1,6 VA                                            |
|                                   | DC          | 0,9 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        |  | 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                 |  | ≥ 1,6 mm                                             |
| • creepage                  |  | ≥ 3,2 mm                                             |

### General data

|                                           |             |                                                    |                  |
|-------------------------------------------|-------------|----------------------------------------------------|------------------|
| Operating / release time (typical values) |             | AC: 10 ms / 8 ms                                   | DC: 13 ms / 3 ms |
| Electrical life                           |             |                                                    |                  |
| • resistive AC1                           |             | ≥ 10 <sup>5</sup> 6 A, 250 V AC                    |                  |
| • cos φ                                   |             | see Fig. 2                                         |                  |
| Mechanical life (cycles)                  |             | ≥ 2 x 10 <sup>7</sup>                              |                  |
| Dimensions (L x W x H)                    |             | 27,5 x 21,2 x 35,6 mm ❶    27,5 x 21,1 x 33,5 mm ❷ |                  |
|                                           |             | 27,5 x 21,2 x 33 mm ❸                              |                  |
| Weight                                    |             | 35 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                          | (NO/NC)     | 10 g / 5 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.

❶ For plug-in sockets version: standard (WT)    ❷ For PCB version    ❸ For version with threaded bolt

Coil data - DC voltage version

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                 |
|-------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|             |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 1005        | 5                     | 28                                                     | 4,0                          | 5,5             |
| 1006        | 6                     | 40                                                     | 4,8                          | 6,6             |
| <b>1012</b> | <b>12</b>             | <b>160</b>                                             | <b>9,6</b>                   | <b>13,2</b>     |
| <b>1024</b> | <b>24</b>             | <b>640</b>                                             | <b>19,2</b>                  | <b>26,4</b>     |
| 1048        | 48                    | 2 600                                                  | 38,4                         | 52,8            |
| 1060        | 60                    | 4 000                                                  | 48,0                         | 66,0            |
| 1080        | 80                    | 7 100                                                  | 64,0                         | 88,0            |
| 1110        | 110                   | 13 600                                                 | 88,0                         | 121,0           |
| 1125        | 125                   | 16 000                                                 | 100,0                        | 137,5           |
| <b>1220</b> | <b>220</b>            | <b>54 000</b>                                          | <b>176,0</b>                 | <b>242,0</b>    |

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

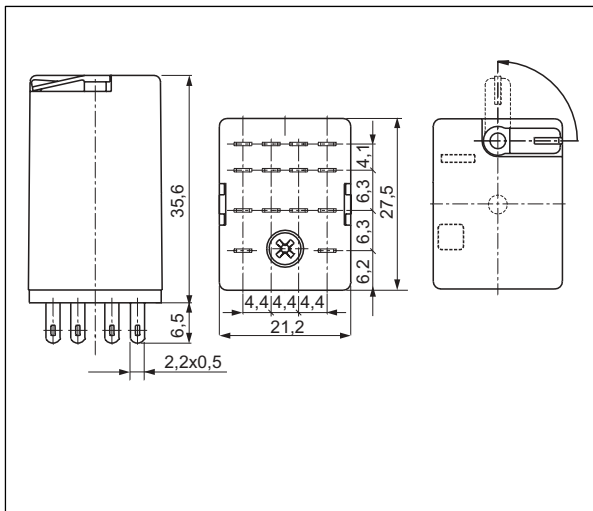
Coil data - AC 50/60 Hz voltage version

Table 2

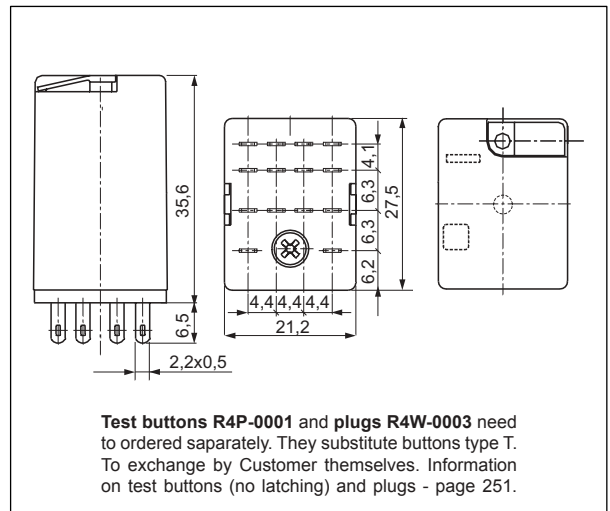
| Coil code   | Rated voltage<br>V AC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                 |
|-------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|             |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 5006        | 6                     | 9,8                                                    | 4,8                          | 6,6             |
| 5012        | 12                    | 39,5                                                   | 9,6                          | 13,2            |
| <b>5024</b> | <b>24</b>             | <b>158,0</b>                                           | <b>19,2</b>                  | <b>26,4</b>     |
| 5042        | 42                    | 470,0                                                  | 33,6                         | 46,2            |
| 5048        | 48                    | 640,0                                                  | 38,4                         | 52,8            |
| 5060        | 60                    | 930,0                                                  | 48,0                         | 66,0            |
| 5080        | 80                    | 1 720,0                                                | 64,0                         | 88,0            |
| 5110        | 110                   | 3 450,0                                                | 88,0                         | 121,0           |
| 5115        | 115                   | 3 610,0                                                | 92,0                         | 127,0           |
| 5120        | 120                   | 3 770,0                                                | 96,0                         | 132,0           |
| 5127        | 127                   | 4 000,0                                                | 101,6                        | 139,0           |
| 5220        | 220                   | 15 400,0                                               | 176,0                        | 242,0           |
| <b>5230</b> | <b>230</b>            | <b>16 100,0</b>                                        | <b>184,0</b>                 | <b>253,0</b>    |
| 5240        | 240                   | 16 800,0                                               | 192,0                        | 264,0           |

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

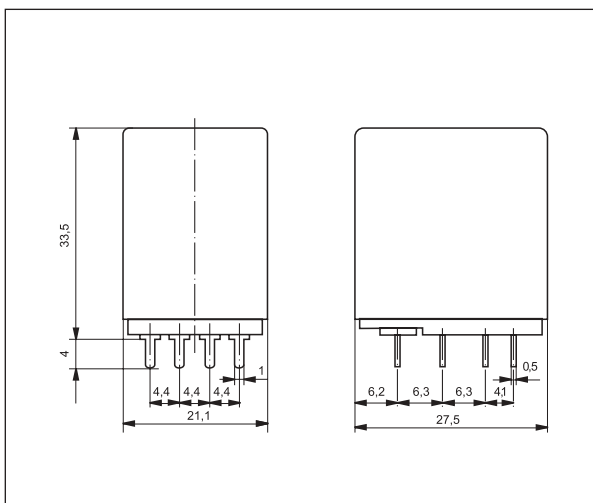
**Dimensions - plug-in version (WT),  
with lockable front test button type T**



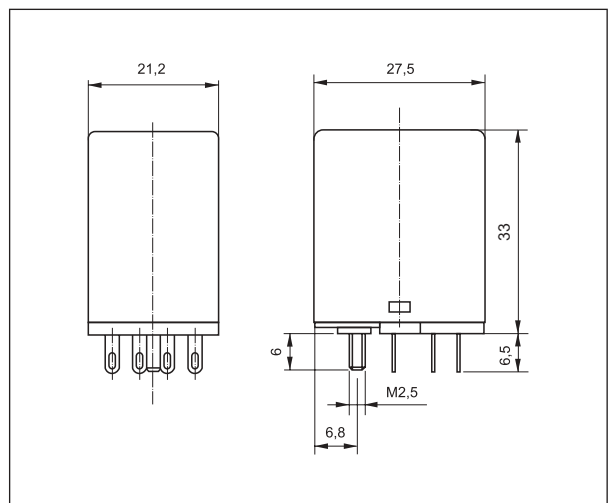
**Dimensions - plug-in version, with test button  
(no latching) or with plug (no manual operation)**



**Dimensions - PCB version  
(without WT)**



**Dimensions - version with threaded bolt**



## Mounting

**Relays R4 are offered in versions:** • 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 R4P-0001 (no latching) or plug R4W-0003 (no manual operation). Test buttons (no latching) and plugs need to be ordered separately • for PCB (without WT) • with threaded bolt.

Connection diagram (pin side view)

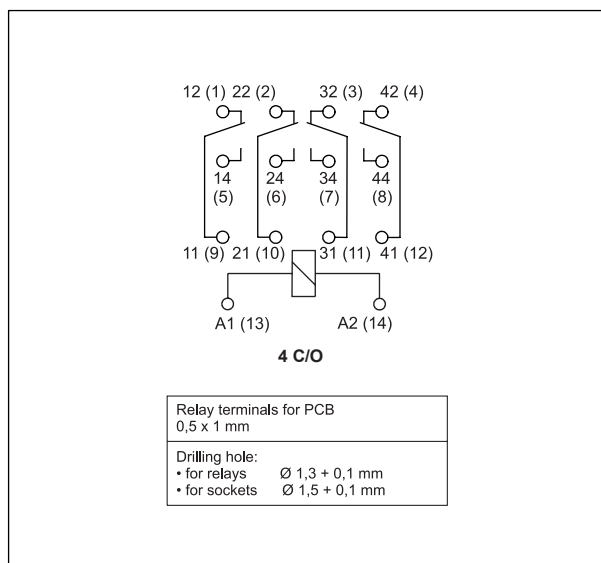
Electrical life at AC resistive load.  
Switching frequency: 1 200 cycles/hour

Fig. 1

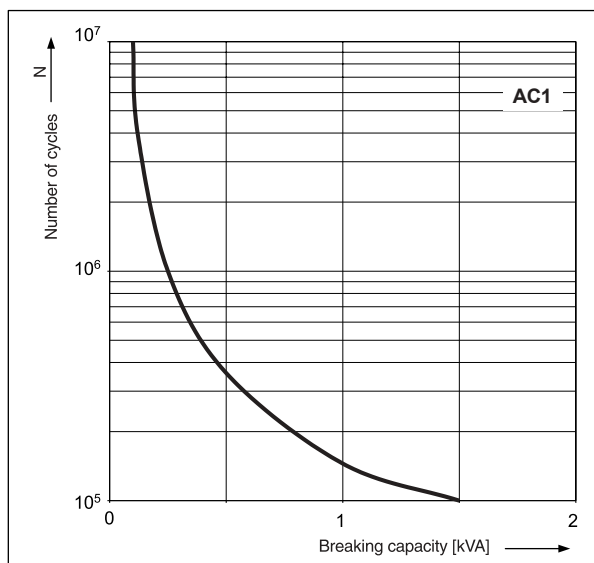
Electrical life reduction factor  
at AC inductive load

Fig. 2

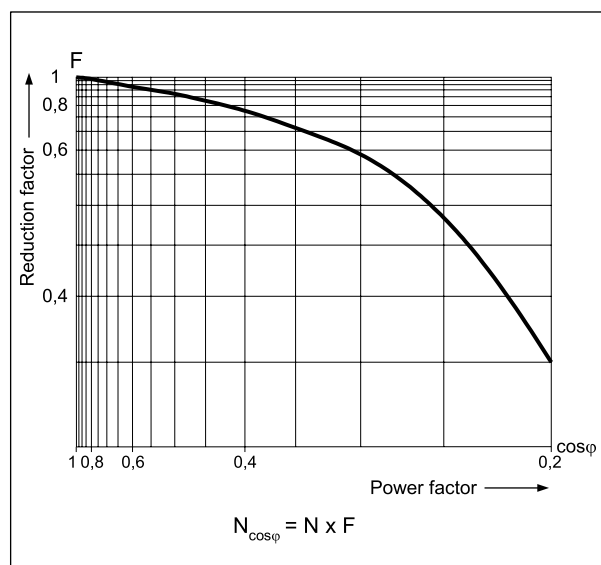
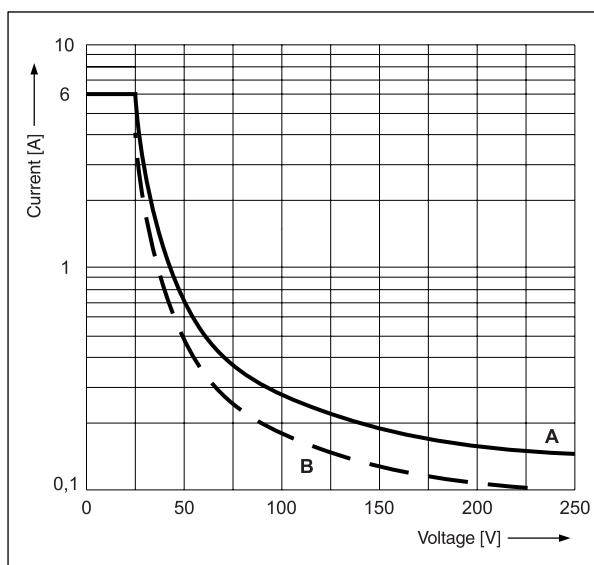
Max. DC breaking capacity  
A - resistive load DC1  
B - inductive load L/R = 40 ms

Fig. 3



## Mounting

Relays **R4** are designed for:

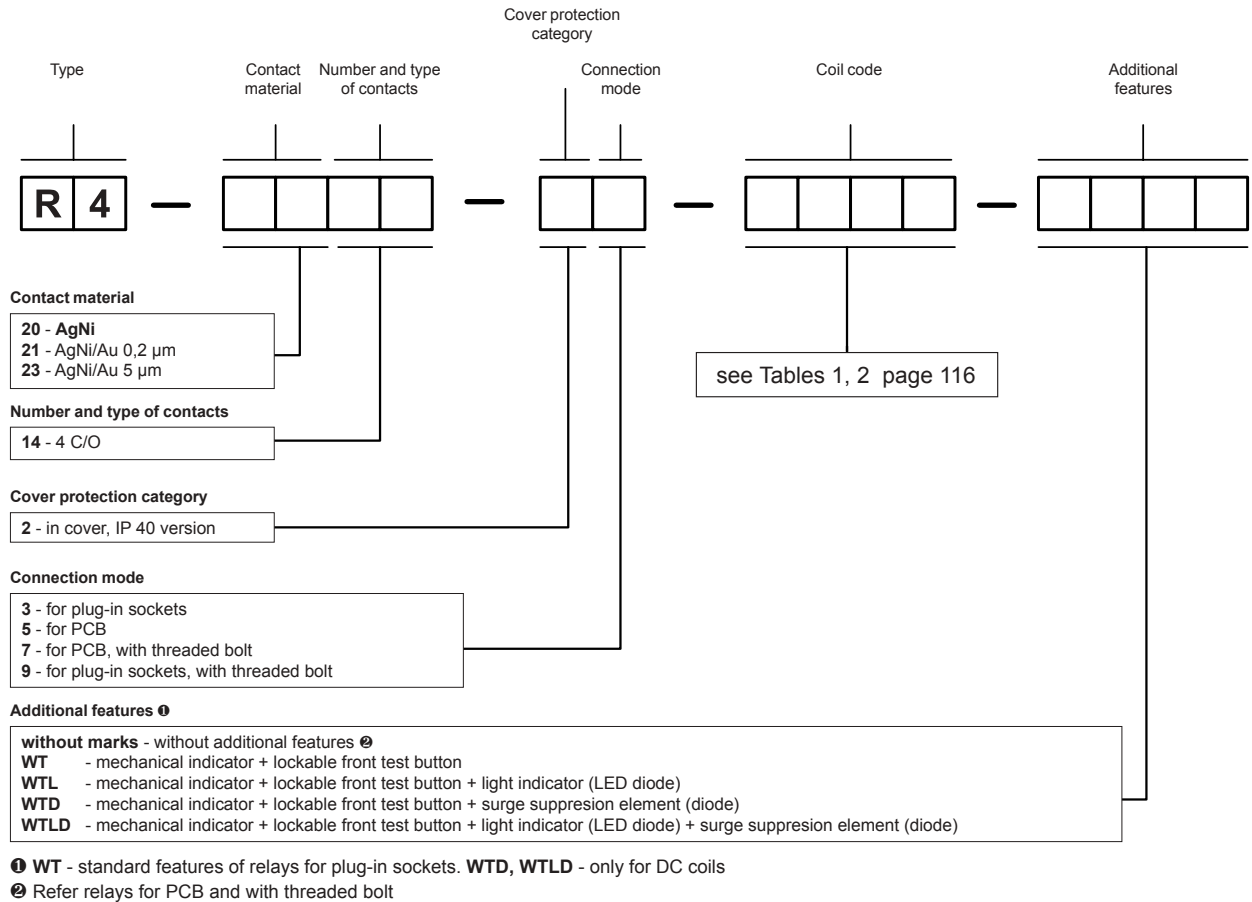
- screw terminals plug-in sockets **GZT4** ① and **GZM4** ① with clip **GZT4-0040** or **G4 1052**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. Signalling / protecting modules **type M...** are available with sockets (see page 250)
- screw terminals plug-in sockets **GZ4** with clip **G4 1052** or plug-in sockets **GS4** with clip **GS4-0036**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- plug-in sockets for PCB mounting **SU4D** with clip **G4 1053** (WT) or **G4 1050** (without WT)
- solder terminals sockets **SU4L** with clip **G4 1053** (WT) or **G4 1050** (without WT) and spring clamp **G4 1040**
- solder terminals sockets **G4** with clip **G4 1053** (WT) or **G4 1050** (without WT)
- direct PCB mounting.

① Plug-in sockets **GZT4** and **GZM4** may be linked with interconnection strip type **ZGGZ4** (see page 262).

## Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au 0,2 μm** - contact surface protection against oxidation during storage,
- **AgNi/Au 5 μm** - for small resistive loads in control circuits.

## Ordering codes



**Test buttons (no latching) and plugs** need to be ordered separately. They substitute buttons type T. To be exchanged by the Customer themselves. Information on test buttons (no latching) and plugs - page 251.

- 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:**

For relays with DC coils and additional features inclusive: **D** - surge suppression element (diode) and **L** - light indicator (LED diode) coil supply polarization is fixed. Terminal A1 (13) "+"; terminal A2 (14) "-". Supply polarization is marked on relay cover. Colour of lockable front test button type T represents type of coil supply current: orange - AC coil, green - DC coil.

Example of ordering code:

**R4-2014-23-5230-WTL** relay **R4**, contact material AgNi, with four changeover contacts, in cover IP 40, for plug-in sockets, voltage version 230 V AC 50/60 Hz, with mechanical indicator and lockable front test button and light indicator (LED diode)



- Relays of general application
- For plug-in sockets, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting
- Flat insert connectors - faston 4,8 x 0,5 mm
- Recognitions, certifications, directives: RoHS,   

## Contact data

|                                |     |                        |
|--------------------------------|-----|------------------------|
| Number and type of contacts    |     | 2 C/O                  |
| Contact material               |     | <b>AgNi</b> , AgCdO    |
| Rated / max. switching voltage | AC  | 250 V / 440 V          |
| Min. switching voltage         |     | 5 V AgNi, 10 V AgCdO   |
| Rated load                     | AC1 | 12 A / 250 V AC        |
|                                | DC1 | 12 A / 30 V DC         |
| Min. switching current         |     | 5 mA AgNi, 10 mA AgCdO |
| Max. inrush current            |     | 20 A                   |
| Rated current                  |     | 12 A                   |
| Max. breaking capacity         | AC1 | 3 000 VA               |
| Min. breaking capacity         |     | 0,3 W AgNi, 1 W AgCdO  |
| 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 | 6 ... 240 V                                       |
|                                   | DC          | 5 ... 220 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          | 1,6 VA                                            |
|                                   | DC          | 0,9 W                                             |

## Insulation according to PN-EN 60664-1

|                             |            |                                        |
|-----------------------------|------------|----------------------------------------|
| Insulation rated voltage    |            | 250 V AC                               |
| Rated surge voltage         |            | 4 000 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         | 1 000 V AC | type of clearance: micro-disconnection |
| • pole - pole               | 2 500 V AC | type of insulation: basic              |
| Contact - coil distance     |            |                                        |
| • clearance                 |            | ≥ 2,6 mm                               |
| • creepage                  |            | ≥ 4 mm                                 |

## General data

|                                           |             |                                  |
|-------------------------------------------|-------------|----------------------------------|
| Operating / release time (typical values) |             | 15 ms / 10 ms                    |
| Electrical life                           |             |                                  |
| • resistive AC1                           |             | ≥ 10 <sup>5</sup> 12 A, 250 V AC |
| • cos φ                                   |             | see Fig. 2                       |
| Mechanical life (cycles)                  |             | ≥ 10 <sup>7</sup>                |
| Dimensions (L x W x H)                    |             | 27,5 x 21,1 x 34,5 mm ❶          |
| Weight                                    |             | 35 g                             |
| Ambient temperature                       | • storage   | -40...+70 °C                     |
|                                           | • operating | -40...+55 °C                     |
| Cover protection category                 |             | IP 40 PN-EN 60529                |
| Shock resistance                          |             | 10 g                             |
| Vibration resistance                      |             | 5 g 15...150 Hz                  |

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

❶ For plug-in sockets version: standard

**Coil data - DC voltage version**

**Table 1**

| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                |
|-----------|-----------------------|----------------------------------------------------|------------------------------|----------------|
|           |                       |                                                    | min. (at 20°C)               | max. (at 55°C) |
| 1005      | 5                     | 28                                                 | 4,0                          | 5,5            |
| 1006      | 6                     | 40                                                 | 4,8                          | 6,6            |
| 1012      | 12                    | 160                                                | 9,6                          | 13,2           |
| 1024      | 24                    | 640                                                | 19,2                         | 26,4           |
| 1048      | 48                    | 2 600                                              | 38,4                         | 52,8           |
| 1060      | 60                    | 4 000                                              | 48,0                         | 66,0           |
| 1080      | 80                    | 7 100                                              | 64,0                         | 88,0           |
| 1110      | 110                   | 13 600                                             | 88,0                         | 121,0          |
| 1125      | 125                   | 16 000                                             | 100,0                        | 137,5          |
| 1220      | 220                   | 54 000                                             | 176,0                        | 242,0          |

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

**Table 2**

| Coil code | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                |
|-----------|-----------------------|----------------------------------------------------|------------------------------|----------------|
|           |                       |                                                    | min. (at 20°C)               | max. (at 55°C) |
| 5006      | 6                     | 9,8                                                | 4,8                          | 6,6            |
| 5012      | 12                    | 39,5                                               | 9,6                          | 13,2           |
| 5024      | 24                    | 158,0                                              | 19,2                         | 26,4           |
| 5042      | 42                    | 470,0                                              | 33,6                         | 46,2           |
| 5048      | 48                    | 640,0                                              | 38,4                         | 52,8           |
| 5060      | 60                    | 930,0                                              | 48,0                         | 66,0           |
| 5080      | 80                    | 1 720,0                                            | 64,0                         | 88,0           |
| 5110      | 110                   | 3 450,0                                            | 88,0                         | 121,0          |
| 5120      | 120                   | 3 770,0                                            | 96,0                         | 132,0          |
| 5127      | 127                   | 4 000,0                                            | 101,6                        | 139,7          |
| 5220      | 220                   | 15 400,0                                           | 176,0                        | 242,0          |
| 5230      | 230                   | 16 100,0                                           | 184,0                        | 253,0          |
| 5240      | 240                   | 16 800,0                                           | 192,0                        | 264,0          |

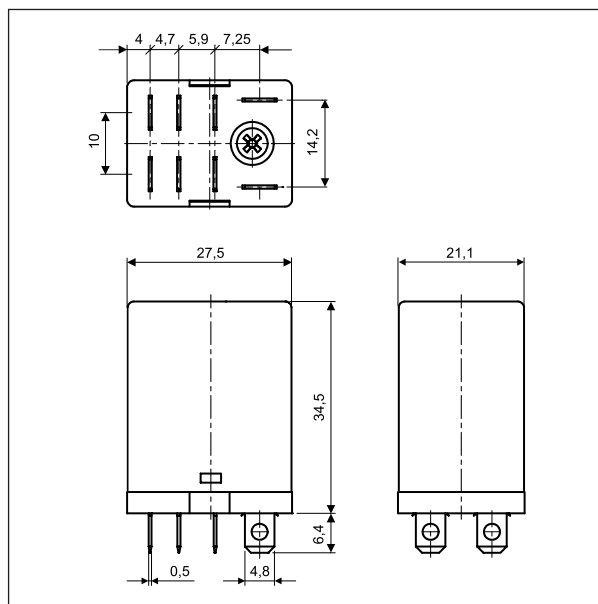
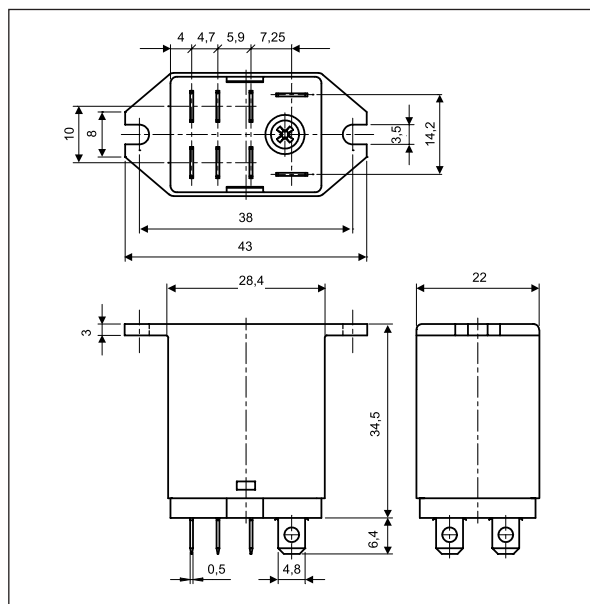
**Dimensions - plug-in version (standard)****Dimensions - version with mounting flange in the upper wall of the cover****Electrical life at AC resistive load.  
Switching frequency: 1 200 cycles/hour**

Fig. 1

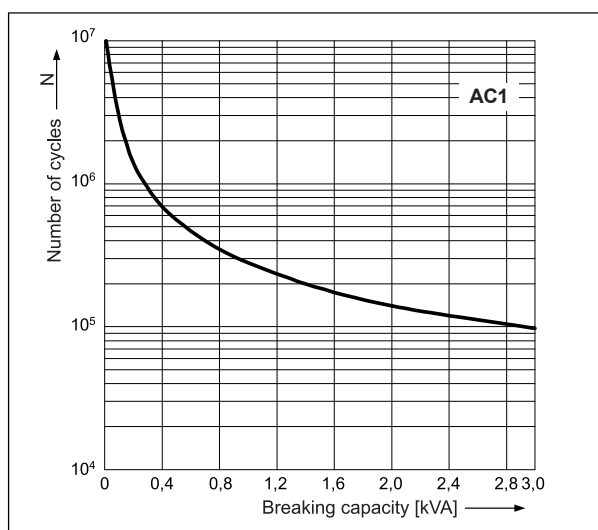
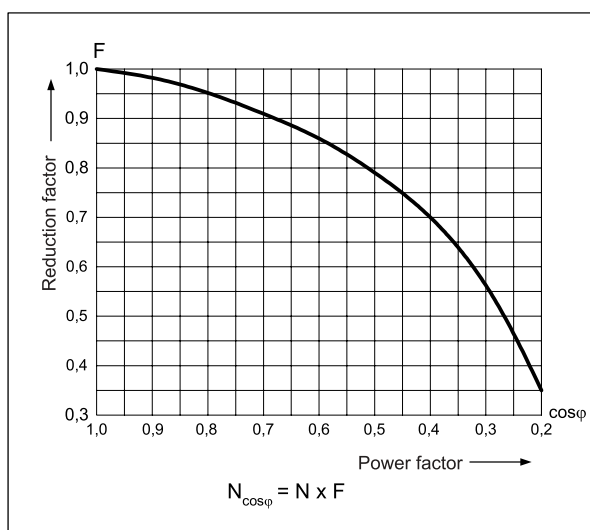
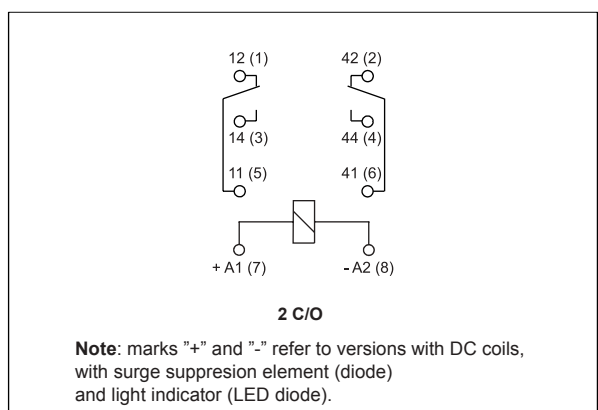
**Electrical life reduction factor at AC inductive load**

Fig. 2

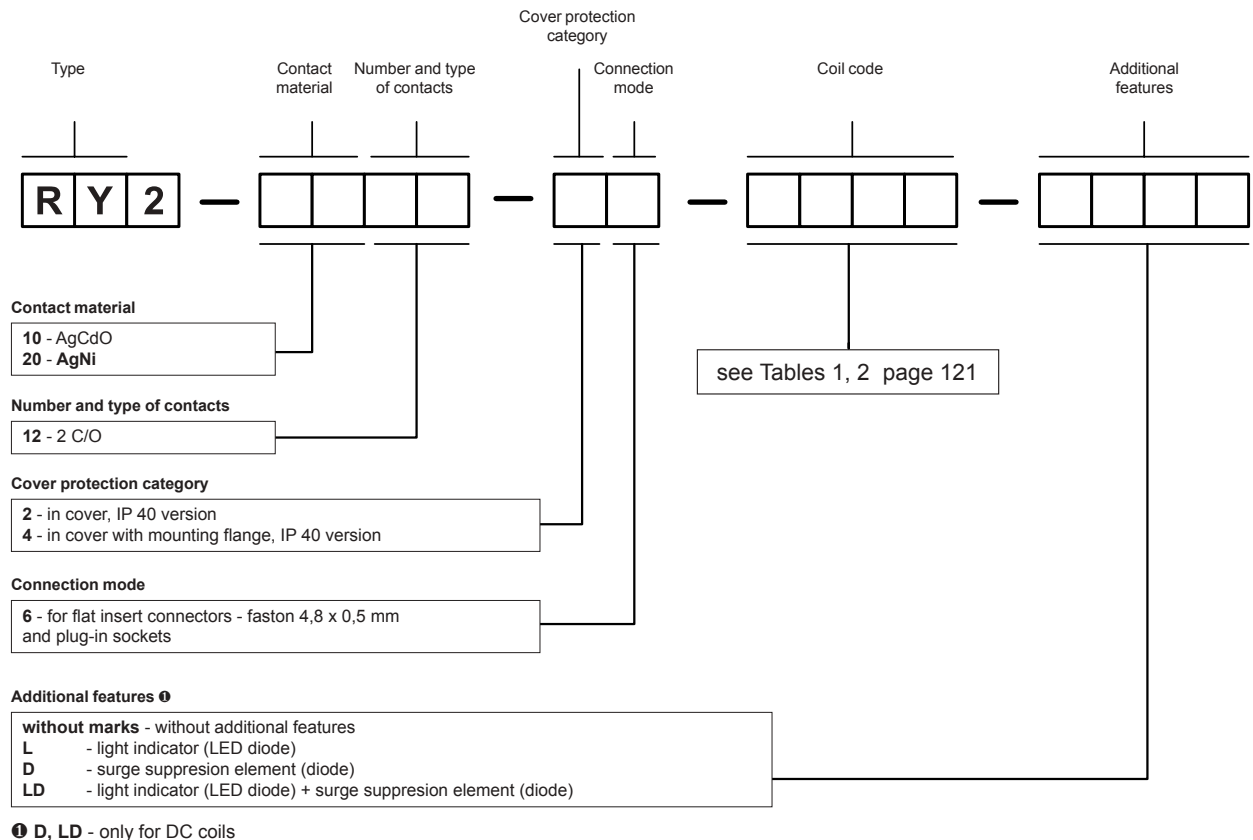
**Connection diagram (pin side view)**

## Mounting

**Relays RY2 are offered in versions:** • standard, for plug-in sockets • with mounting flange in the upper wall of the cover.

Relays **RY2** are designed for: • screw terminals plug-in sockets **GZY2** with clip **GZY 2000** and spring clamp **GZ2 1111**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • flat insert connectors - faston 4,8 x 0,5 mm.

## Ordering codes



Examples of ordering codes:

- RY2-2012-26-1024** relay **RY2**, contact material AgNi, with two changeover contacts, in cover IP 40, for flat insert connectors - faston 4,8 x 0,5 mm and plug-in sockets, voltage version 24 V DC
- RY2-2012-26-5230-L** relay **RY2**, contact material AgNi, with two changeover contacts, in cover IP 40, for flat insert connectors - faston 4,8 x 0,5 mm and plug-in sockets, voltage version 230 V AC 50/60 Hz, with light indicator (LED diode)



- Relays of general application
- For plug-in sockets, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting
- For PCB and for soldering connections
- AC and DC coils
- Recognitions, certifications, directives: RoHS,   

## Contact data

|                                |     |                                                          |
|--------------------------------|-----|----------------------------------------------------------|
| Number and type of contacts    |     | 2 C/O                                                    |
| Contact material               |     | <b>AgNi</b> , AgNi/Au 0,2 µm, AgSnO <sub>2</sub>         |
| Rated / max. switching voltage | AC  | 250 V / 250 V                                            |
| Min. switching voltage         |     | 5 V AgNi, 5 V AgNi/Au 0,2 µm, 10 V AgSnO <sub>2</sub>    |
| Rated load                     | AC1 | 5 A / 250 V AC                                           |
|                                | DC1 | 5 A / 24 V DC                                            |
| Min. switching current         |     | 5 mA AgNi, 5 mA AgNi/Au 0,2 µm, 10 mA AgSnO <sub>2</sub> |
| Rated current                  |     | 5 A                                                      |
| Max. breaking capacity         | AC1 | 1 250 VA                                                 |
| Min. breaking capacity         |     | 0,3 W AgNi, 0,3 W AgNi/Au 0,2 µm, 1 W AgSnO <sub>2</sub> |
| Contact resistance             |     | ≤ 100 mΩ                                                 |
| Max. operating frequency       |     |                                                          |
| • at rated load                | AC1 | 1 200 cycles/hour                                        |
| • no load                      |     | 36 000 cycles/hour                                       |

## Coil data

|                                   |             |                       |
|-----------------------------------|-------------|-----------------------|
| Rated voltage                     | 50/60 Hz AC | 6 ... 240 V           |
|                                   | DC          | 6 ... 110 V           |
| Must release voltage              |             | ≥ 0,05 U <sub>n</sub> |
| Operating range of supply voltage |             | see Tables 1, 2       |
| Rated power consumption           | AC          | 1,2 VA                |
|                                   | DC          | 0,9 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        |            | II                                     |
| Insulation pollution degree |            | 3                                      |
| Dielectric strength         |            |                                        |
| • between coil and contacts | 2 000 V AC | type of insulation: basic              |
| • contact clearance         | 1 000 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 mm                                 |

## General data

|                                           |                       |                  |
|-------------------------------------------|-----------------------|------------------|
| Operating / release time (typical values) | AC: 8 ms / 7 ms       | DC: 10 ms / 3 ms |
| Electrical life                           |                       |                  |
| • resistive AC1                           | ≥ 2 x 10 <sup>5</sup> | 5 A, 250 V AC    |
| • cos φ                                   | see Fig. 2            |                  |
| Mechanical life (cycles)                  | ≥ 10 <sup>7</sup>     |                  |
| Dimensions (L x W x H)                    | 27,5 x 14 x 32,9 mm   |                  |
| Weight                                    | 22 g                  |                  |
| Ambient temperature                       | • storage             | -40...+70 °C     |
|                                           | • operating           | -40...+55 °C     |
| Cover protection category                 | IP 40                 | PN-EN 60529      |
| 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.

**Note:** relays with AgNi contacts can be used up to 5 A at resistive and inductive load.

**Coil data - DC voltage version**

**Table 1**

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                |
|-------------|-----------------------|----------------------------------------------------|------------------------------|----------------|
|             |                       |                                                    | min. (at 20°C)               | max. (at 55°C) |
| 1006        | 6                     | 47                                                 | 4,8                          | 6,6            |
| <b>1012</b> | <b>12</b>             | <b>188</b>                                         | <b>9,6</b>                   | <b>13,2</b>    |
| <b>1024</b> | <b>24</b>             | <b>750</b>                                         | <b>19,2</b>                  | <b>26,4</b>    |
| 1048        | 48                    | 2 660                                              | 38,4                         | 52,8           |
| 1060        | 60                    | 4 000                                              | 48,0                         | 66,0           |
| 1080        | 80                    | 7 100                                              | 64,0                         | 88,0           |
| 1110        | 110                   | 13 480                                             | 88,0                         | 121,0          |

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

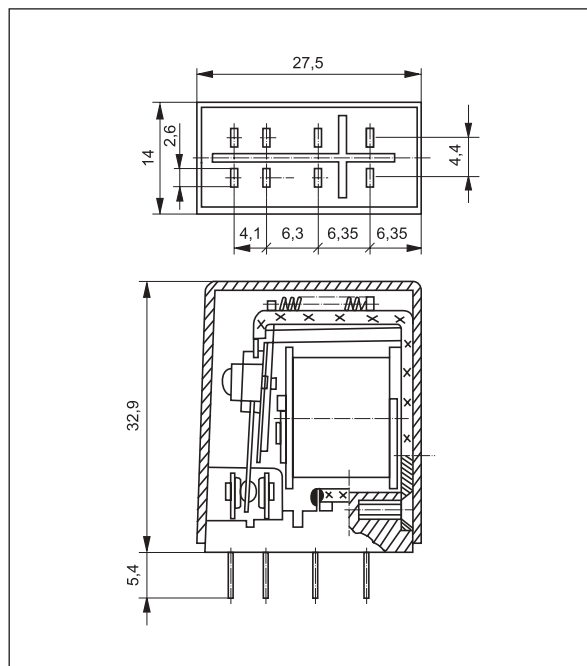
**Coil data - AC 50/60 Hz voltage version**

**Table 2**

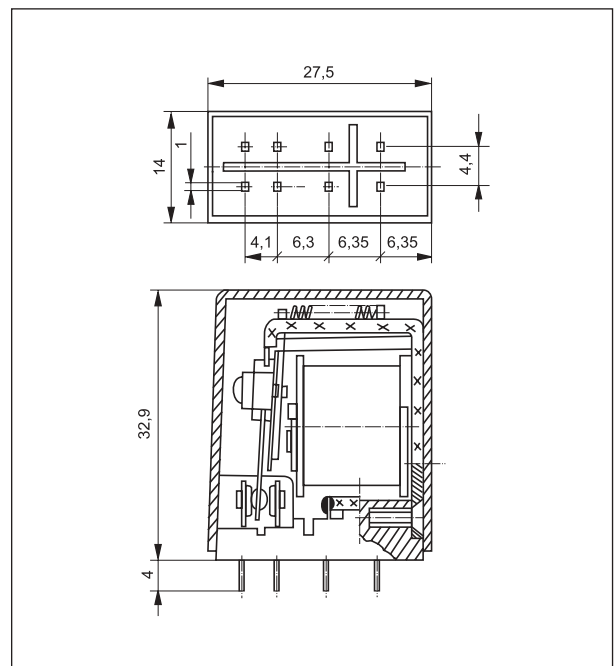
| Coil code   | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                |
|-------------|-----------------------|----------------------------------------------------|------------------------------|----------------|
|             |                       |                                                    | min. (at 20°C)               | max. (at 55°C) |
| 5006        | 6                     | 16                                                 | 4,8                          | 6,6            |
| 5012        | 12                    | 68                                                 | 9,6                          | 13,2           |
| <b>5024</b> | <b>24</b>             | <b>270</b>                                         | <b>19,2</b>                  | <b>26,4</b>    |
| 5050        | 50                    | 1 150                                              | 40,0                         | 55,0           |
| 5100        | 100                   | 5 590                                              | 80,0                         | 110,0          |
| 5110        | 110                   | 5 670                                              | 88,0                         | 121,0          |
| 5115        | 115                   | 5 990                                              | 92,0                         | 126,0          |
| 5120        | 120                   | 6 390                                              | 96,0                         | 132,0          |
| 5220        | 220                   | 21 470                                             | 176,0                        | 242,0          |
| <b>5230</b> | <b>230</b>            | <b>21 470</b>                                      | <b>184,0</b>                 | <b>253,0</b>   |
| 5240        | 240                   | 25 390                                             | 192,0                        | 264,0          |

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

**Dimensions - plug-in version**



**Dimensions - PCB version**



Connection diagram (pin side view)

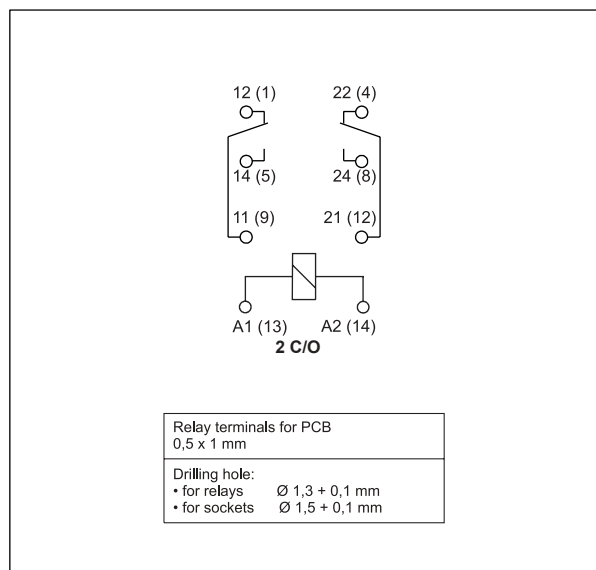
Electrical life at AC resistive load.  
Switching frequency: 1 200 cycles/hour

Fig. 1

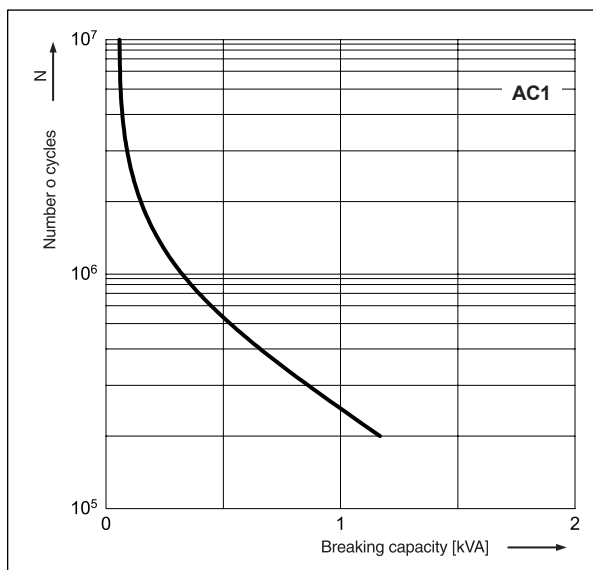
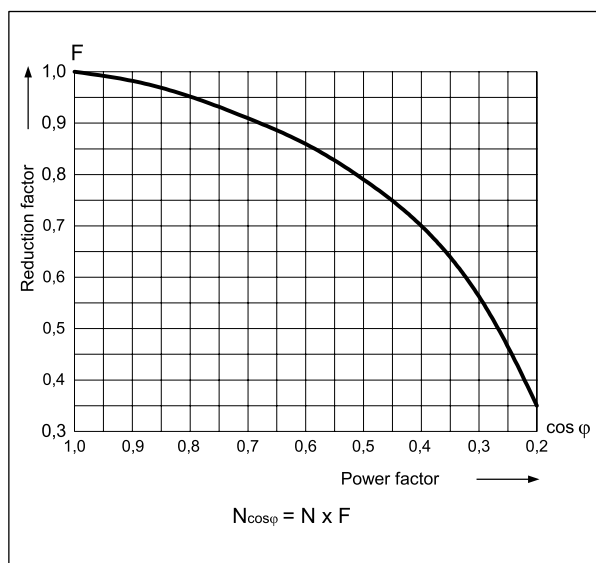
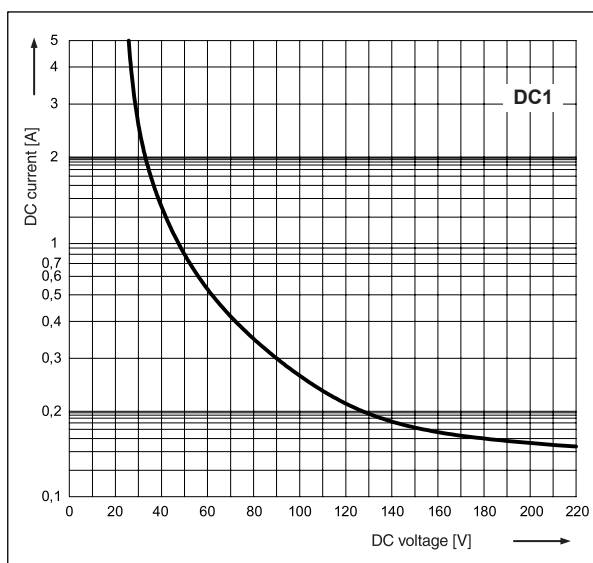
Electrical life reduction factor  
at AC inductive load

Fig. 2



Max. DC resistive load breaking capacity

Fig. 3



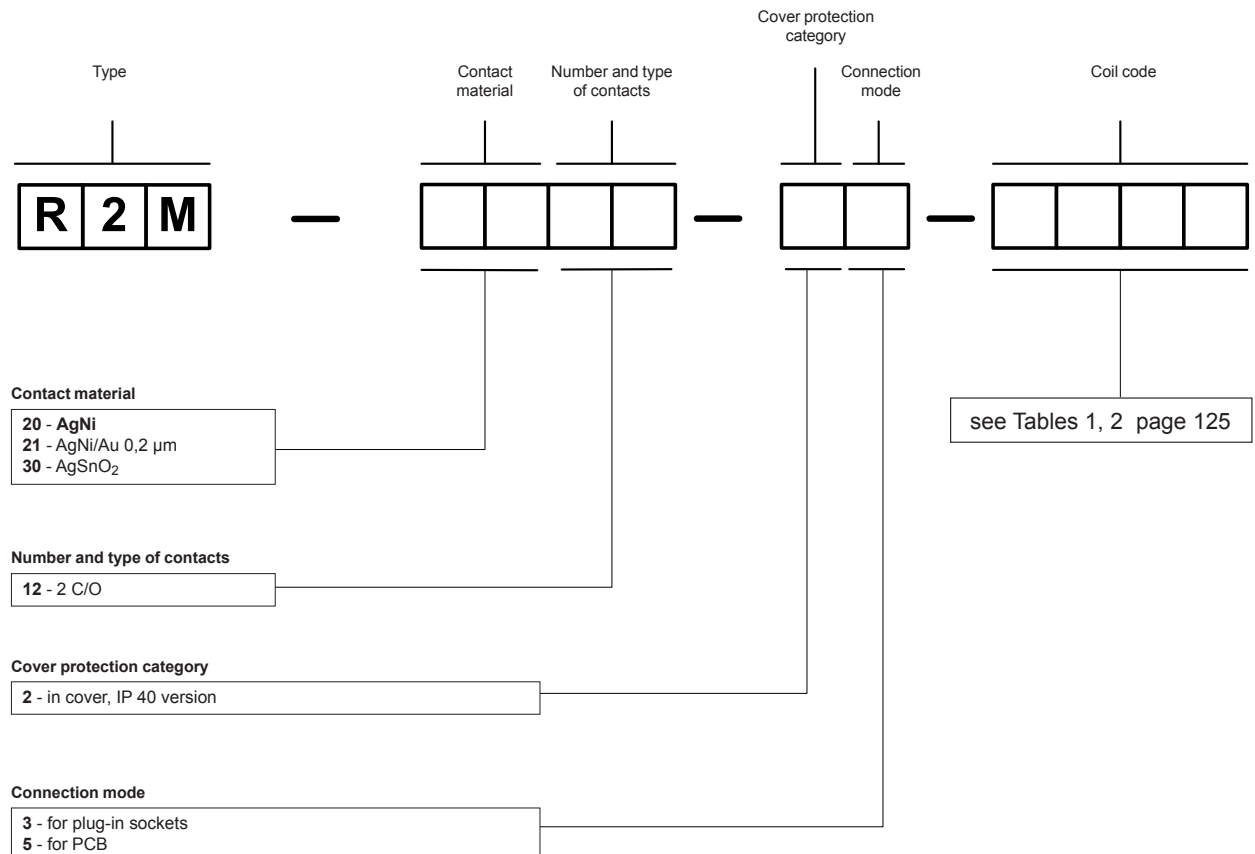
## Mounting

Relays **R2M** are designed for: • screw terminals plug-in sockets **GZ2** with clip **GZ2 1060** and spring clamp **GZ2 1111**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • plug-in sockets for PCB mounting **S2M** with clip **G4 1050** • solder terminals sockets **G2M** with clip **G4 1050** and spring clamp **G2M 1020** • direct PCB mounting.

## Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au 0,2 µm** - contact surface protection against oxidation during storage,
- **AgSnO<sub>2</sub>** - for capacitive loads or incandescent lamp loads.

## Ordering codes



Examples of ordering codes:

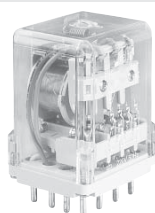
- R2M-2012-23-5230** relay **R2M**, contact material AgNi, with two changeover contacts, in cover IP 40, for plug-in sockets, voltage version 230 V AC 50/60 Hz
- R2M-2012-25-1024** relay **R2M**, contact material AgNi, with two changeover contacts, in cover IP 40, for PCB, voltage version 24 V DC



R15 2 C/O



R15 3 C/O



R15 4 C/O

• Relays of general application • For plug-in sockets, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting • Cadmium - free contacts - R15 2 C/O, R15 3 C/O relays • WT (mechanical indicator + lockable front test button) - standard features of R15 2 C/O, R15 3 C/O relays in cover, for plug-in sockets. Relays may be provided with the test buttons (no latching) and plugs - page 251 • **Have obtained LR Type Approval Certificate (Lloyd's Register) - R15...WT 2 C/O, R15...WT 3 C/O** • Recognitions, certifications, directives: RoHS, AUCOTEAM GmbH Berlin - railway standards,       

### Contact data

|                                |                                                                                                                  |                                                                                                                                                                                                                         |
|--------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number and type of contacts    | 2 C/O, 3 C/O, 4 C/O                                                                                              |                                                                                                                                                                                                                         |
| Contact material               | 2 C/O, 3 C/O: <b>AgNi</b> , AgNi/Au 0,2 µm, AgNi/Au 5 µm<br>4 C/O: <b>AgCdO</b> , AgCdO/Au 0,2 µm, AgCdO/Au 5 µm |                                                                                                                                                                                                                         |
| Rated / max. switching voltage | AC                                                                                                               | 2 C/O, 3 C/O: 250 V / 440 V      4 C/O: 250 V / 250 V                                                                                                                                                                   |
| Min. switching voltage         |                                                                                                                  | 2 C/O, 3 C/O: 5 V AgNi, 5 V AgNi/Au 0,2 µm, 5 V AgNi/Au 5 µm<br>4 C/O: 10 V AgCdO, 10 V AgCdO/Au 0,2 µm, 5 V AgCdO/Au 5 µm                                                                                              |
| Rated load (capacity)          | AC1<br>AC15<br>AC3<br>DC1<br>DC13                                                                                | 10 A / 250 V AC      10 A / 277 V AC UL 508<br>3 A / 120 V      1,5 A / 240 V (B300)<br>370 W (single-phase motor, 1/2 HP / 240 V AC UL 508)<br>10 A / 24 V DC (see Fig. 3)<br>0,22 A / 120 V      0,1 A / 250 V (R300) |
| Min. switching current         |                                                                                                                  | 2 C/O, 3 C/O: 5 mA AgNi, 5 mA AgNi/Au 0,2 µm, 2 mA AgNi/Au 5 µm<br>4 C/O: 10 mA AgCdO, 10 mA AgCdO/Au 0,2 µm, 2 mA AgCdO/Au 5 µm                                                                                        |
| Max. inrush current            |                                                                                                                  | 20 A                                                                                                                                                                                                                    |
| Rated current                  |                                                                                                                  | 10 A                                                                                                                                                                                                                    |
| Max. breaking capacity         | AC1                                                                                                              | 2 500 VA                                                                                                                                                                                                                |
| Min. breaking capacity         |                                                                                                                  | 2 C/O, 3 C/O: 0,3 W AgNi, 0,3 W AgNi/Au 0,2 µm, 0,05 W AgNi/Au 5 µm<br>4 C/O: 0,5 W AgCdO, 0,5 W AgCdO/Au 0,2 µm, 0,05 W AgCdO/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                     | AC<br>DC | 2 C/O, 3 C/O: 6 ... 240 V 50/60 Hz      4 C/O: 6 ... 240 V 50 Hz, 60 Hz<br>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, 3, 4                                                                  |
| 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<br>• contact clearance<br>• pole - pole | 2 500 V AC    type of insulation: basic<br>1 500 V AC    type of clearance: micro-disconnection<br>2 000 V AC    type of insulation: basic |
| Contact - coil distance     |                                                                     |                                                                                                                                            |
| • clearance                 |                                                                     | 2 C/O, 3 C/O, 4 C/O: ≥ 3 mm                                                                                                                |
| • creepage                  |                                                                     | 2 C/O, 3 C/O: ≥ 4,2 mm      4 C/O: ≥ 3,2 mm                                                                                                |

### General data

|                                           |                                                                 |
|-------------------------------------------|-----------------------------------------------------------------|
| Operating / release time (typical values) | AC: 12 ms / 10 ms      DC: 18 ms / 7 ms                         |
| Electrical life                           | • resistive AC1<br>• cosφ                                       |
|                                           | ≥ 2 x 10 <sup>5</sup> 10 A, 250 V AC<br>see Fig. 2              |
| Mechanical life (cycles)                  | ≥ 2 x 10 <sup>7</sup>                                           |
| Dimensions (L x W x H)                    | 2 C/O, 3 C/O: 35 x 35 x 54,4 mm      4 C/O: 35 x 42,5 x 54,5 mm |
| Weight                                    | 2 C/O, 3 C/O: 83 g      4 C/O: 95 g                             |
| Ambient temperature                       | • storage<br>• operating                                        |
|                                           | -40...+85 °C<br>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.

Coil data - DC voltage version

Table 1

| Coil code   | Rated voltage U <sub>n</sub><br>V DC | Coil resistance<br>±10% at 20 °C<br>Ω | Coil operating range<br>V DC |                 |
|-------------|--------------------------------------|---------------------------------------|------------------------------|-----------------|
|             |                                      |                                       | min. (at 20 °C)              | max. (at 55 °C) |
| 1006        | 6                                    | 28                                    | 4,8                          | 6,6             |
| <b>1012</b> | <b>12</b>                            | <b>110</b>                            | <b>9,6</b>                   | <b>13,2</b>     |
| <b>1024</b> | <b>24</b>                            | <b>430</b>                            | <b>19,2</b>                  | <b>26,4</b>     |
| 1048        | 48                                   | 1 750                                 | 38,4                         | 52,8            |
| 1060        | 60                                   | 2 700                                 | 48,0                         | 66,0            |
| 1110        | 110                                  | 9 200                                 | 88,0                         | 121,0           |
| 1120        | 120                                  | 11 000                                | 96,0                         | 132,0           |
| <b>1220</b> | <b>220</b>                           | <b>37 000</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 (standard for R15 2 C/O, R15 3 C/O)

Table 2

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

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

Coil data - AC 50 Hz voltage version (standard for R15 4 C/O)

Table 3

| Coil code | Rated voltage U <sub>n</sub><br>V AC | Coil resistance<br>±15% at 20 °C<br>Ω | Coil operating range<br>V AC |                 |
|-----------|--------------------------------------|---------------------------------------|------------------------------|-----------------|
|           |                                      |                                       | min. (at 20 °C)              | max. (at 55 °C) |
| 3006      | 6                                    | 4,8                                   | 4,8                          | 6,6             |
| 3012      | 12                                   | 20,0                                  | 9,6                          | 13,2            |
| 3024      | 24                                   | 72,0                                  | 19,2                         | 26,4            |
| 3048      | 48                                   | 360,0                                 | 38,4                         | 52,8            |
| 3060      | 60                                   | 520,0                                 | 48,0                         | 66,0            |
| 3115      | 115                                  | 2 100,0                               | 92,0                         | 126,5           |
| 3120      | 120                                  | 2 300,0                               | 96,0                         | 132,0           |
| 3220      | 220                                  | 7 000,0                               | 176,0                        | 242,0           |
| 3230      | 230                                  | 7 900,0                               | 184,0                        | 253,0           |
| 3240      | 240                                  | 8 300,0                               | 192,0                        | 264,0           |

Coil data - AC 60 Hz voltage version (special for R15 4 C/O)

Table 4

| Coil code | Rated voltage $U_n$<br>V AC | Coil resistance<br>$\pm 15\%$ at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                 |
|-----------|-----------------------------|----------------------------------------------------|------------------------------|-----------------|
|           |                             |                                                    | min. (at 20 °C)              | max. (at 55 °C) |
| 6006      | 6                           | 4,8                                                | 4,8                          | 6,6             |
| 6012      | 12                          | 17,0                                               | 9,6                          | 13,2            |
| 6024      | 24                          | 65,0                                               | 19,2                         | 26,4            |
| 6048      | 48                          | 310,0                                              | 38,4                         | 52,8            |
| 6060      | 60                          | 490,0                                              | 48,0                         | 66,0            |
| 6110      | 110                         | 1 760,0                                            | 88,0                         | 121,0           |
| 6120      | 120                         | 2 000,0                                            | 96,0                         | 132,0           |
| 6220      | 220                         | 6 900,0                                            | 176,0                        | 242,0           |
| 6230      | 230                         | 7 000,0                                            | 184,0                        | 253,0           |
| 6240      | 240                         | 7 100,0                                            | 192,0                        | 264,0           |

### Mounting

**Relays R15 2 C/O and R15 3 C/O 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.**

Relays **R15 2 C/O** 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 C/O** 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.

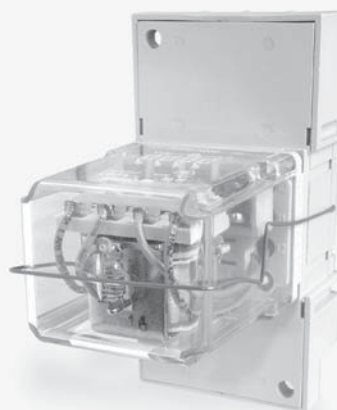
**Relays R15 4 C/O are offered in version** • in cover, for plug-in sockets.

Relays **R15 4 C/O** are designed for: • screw terminals plug-in sockets **GZ14U** with clip **GZ14 0737**, 35 mm rail mount acc. to PN-EN 60715 • screw terminals plug-in sockets **GZ14** with clip **GZ14 0737**, on panel mounting with two M3 screws • screw terminals plug-in sockets **GZ14Z** with clip **GZ14 0737**, on panel mounting with two M3 screws • solder terminals sockets **GOP14** with clip **R15 0736** and spring clamp **R15 5922**.

**NEW product** 

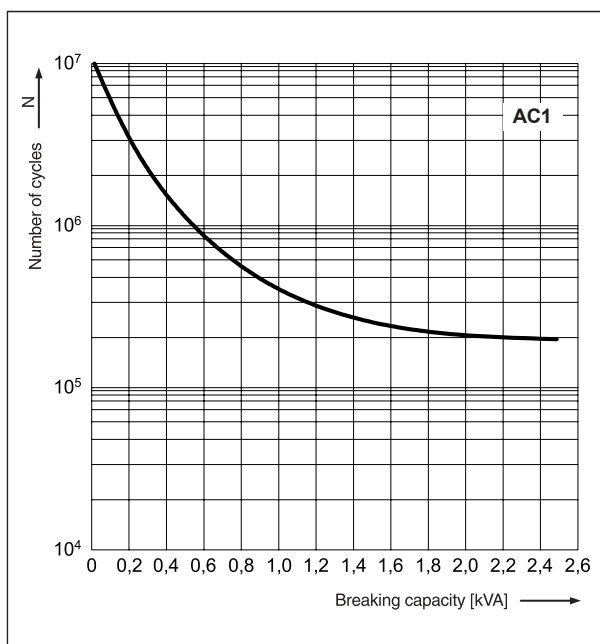
### GZ14Z

Screw terminals plug-in socket for R15 4 C/O **to be mounted behind the assembly panel**  
- see page 248.



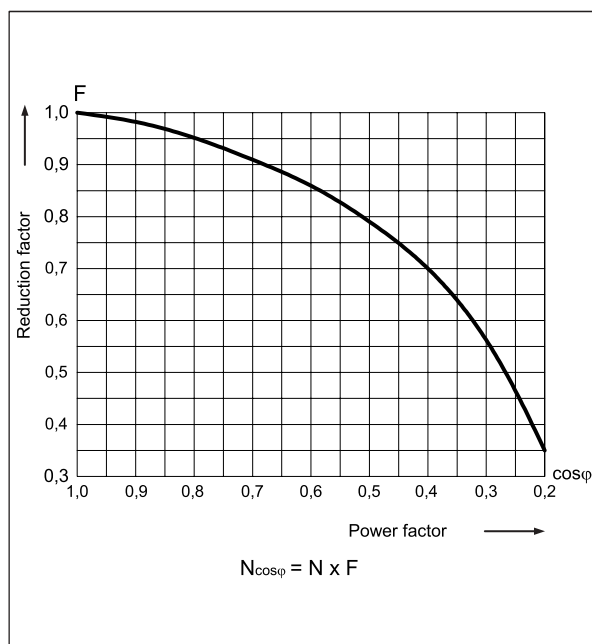
**Electrical life at AC resistive load.**  
Switching frequency: 1 200 cycles/hour

Fig. 1



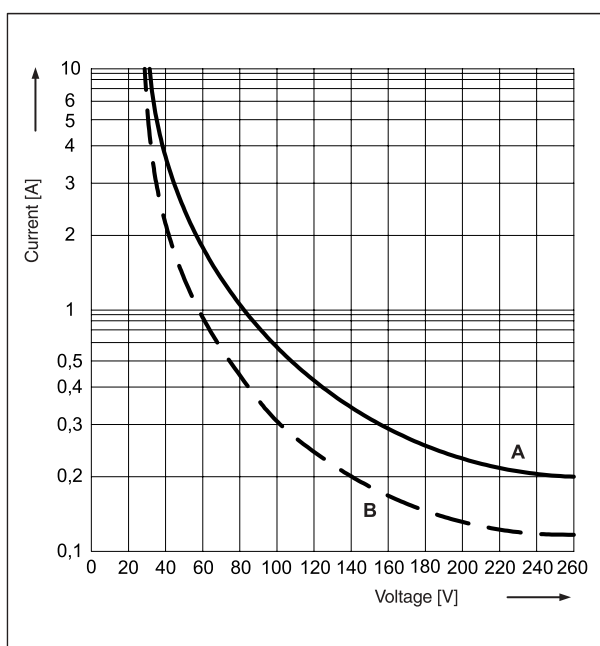
**Electrical life reduction factor at AC inductive load**

Fig. 2



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

Fig. 3



## R15 2 C/O, R15 3 C/O in cover, for plug-in sockets

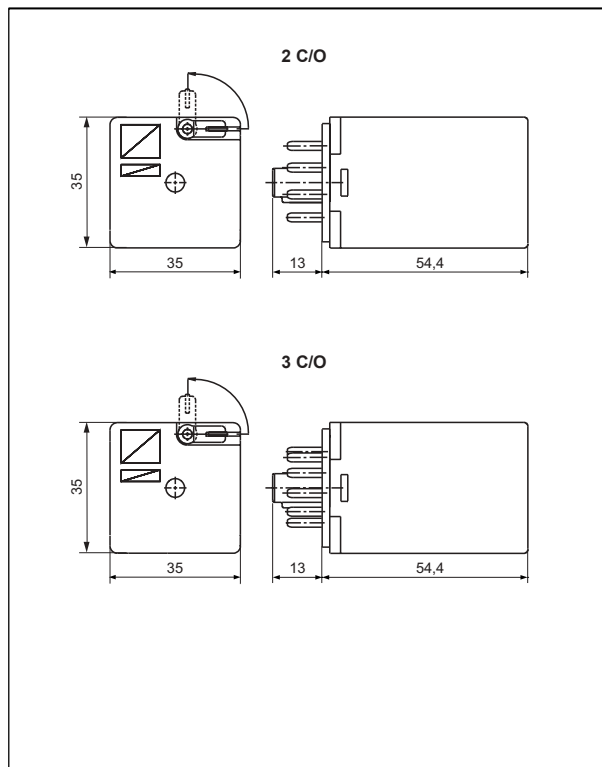
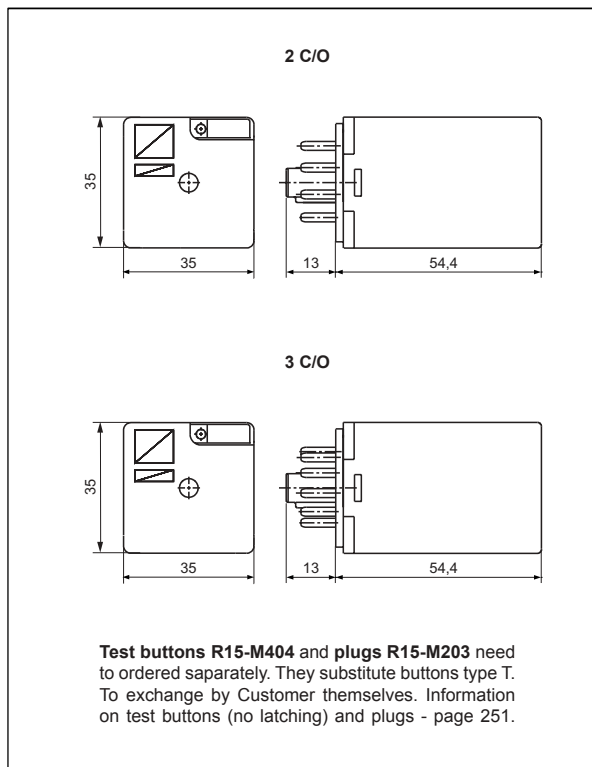
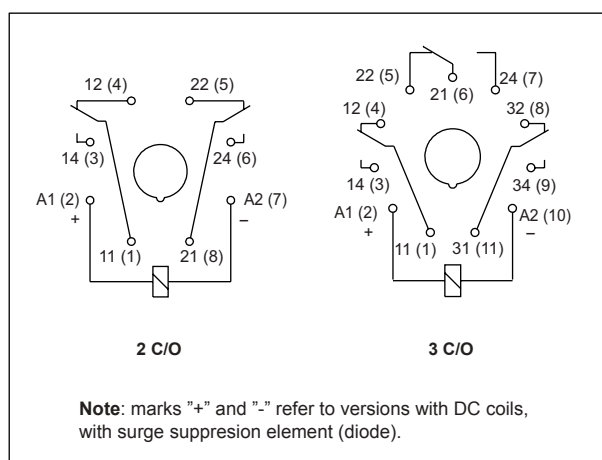


R15 2 C/O



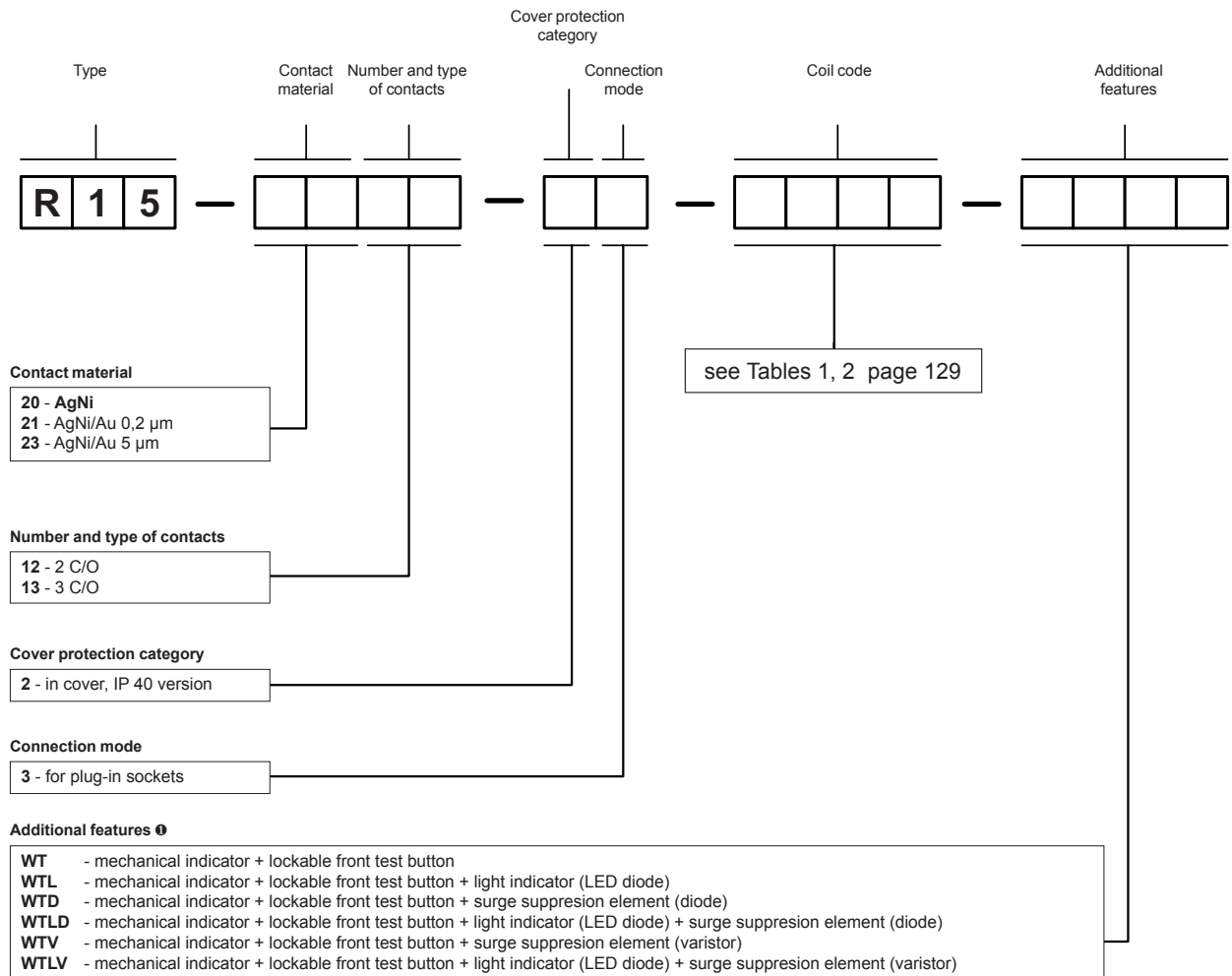
R15 3 C/O

- WT (mechanical indicator + lockable front test button) - standard features of R15 2 C/O, R15 3 C/O relays in cover, for plug-in sockets. Relays may be provided with the test buttons (no latching) and plugs - page 251
- **Have obtained LR Type Approval Certificate (Lloyd's Register) - R15...WT 2 C/O, R15...WT 3 C/O**
- Recognitions, certifications, directives: RoHS, AUCOTEAM GmbH Berlin - railway standards,


**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)

**Connection diagrams** (pin side view)


## R15 2 C/O, R15 3 C/O in cover, for plug-in sockets

## Ordering codes



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

**Test buttons (no latching) and plugs** need to be ordered separately. They substitute buttons type T. To be exchanged by the Customer themselves. Information on test buttons (no latching) and plugs - page 251.

- 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:**

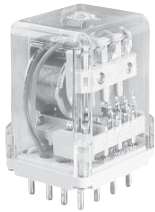
Colour of lockable front test button type T represents type of coil supply current: orange - AC coil, green - DC coil.

Examples of ordering codes:

- R15-1012-23-1024-WT** relay **R15**, contact material AgNi, with two changeover contacts, in cover IP 40, for plug-in sockets, voltage version 24 V DC, with mechanical indicator and lockable front test button
- R15-1013-23-5230-WTL** relay **R15**, contact material AgNi, with three changeover contacts, in cover IP 40, for plug-in sockets, voltage version 230 V AC 50/60 Hz, with mechanical indicator and lockable front test button and light indicator (LED diode)

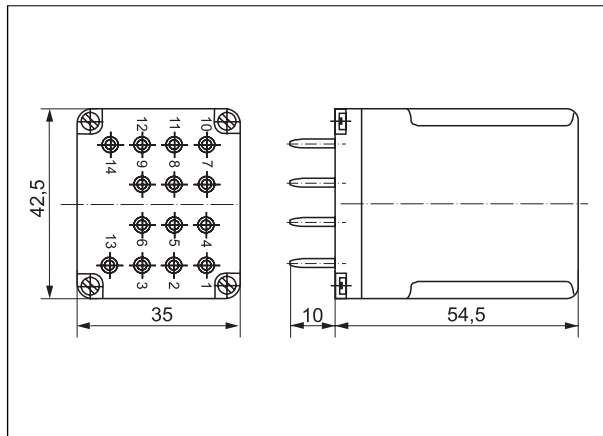
## R15 4 C/O in cover, for plug-in sockets

• Recognitions, certifications, directives: RoHS,     

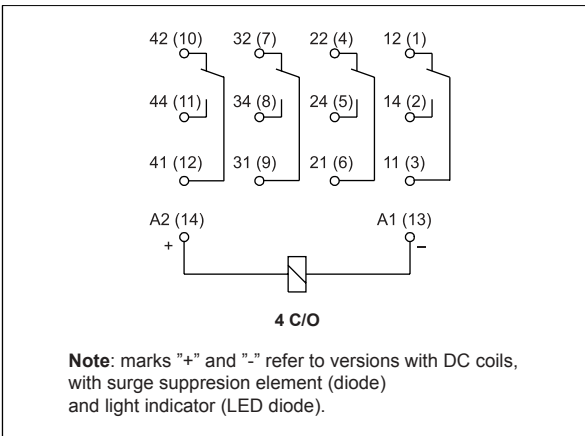


R15 4 C/O

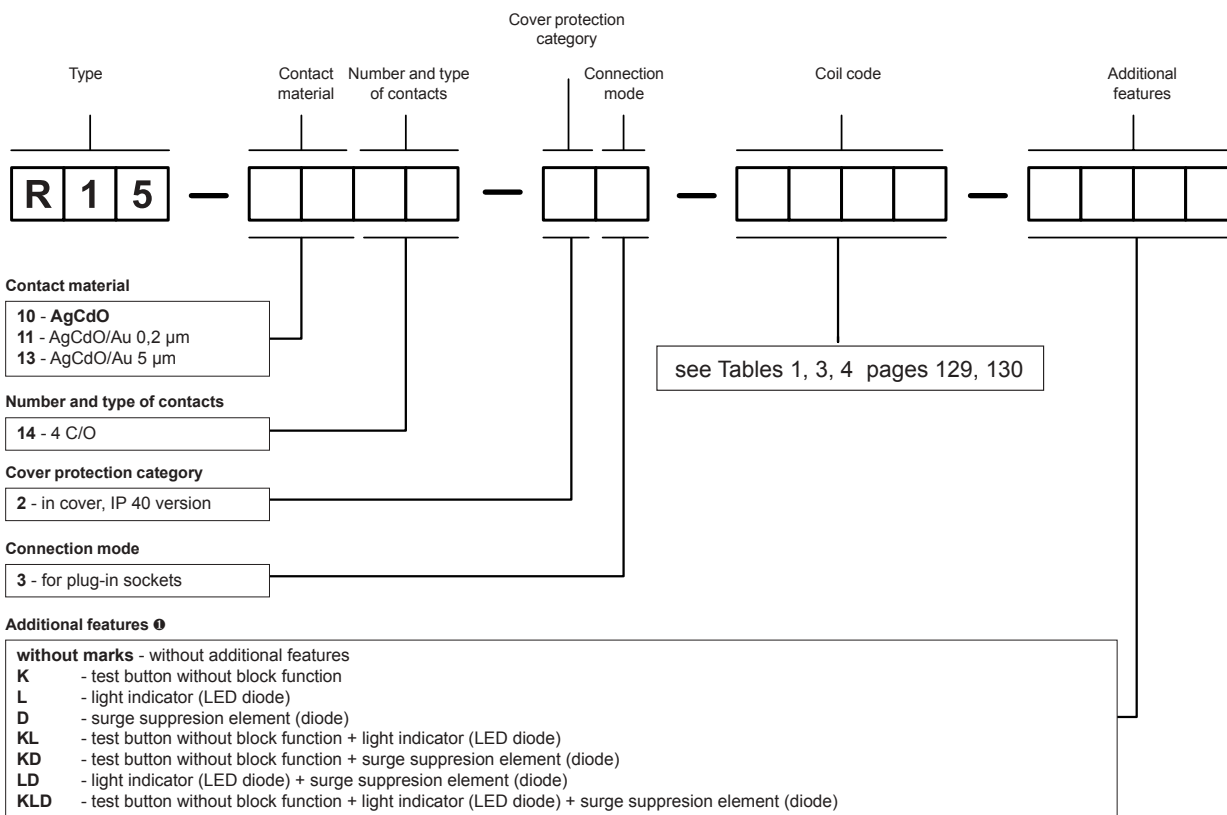
## Dimensions



## Connection diagram (pin side view)



## Ordering codes

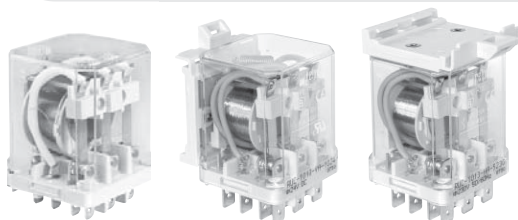


ⓘ **D, KD, LD, KLD** - only for DC coils

**Note:** for R15 4 C/O relays 50/60 Hz coils are not offered, show coil according with Table 3 or 4, pages 129, 130.

Example of ordering code:

**R15-1014-23-3230-K** relay **R15**, contact material AgCdO, with four changeover contacts, in cover IP 40, for plug-in sockets, voltage version 230 V AC 50 Hz, with test button without block function



NEW product

with adaptor (V)

with adaptor (H)

• Power relays of general application • AC and DC coils • Mounting: in sockets; 35 mm rail mount acc. to PN-EN 60715; on panel; PCB • Versions: faston 187 (4,8 x 0,5 mm); faston 250 (6,3 x 0,8 mm) • 3 mm contact gap (option - only in versions with normally open contacts) • Additional features: K - test button; L - light indicator (LED) • Applications: control of electromagnets; systems of heating, cooling, ventilation, air conditioning; control with single-phase and three-phase motors; catering industry machines and equipment; automation systems; etc.

• Recognitions, certifications, directives: RoHS,     

## Contact data

|                                |     |                                    |                 |                              |
|--------------------------------|-----|------------------------------------|-----------------|------------------------------|
| Number and type of contacts    |     | 2 C/O, 3 C/O, 2 NO, 3 NO           | 2 NO, 3 NO      | with contact gap $\geq 3$ mm |
| Contact material               |     | <b>AgCdO, AgNi</b>                 |                 |                              |
| Rated / max. switching voltage | AC  | 400 V / 440 V                      | 230 V / 250 V   | ❶                            |
| Min. switching voltage         |     | 5 V AgNi, 10 V AgCdO               |                 |                              |
| Rated load                     | AC1 | 16 A / 250 V AC or 10 A / 400 V AC | 16 A / 250 V AC | ❶                            |
|                                | DC1 | 16 A / 24 V DC                     |                 |                              |
| Min. switching current         |     | 5 mA AgNi, 10 mA AgCdO             |                 |                              |
| Max. inrush current            |     | 40 A                               |                 |                              |
| Rated current                  |     | 16 A                               |                 |                              |
| Max. breaking capacity         | AC1 | 4 000 VA                           |                 |                              |
| Min. breaking capacity         |     | 0,3 W AgNi, 1 W AgCdO              |                 |                              |
| Contact resistance             |     | $\leq 100$ m $\Omega$              |                 |                              |
| Max. operating frequency       |     |                                    |                 |                              |
| • at rated load                | AC1 | 1 200 cycles/hour                  |                 |                              |
| • no load                      |     | 12 000 cycles/hour                 |                 |                              |

## Coil data

|                                   |    |                       |                    |                              |
|-----------------------------------|----|-----------------------|--------------------|------------------------------|
| Rated voltage                     | AC | 6 ... 240 V 50/60 Hz  | 400 V 50 Hz        | ❶                            |
|                                   | DC | 6 ... 220 V           |                    |                              |
| Must release voltage              |    | AC: $\geq 0,15 U_n$   | DC: $\geq 0,1 U_n$ |                              |
| Operating range of supply voltage |    | see Tables 1, 2, 3, 4 |                    |                              |
| Rated power consumption           | AC | 2,8 VA 50 Hz          | 2,5 VA 60 Hz       |                              |
|                                   | DC | 1,5 W                 | 1,7 W              | with contact gap $\geq 3$ mm |

## Insulation according to PN-EN 60664-1

|                             |                                                    |             |                                                                     |  |
|-----------------------------|----------------------------------------------------|-------------|---------------------------------------------------------------------|--|
| Insulation rated voltage    |                                                    | 400 V AC    |                                                                     |  |
| Rated surge voltage         |                                                    | 4 000 V     | 1,2 / 50 $\mu$ s                                                    |  |
| Overvoltage category        |                                                    | III         |                                                                     |  |
| Insulation pollution degree |                                                    | 3           |                                                                     |  |
| Dielectric strength         | • between coil and contacts<br>• contact clearance | 2 500 V AC  | type of insulation: basic                                           |  |
|                             |                                                    | 1 500 V AC  | type of clearance: micro-disconnection                              |  |
|                             |                                                    | 2 500 V AC  | with contact gap $\geq 3$ mm, type of clearance: full-disconnection |  |
|                             | • pole - pole                                      | 2 500 V AC  | type of insulation: basic                                           |  |
| Contact - coil distance     | • clearance                                        | $\geq 5$ mm |                                                                     |  |
|                             | • creepage                                         | $\geq 8$ mm |                                                                     |  |

## General data

|                                           |                                                                                                 |                                                                                                                                                                                                               |                            |
|-------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Operating / release time (typical values) |                                                                                                 | 20 ms / 15 ms                                                                                                                                                                                                 |                            |
| Electrical life                           | <ul style="list-style-type: none"><li>• resistive AC1</li><li>• <math>\cos\phi</math></li></ul> | $\geq 10^5$ 16 A, 250 V AC                                                                                                                                                                                    | $\geq 10^5$ 10 A, 400 V AC |
|                                           |                                                                                                 | see Fig. 2                                                                                                                                                                                                    |                            |
| Mechanical life (cycles)                  |                                                                                                 | $\geq 10^7$                                                                                                                                                                                                   |                            |
| Motor load according to UL 508            |                                                                                                 | 2 C/O: 1/3 HP 120 V AC, single-phase motor 1/2 HP 240 V AC, single-phase motor<br>3 C/O: 1/3 HP 120 V AC, single-phase motor 1/2 HP 240 V AC, single-phase motor<br>3 C/O: 1/2 HP 240 V AC, three-phase motor |                            |
| Dimensions (L x W x H)                    |                                                                                                 | RUC faston 4,8 x 0,5 ❷ RUC faston 6,3 x 0,8 ❸                                                                                                                                                                 |                            |
| Weight                                    |                                                                                                 | 80 g ❹ 85 g ❺                                                                                                                                                                                                 |                            |
| Ambient temperature                       | <ul style="list-style-type: none"><li>• storage</li><li>• operating</li></ul>                   | -40...+85 °C<br>AC: -40...+55 °C 3 C/O, 3 NO / 16 A (+70 °C 2 C/O, 2 NO / 16 A)<br>DC: -40...+55 °C 3 C/O, 3 NO / 16 A (+70 °C 3 C/O, 3 NO / 10 A; 2 C/O, 2 NO / 16 A)                                        |                            |
| Cover protection category                 |                                                                                                 | IP 00 PN-EN 60529                                                                                                                                                                                             |                            |
| Shock / vibration resistance              |                                                                                                 | 10 g / 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. ❶ For RUC faston 4,8 x 0,5 with GUC11 socket, max. switching voltages and coil voltages of relays are limited to 250 V AC/DC. ❷ For plug-in sockets version: 36,1 x 38,6 x 45,5 mm. For version: with (V) adaptor: 58,75 x 38,6 x 45,9 mm; with (H) adaptor: 46,8 x 38,6 x 62,45 mm. For version with mounting flange: 66,3 x 38,6 x 36,1 mm. For PCB version: 36,1 x 38,6 x 52,5 mm. ❸ For version: with (V) adaptor: 62,4 x 38,6 x 45,9 mm; with (H) adaptor: 46,8 x 38,6 x 66,1 mm. For version with mounting flange: 66,3 x 38,6 x 36,1 mm. ❹ Weight of plug-in sockets version and PCB version (RUC faston 4,8 x 0,5). ❺ Weight of version with (V) or (H) adaptor, and version with mounting flange.

Coil data - DC voltage version

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>±10% at 20°C<br>Ω | Coil operating range<br>V DC |                |
|-------------|-----------------------|--------------------------------------|------------------------------|----------------|
|             |                       |                                      | min. (at 20°C)               | max. (at 55°C) |
| 1006        | 6                     | 28                                   | 4,8                          | 6,6            |
| <b>1012</b> | <b>12</b>             | <b>110</b>                           | <b>9,6</b>                   | <b>13,2</b>    |
| 1024        | 24                    | 430                                  | 19,2                         | 26,4           |
| 1042        | 42                    | 1 340                                | 33,6                         | 46,2           |
| 1048        | 48                    | 1 750                                | 38,4                         | 52,8           |
| 1060        | 60                    | 2 700                                | 48,0                         | 66,0           |
| 1110        | 110                   | 9 200                                | 88,0                         | 121,0          |
| 1120        | 120                   | 11 000                               | 96,0                         | 132,0          |
| 1220        | 220                   | 37 000                               | 176,0                        | 242,0          |

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

Coil data - DC voltage version, reinforced

Table 2

| Coil code ❶ | Rated voltage<br>V DC | Coil resistance<br>±10% at 20°C<br>Ω | Coil operating range<br>V DC |                |
|-------------|-----------------------|--------------------------------------|------------------------------|----------------|
|             |                       |                                      | min. (at 20°C)               | max. (at 55°C) |
| W012        | 12                    | 85                                   | 9,6                          | 13,2           |
| W024        | 24                    | 345                                  | 19,2                         | 26,4           |
| W048        | 48                    | 1 370                                | 38,4                         | 52,8           |
| W110        | 110                   | 7 300                                | 88,0                         | 121,0          |
| W220        | 220                   | 30 000                               | 176,0                        | 242,0          |

❶ For version with contact gap ≥ 3 mm.

Coil data - AC 50/60 Hz voltage version

Table 3

| Coil code | Rated voltage<br>V AC | Coil resistance<br>±10% at 20°C<br>Ω | Coil operating range<br>V AC |                |
|-----------|-----------------------|--------------------------------------|------------------------------|----------------|
|           |                       |                                      | min. (at 20°C)               | max. (at 55°C) |
| 5006      | 6                     | 4,3                                  | 4,8                          | 6,6            |
| 5012      | 12                    | 18,5                                 | 9,6                          | 13,2           |
| 5024      | 24                    | 75,0                                 | 19,2                         | 26,4           |
| 5115      | 115                   | 1 840,0                              | 92,0                         | 126,5          |
| 5120      | 120                   | 1 910,0                              | 96,0                         | 132,0          |
| 5220      | 220                   | 6 980,0                              | 176,0                        | 242,0          |
| 5230      | 230                   | 7 080,0                              | 184,0                        | 253,0          |
| 5240      | 240                   | 7 760,0                              | 192,0                        | 264,0          |

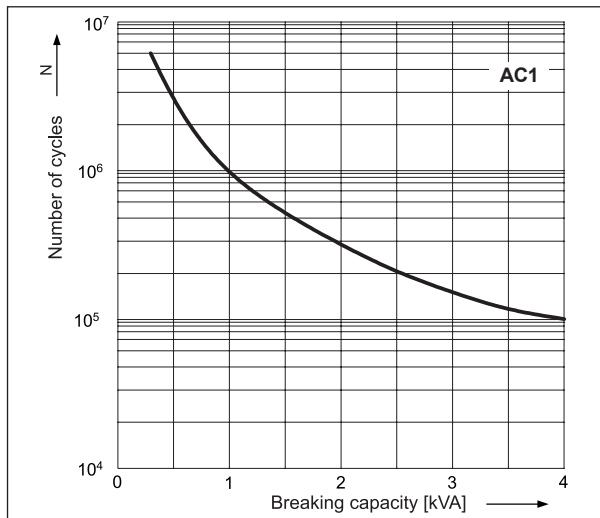
Coil data - AC 50 Hz voltage version

Table 4

| Coil code | Rated voltage<br>V AC | Coil resistance<br>±10% at 20°C<br>Ω | Coil operating range<br>V AC |                |
|-----------|-----------------------|--------------------------------------|------------------------------|----------------|
|           |                       |                                      | min. (at 20°C)               | max. (at 55°C) |
| 3400      | 400                   | 21 500                               | 320,0                        | 440,0          |

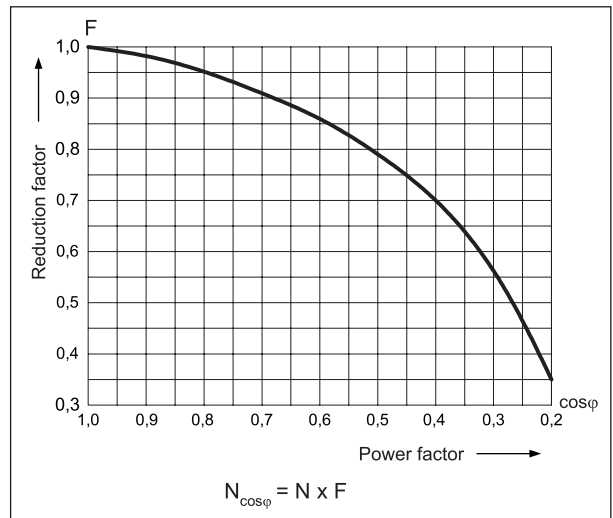
**Electrical life at AC resistive load.**  
Switching frequency: 1 200 cycles/hour

Fig. 1



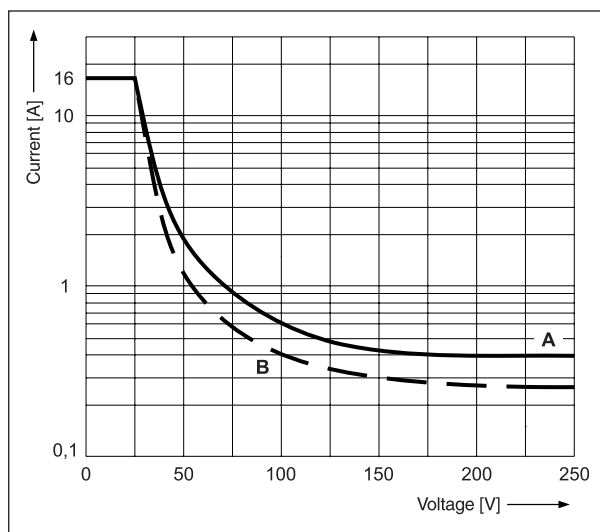
**Electrical life reduction factor at AC inductive load**

Fig. 2

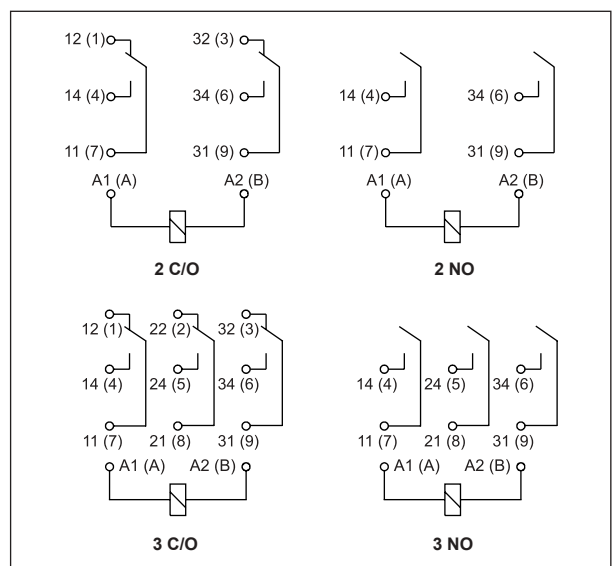


**Max. DC breaking capacity**  
A - resistive load DC1  
B - inductive load L/R = 40 ms

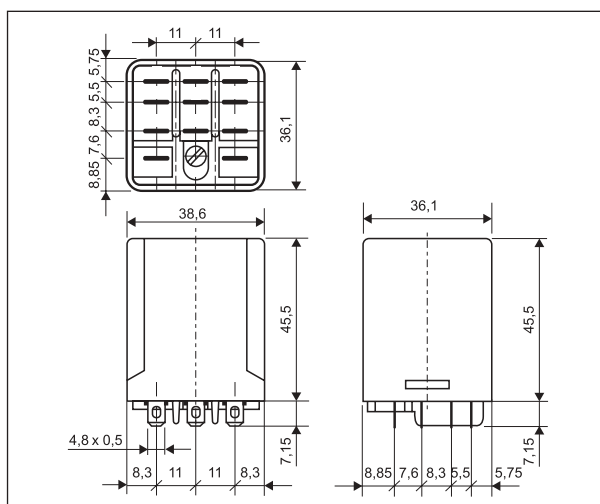
Fig. 3



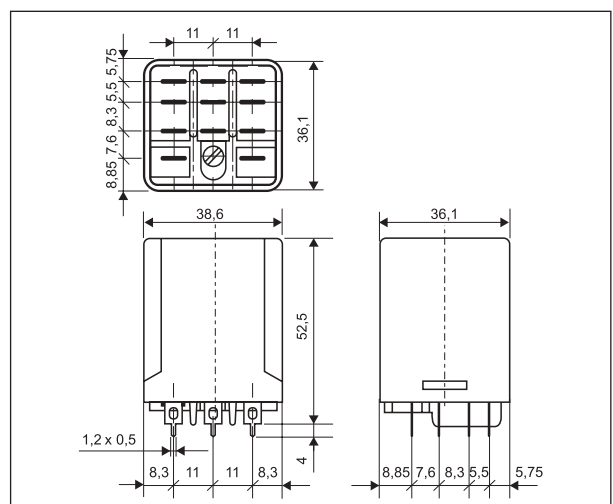
**Connection diagrams (pin side view)**



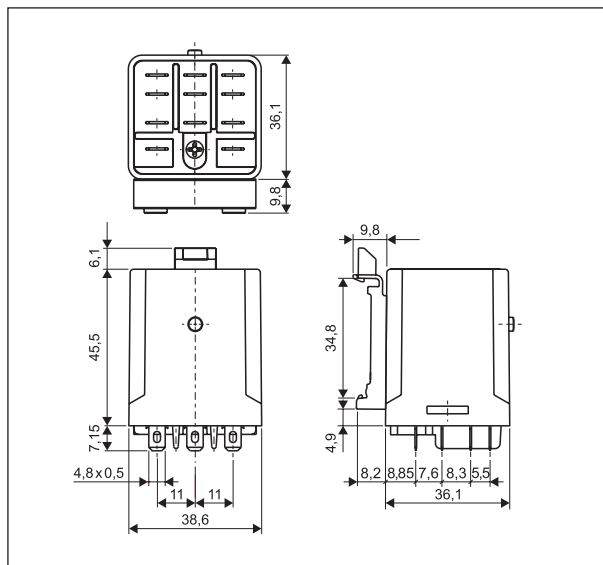
**Dimensions - RUC faston 4,8 x 0,5**  
- plug-in version (standard)



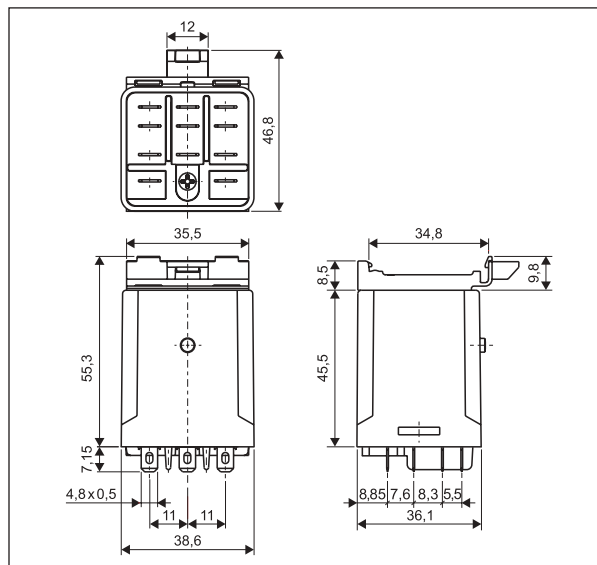
**Dimensions - RUC faston 4,8 x 0,5**  
- PCB version



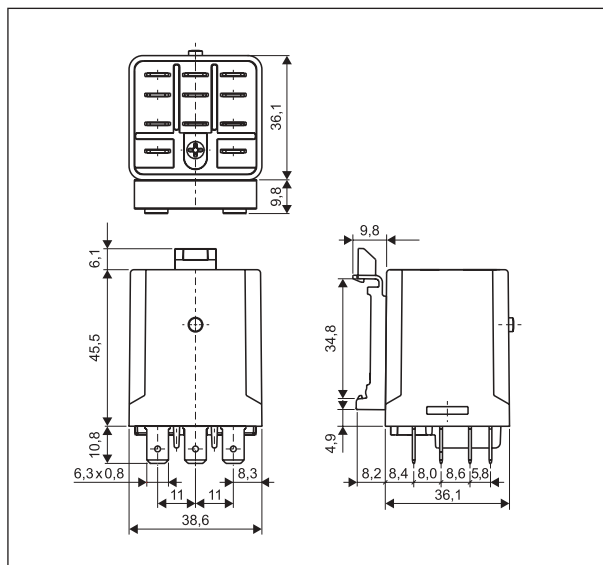
**Dimensions - RUC faston 4,8 x 0,5**  
- version with vertical adaptor (V)



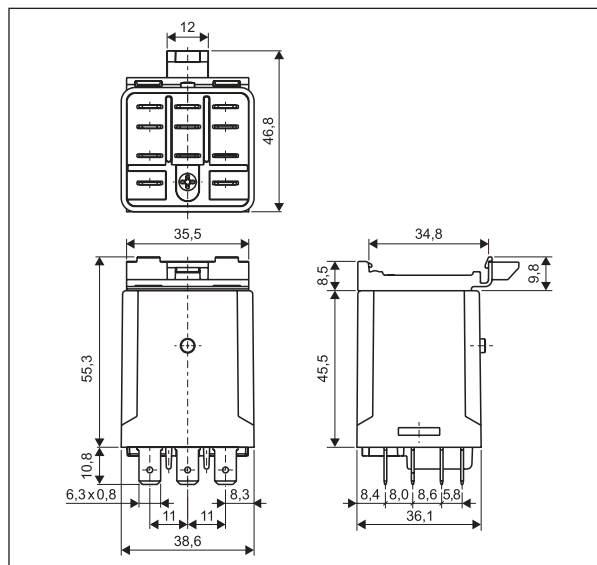
**Dimensions - RUC faston 4,8 x 0,5**  
- version with horizontal adaptor (H)



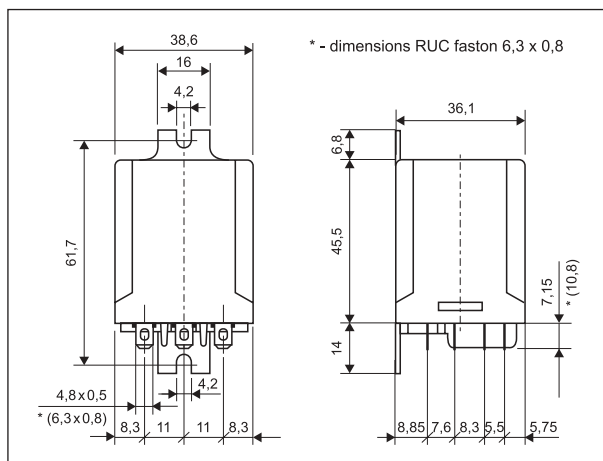
**Dimensions - RUC faston 6,3 x 0,8**  
- version with vertical adaptor (V)



**Dimensions - RUC faston 6,3 x 0,8**  
- version with horizontal adaptor (H)



**Dimensions - RUC faston 4,8 x 0,5 (faston 6,3 x 0,8)**  
- version with mounting flange in the wall of the cover



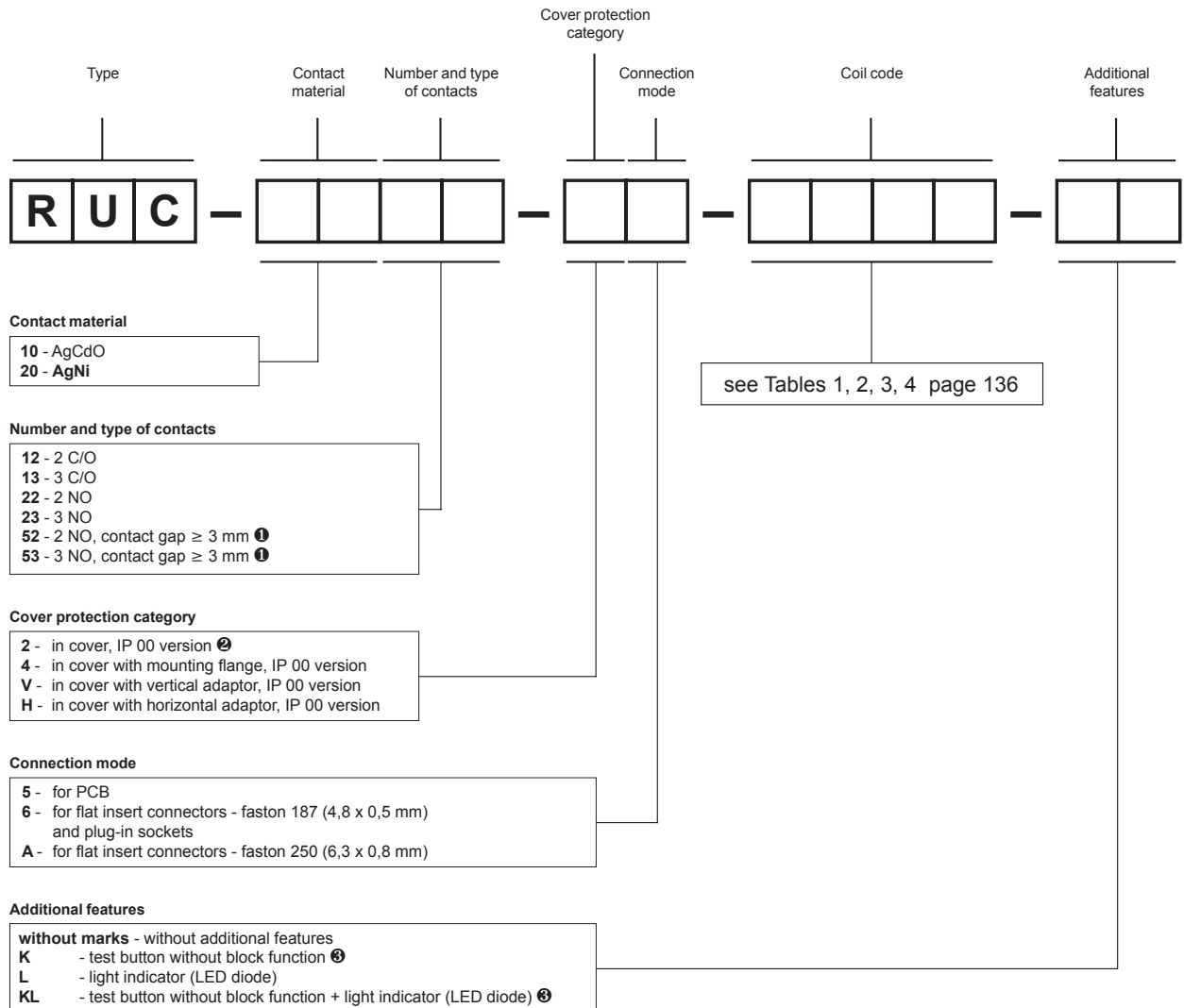
**Mounting**

**Relays RUC are offered in versions:** • standard, for screw terminals plug-in sockets **GUC11** ① with clip **MBA**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • with mounting flange in the wall of the cover, on panel mounting, flat insert connectors - faston 187 (4,8 x 0,5 mm) or faston 250 (6,3 x 0,8 mm) • with vertical (V) or horizontal (H) adaptors for direct mounting on 35 mm rail mount acc. to PN-EN 60715, flat insert connectors - faston 187 (4,8 x 0,5 mm) or faston 250 (6,3 x 0,8 mm) • for direct PCB mounting ②.

② Relays are not available with (V) or (H) adaptor, and cover with mounting flange.

① For RUC faston 4,8 x 0,5 with GUC11 socket, max. switching voltages and coil voltages of relays are limited to 250 V AC/DC.

### Ordering codes



① For versions with reinforced DC coils: W012, W024, W048, W110, W220 and with AC coils.

② Only for version RUC faston 4,8 x 0,5.

③ Additional features is not available in versions of relays with contact gap  $\geq 3$  mm.

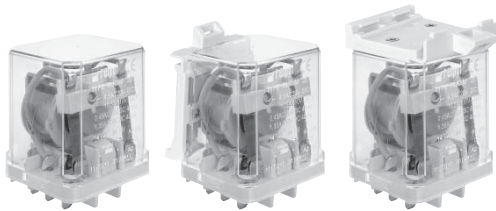
Examples of ordering codes:

**RUC-2053-26-W024** relay **RUC**, faston 187 (4,8 x 0,5 mm), contact material AgNi, with three normally open contacts, with contact gap  $\geq 3$  mm, in cover IP 00, for plug-in sockets GUC11, voltage version 24 V DC - reinforced coil

**RUC-2013-V6-3400-KL** relay **RUC**, faston 187 (4,8 x 0,5 mm), contact material AgNi, with three changeover contacts, in cover IP 00, with vertical adaptor (V), for flat insert connectors, voltage version 400 V AC 50 Hz, with test button without block function and light indicator (LED diode)

**RUC-2052-HA-W220-L** relay **RUC**, faston 250 (6,3 x 0,8 mm), contact material AgNi, with two normally open contacts, with contact gap  $\geq 3$  mm, in cover IP 00, with horizontal adaptor (H), for flat insert connectors, voltage version 220 V DC - reinforced coil, with light indicator (LED diode)

**RUC-1022-25-5024** relay **RUC**, contact material AgCdO, with two normally open contacts, in cover IP 00, for PCB, voltage version 24 V AC 50/60 Hz

NEW  
product

with adaptor (V)

with adaptor (H)

• **Magnetic blow-out relays for high DC load with the contact plate with permanent magnet whose magnetic field blows out the electric arc between the contacts** • AC and DC coils • Mounting: in sockets; 35 mm rail mount acc. to PN-EN 60715; on panel; PCB • Version: faston 187 (4,8 x 0,5 mm) • Contact gap: 3 mm (version 2 NO); 6 mm (version 1 NO) • Additional features: L - light indicator (LED) • Applications: control of electromagnets; systems of heating, cooling, ventilation, air conditioning; control with single-phase and three-phase motors; catering industry machines and equipment; automation systems; etc. • Recognitions, certifications, directives: RoHS,   

## Contact data

|                                |                                     |                                                    |
|--------------------------------|-------------------------------------|----------------------------------------------------|
| Number and type of contacts    | 1 NO (double-break)                 | 2 NO                                               |
| Contact material               | <b>AgCdO</b>                        |                                                    |
| Rated / max. switching voltage | 250 V DC, AC / 350 V DC; 440 V AC ❶ |                                                    |
| Min. switching voltage         | 10 V                                |                                                    |
| Rated load (capacity)          | DC1                                 | 16 A / 24 V DC; 14 A / 110 V DC<br>12 A / 220 V DC |
|                                | DC L/R=40 ms                        | 16 A / 24 V DC; 5,4 A / 110 V DC<br>3 A / 220 V DC |
|                                | AC1                                 | 16 A / 250 V AC                                    |
| Min. switching current         | 10 mA                               |                                                    |
| Max. inrush current            | 40 A 20 ms                          |                                                    |
| Rated current                  | 16 A                                |                                                    |
| Min. breaking capacity         | 1 W                                 |                                                    |
| Contact resistance             | ≤ 100 mΩ                            |                                                    |
| Max. operating frequency       | AC1                                 | 1 200 cycles/hour<br>12 000 cycles/hour            |
| • at rated load                |                                     |                                                    |
| • no load                      |                                     |                                                    |

## Coil data

|                                   |                               |                                              |
|-----------------------------------|-------------------------------|----------------------------------------------|
| Rated voltage                     | AC                            | 12 ... 240 V 50/60 Hz                        |
|                                   | DC                            | 12 ... 220 V                                 |
| Must release voltage              | AC: ≥ 0,15 U <sub>n</sub>     | DC: ≥ 0,1 U <sub>n</sub>                     |
| Operating range of supply voltage | AC: 0,85...1,1 U <sub>n</sub> | DC: 0,8...1,1 U <sub>n</sub> see Tables 1, 2 |
| Rated power consumption           | AC                            | 2,8 VA                                       |
|                                   | DC                            | 1,7 W                                        |

## Insulation according to PN-EN 60664-1

|                             |                                                                                                                                                      |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation rated voltage    | 400 V AC                                                                                                                                             |
| Rated surge voltage         | 4 000 V 1,2 / 50 μs                                                                                                                                  |
| Overvoltage category        | III                                                                                                                                                  |
| Insulation pollution degree | 3                                                                                                                                                    |
| Dielectric strength         | • between coil and contacts<br>• contact clearance<br>• pole - pole                                                                                  |
|                             | 2 500 V AC type of insulation: reinforced<br>4 000 V AC type of clearance: full-disconnection<br>2 500 V AC contacts 2 NO, type of insulation: basic |
| Contact - coil distance     | • clearance<br>• creepage                                                                                                                            |
|                             | ≥ 6,3 mm<br>≥ 8 mm                                                                                                                                   |

## General data

|                                           |                                      |                                        |
|-------------------------------------------|--------------------------------------|----------------------------------------|
| Operating / release time (typical values) | 20 ms / 15 ms                        |                                        |
| Electrical life                           |                                      |                                        |
| • resistive DC1                           | ≥ 2 x 10 <sup>5</sup> 12 A, 220 V DC | ≥ 2 x 10 <sup>5</sup> 4,5 A, 220 V DC  |
| • DC L/R=40 ms                            | ≥ 2 x 10 <sup>5</sup> 3 A, 220 V DC  | ≥ 2 x 10 <sup>5</sup> 0,45 A, 220 V DC |
| Mechanical life (cycles)                  | ≥ 2 x 10 <sup>7</sup>                |                                        |
| Dimensions (L x W x H)                    | 36,1 x 38,6 x 45,5 mm ❷              |                                        |
| Weight                                    | 80 g ❸                               | 85 g ❹                                 |
| Ambient temperature                       | • storage                            | -40...+85 °C                           |
|                                           | • operating                          | -40...+70 °C                           |
| Cover protection category                 | IP 00                                | PN-EN 60529                            |
| 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.

❶ For RUC-M with GUC11 socket, max. switching voltages and coil voltages of relays are limited to 250 V AC/DC.

❷ For plug-in sockets version. For version: with (V) adaptor: 58,75 x 38,6 x 45,9 mm; with (H) adaptor: 46,8 x 38,6 x 62,45 mm.

For version with mounting flange: 66,3 x 38,6 x 36,1 mm. For PCB version: 36,1 x 38,6 x 52,5 mm.

❸ Weight of plug-in sockets version and PCB version. ❹ Weight of version with (V) or (H) adaptor, and version with mounting flange.

**Coil data - DC voltage version, reinforced**

Table 1

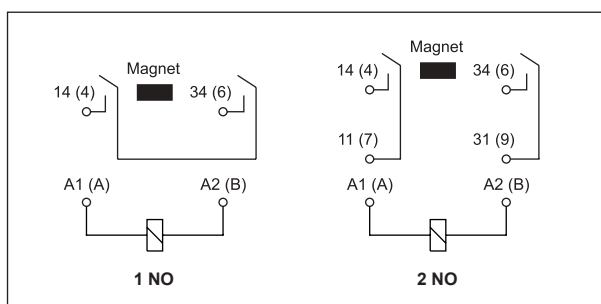
| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>V DC |                |
|-----------|-----------------------|---------------------------------------------------|------------------------------|----------------|
|           |                       |                                                   | min. (at 20°C)               | max. (at 55°C) |
| W012      | 12                    | 85                                                | 9,6                          | 13,2           |
| W024      | 24                    | 345                                               | 19,2                         | 26,4           |
| W048      | 48                    | 1 370                                             | 38,4                         | 52,8           |
| W110      | 110                   | 7 300                                             | 88,0                         | 121,0          |
| W220      | 220                   | 30 000                                            | 176,0                        | 242,0          |

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

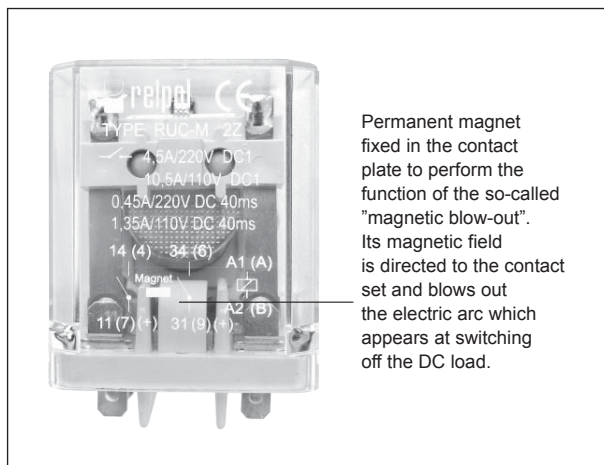
Table 2

| Coil code | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>V AC |                |
|-----------|-----------------------|---------------------------------------------------|------------------------------|----------------|
|           |                       |                                                   | min. (at 20°C)               | max. (at 55°C) |
| 5012      | 12                    | 18,5                                              | 9,6                          | 13,2           |
| 5024      | 24                    | 75,0                                              | 19,2                         | 26,4           |
| 5115      | 115                   | 1 840,0                                           | 92,0                         | 126,5          |
| 5120      | 120                   | 1 910,0                                           | 96,0                         | 132,0          |
| 5230      | 230                   | 7 080,0                                           | 184,0                        | 253,0          |
| 5240      | 240                   | 7 760,0                                           | 192,0                        | 264,0          |

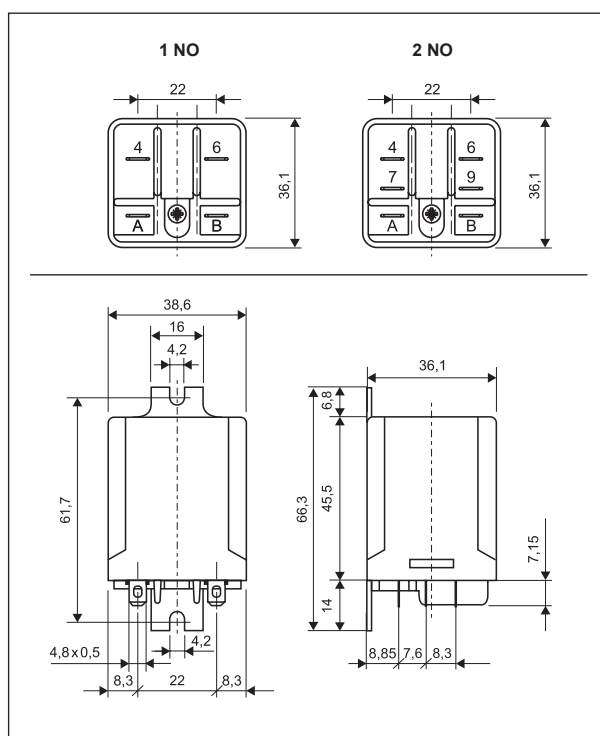
**Connection diagrams (pin side view)**



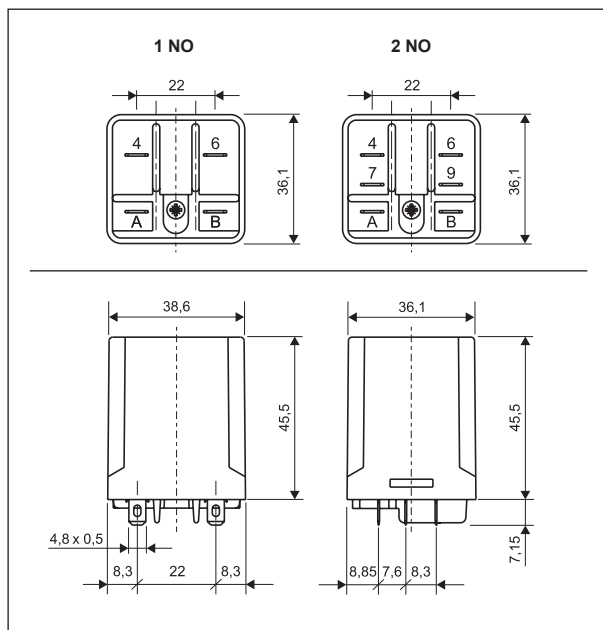
**Design**



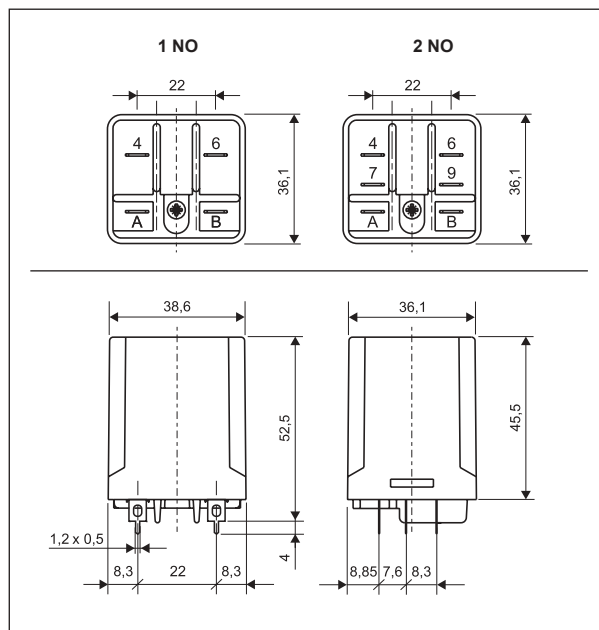
**Dimensions - version with mounting flange in the wall of the cover**



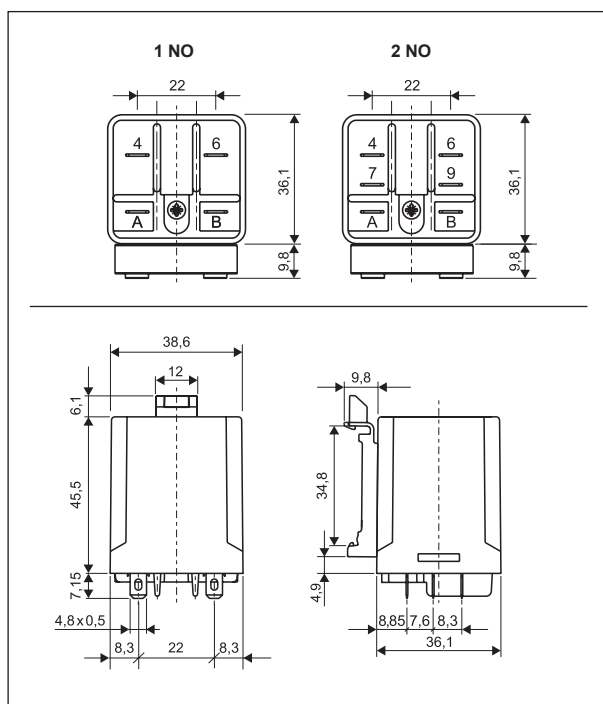
## Dimensions - plug-in version (standard)



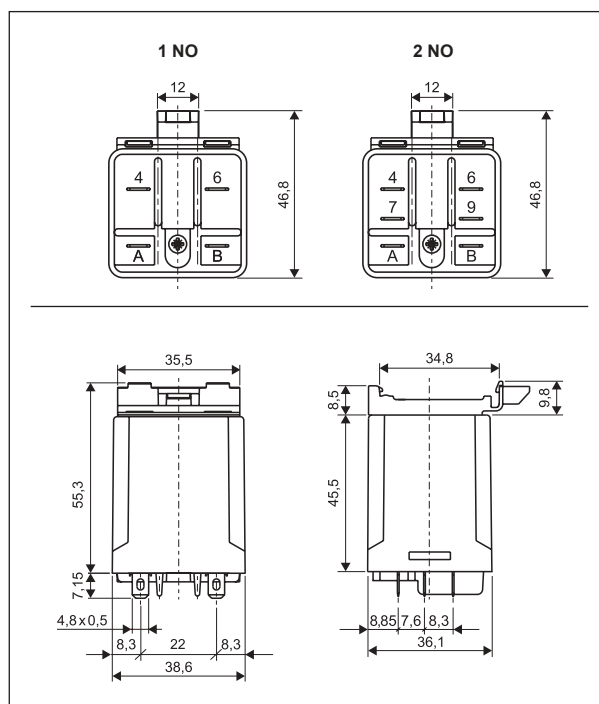
## Dimensions - PCB version



## Dimensions - version with vertical adaptor (V)



## Dimensions - version with horizontal adaptor (H)



## Mounting

**Relays RUC-M are offered in versions:**

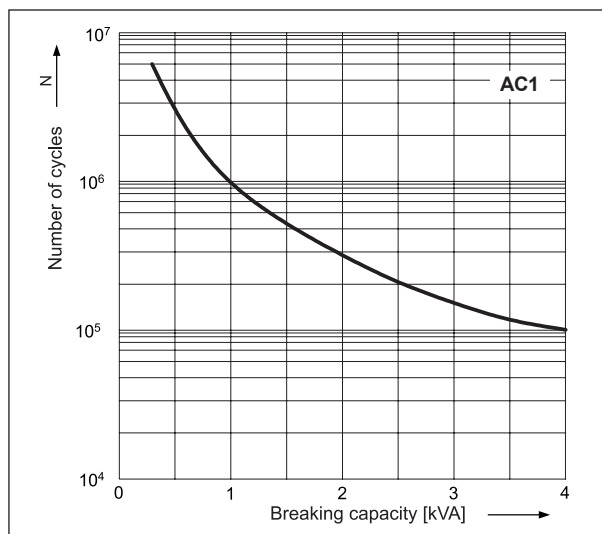
- standard, for screw terminals plug-in sockets **GUC11** ① with clip **MBA**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- with mounting flange in the wall of the cover, on panel mounting, flat insert connectors - faston 187 (4,8 x 0,5 mm)
- with vertical (V) or horizontal (H) adaptors for direct mounting on 35 mm rail mount acc. to PN-EN 60715, flat insert connectors - faston 187 (4,8 x 0,5 mm)
- for direct PCB mounting ②.

② Relays are not available with (V) or (H) adaptor, and cover with mounting flange.

① For RUC-M with GUC11 socket, max. switching voltages and coil voltages of relays are limited to 250 V AC/DC.

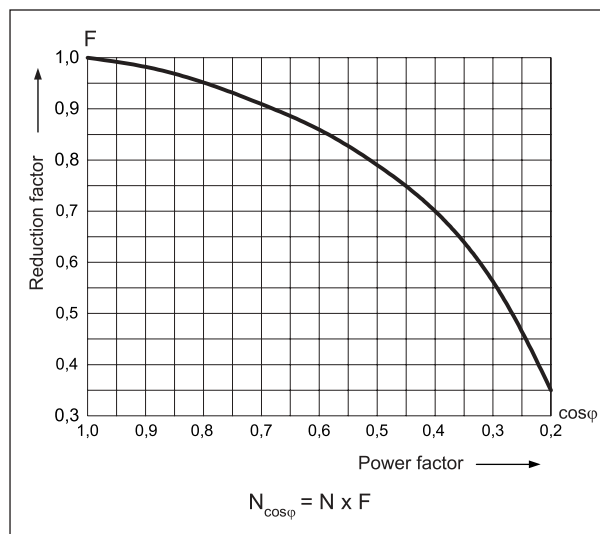
**Electrical life at AC resistive load.**  
Switching frequency: 1 200 cycles/hour

Fig. 1

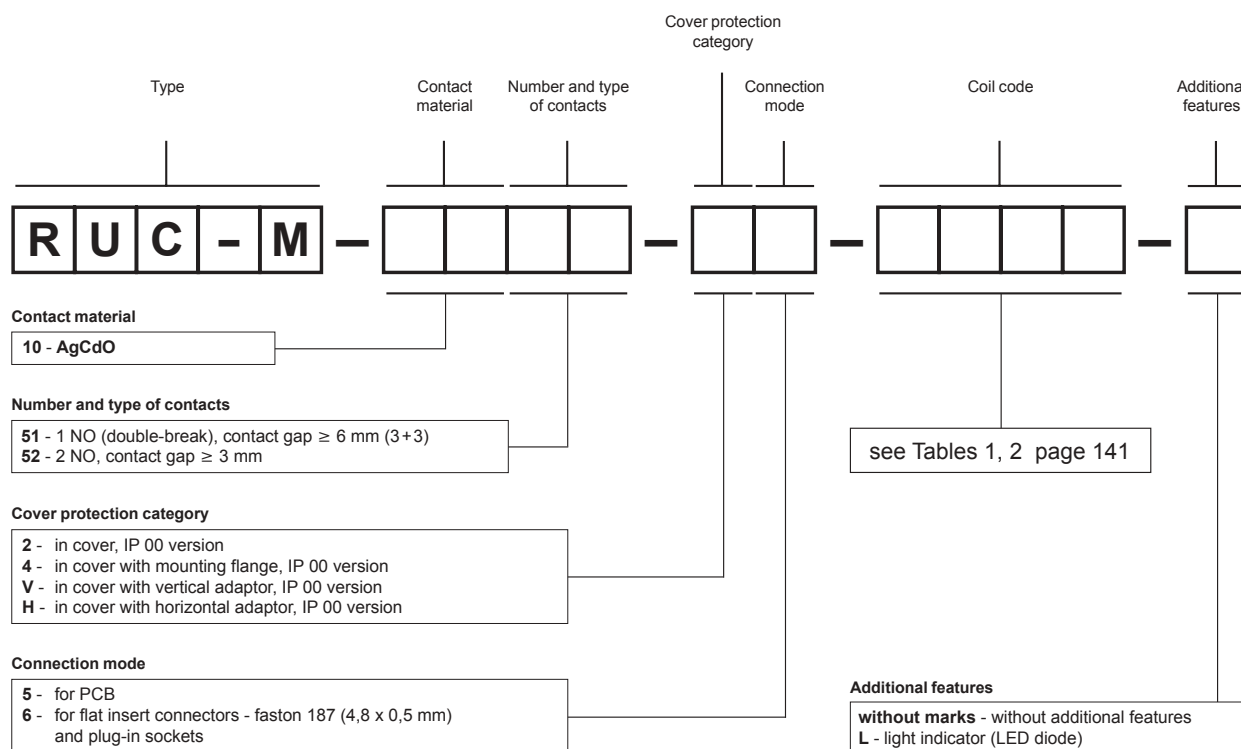


**Electrical life reduction factor**  
at AC inductive load

Fig. 2



### Ordering codes



Examples of ordering codes:

**RUC-M-1051-26-W024** relay **RUC-M**, faston 187 (4,8 x 0,5 mm), contact material AgCdO, with one normally open contact (double-break), with contact gap  $\geq 6$  mm (3+3), in cover IP 00, for plug-in sockets GUC11, voltage version 24 V DC - reinforced coil

**RUC-M-1052-V6-5230-L** relay **RUC-M**, faston 187 (4,8 x 0,5 mm), contact material AgCdO, with two normally open contacts, with contact gap  $\geq 3$  mm, in cover IP 00, with vertical adaptor (V), for flat insert connectors, voltage version 230 V AC 50/60 Hz, with light indicator (LED diode)

**RUC-M-1051-25-5024** relay **RUC-M**, contact material AgCdO, with one normally open contact (double-break), with contact gap  $\geq 6$  mm (3+3), in cover IP 00, for PCB, voltage version 24 V AC 50/60 Hz



- Power relays of general application • AC and DC coils
- High breaking capacity: AC1 - 10 kVA; AC3 - 6 kVA
- 35 mm rail mount acc. to PN-EN 60715
- High insulation dielectric strength
- Applications: control of electromagnets; systems of heating, cooling, ventilation, air conditioning; control with single-phase motors; catering industry machines and equipment; automation systems; etc.
- Recognitions, certifications, directives: RoHS,   

### Contact data

|                                |      |                                           |
|--------------------------------|------|-------------------------------------------|
| Number and type of contacts    |      | 2 NO                                      |
| Contact material               |      | <b>AgCdO</b>                              |
| Rated / max. switching voltage | AC   | 400 V / 440 V                             |
| Min. switching voltage         |      | 10 V                                      |
| Rated load (capacity)          | AC1  | 25 A / 400 V AC                           |
|                                | AC3  | 15 A / 400 V AC                           |
|                                | DC1  | 25 A / 24 V DC (see Fig. 3)               |
|                                | DC13 | 0,30 A / 120 V      0,15 A / 250 V (R300) |
| Min. switching current         |      | 10 mA                                     |
| Max. inrush current            |      | 40 A                                      |
| Rated current                  |      | 25 A                                      |
| Max. breaking capacity         | AC1  | 10 000 VA                                 |
|                                | AC3  | 6 000 VA                                  |
| Min. breaking capacity         |      | 1 W                                       |
| Contact resistance             |      | ≤ 100 mΩ                                  |
| Max. operating frequency       |      |                                           |
| • at rated load                | AC1  | 600 cycles/hour                           |
|                                | AC3  | 600 cycles/hour                           |
| • no load                      |      | 3 600 cycles/hour                         |

### Coil data

|                                   |          |                      |
|-----------------------------------|----------|----------------------|
| Rated voltage                     | 50 Hz AC | 12 ... 400 V         |
|                                   | DC       | 12 ... 220 V         |
| Must release voltage              |          | ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage |          | see Tables 1, 2      |
| Rated power consumption           | AC       | 3,0 VA               |
|                                   | DC       | 1,7 W                |

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

|                             |            |                                       |
|-----------------------------|------------|---------------------------------------|
| Insulation rated voltage    |            | 400 V AC                              |
| Rated surge voltage         |            | 4 000 V      1,2 / 50 μs              |
| Overvoltage category        |            | III                                   |
| Insulation pollution degree |            | 3                                     |
| Dielectric strength         |            |                                       |
| • between coil and contacts | 5 000 V AC | type of insulation: reinforced        |
| • contact clearance         | 1 500 V AC | type of clearance: full-disconnection |
| • pole - pole               | 5 000 V AC | type of insulation: reinforced        |
| Contact - coil distance     |            |                                       |
| • clearance                 |            | ≥ 6 mm                                |
| • creepage                  |            | ≥ 8 mm                                |

### General data

|                                           |             |                                  |
|-------------------------------------------|-------------|----------------------------------|
| Operating / release time (typical values) |             | 20 ms / 20 ms                    |
| Electrical life                           |             |                                  |
| • resistive AC1                           |             | ≥ 10 <sup>5</sup> 25 A, 400 V AC |
| • cos φ                                   |             | see Fig. 2                       |
| Mechanical life (cycles)                  |             | ≥ 10 <sup>6</sup>                |
| Dimensions (L x W x H)                    |             | 26 x 49 x 72 mm                  |
| Weight                                    |             | 130 g                            |
| Ambient temperature                       | • storage   | -25...+85 °C                     |
|                                           | • operating | -25...+85 °C                     |
| Cover protection category                 |             | IP 20      PN-EN 60529           |
| Shock resistance                          |             | 10 g                             |
| Vibration resistance                      |             | 5 g      10...150 Hz             |

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

**Coil data - DC voltage version**

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                |
|-------------|-----------------------|----------------------------------------------------|------------------------------|----------------|
|             |                       |                                                    | min. (at 20°C)               | max. (at 55°C) |
| 1012        | 12                    | 85                                                 | 9,6                          | 13,2           |
| <b>1024</b> | <b>24</b>             | <b>340</b>                                         | <b>19,2</b>                  | <b>26,4</b>    |
| 1048        | 48                    | 1 350                                              | 38,4                         | 52,8           |
| 1110        | 110                   | 7 600                                              | 88,0                         | 121,0          |
| 1220        | 220                   | 30 000                                             | 176,0                        | 242,0          |

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

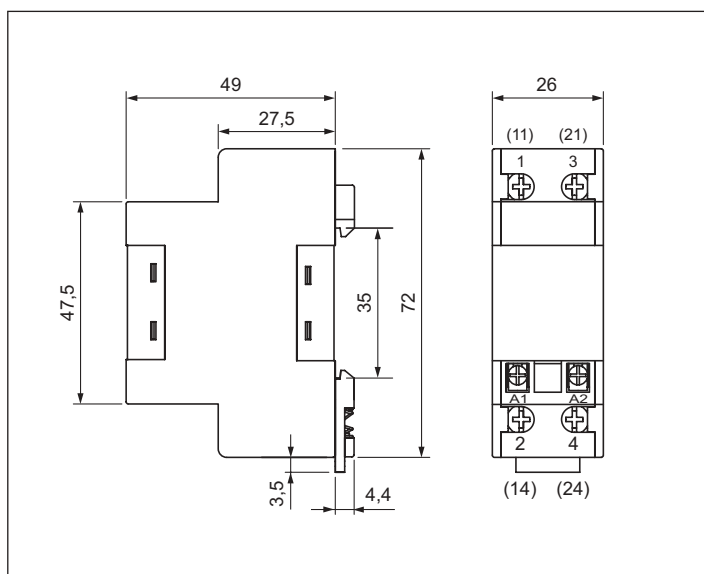
**Coil data - AC 50 Hz voltage version**

Table 2

| Coil code   | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                |
|-------------|-----------------------|----------------------------------------------------|------------------------------|----------------|
|             |                       |                                                    | min. (at 20°C)               | max. (at 55°C) |
| 3012        | 12                    | 17                                                 | 8,4                          | 13,2           |
| <b>3024</b> | <b>24</b>             | <b>76</b>                                          | <b>16,8</b>                  | <b>26,4</b>    |
| 3110        | 110                   | 1 600                                              | 77,0                         | 121,0          |
| <b>3230</b> | <b>230</b>            | <b>6 800</b>                                       | <b>161,0</b>                 | <b>253,0</b>   |
| 3400        | 400                   | 18 600                                             | 280,0                        | 440,0          |

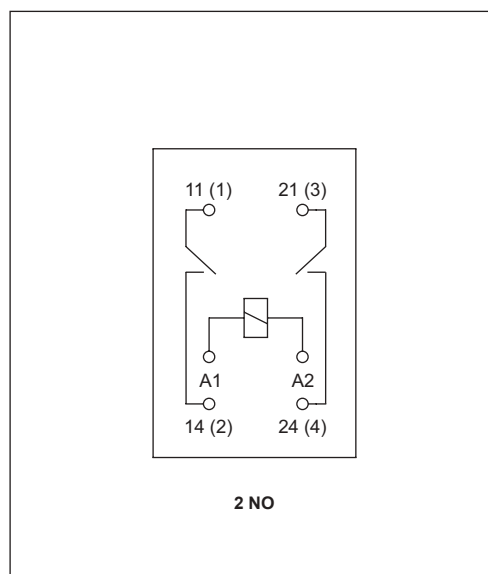
The data in bold type pertain to the standard versions of the relays.

### Dimensions



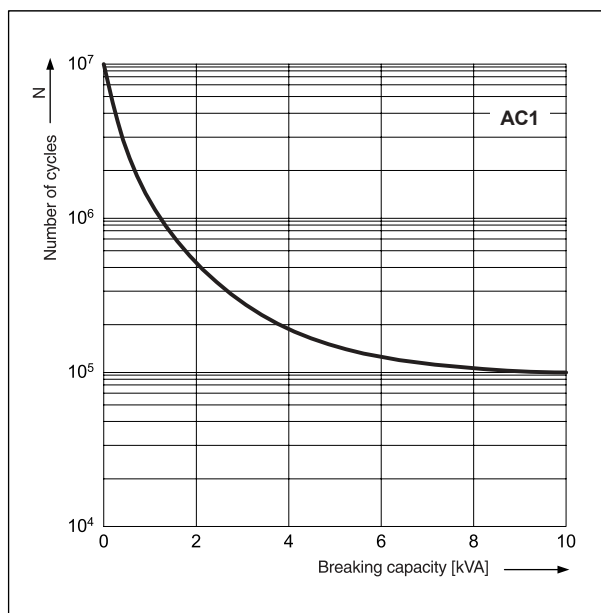
### Connection diagram

(screw terminals side view)



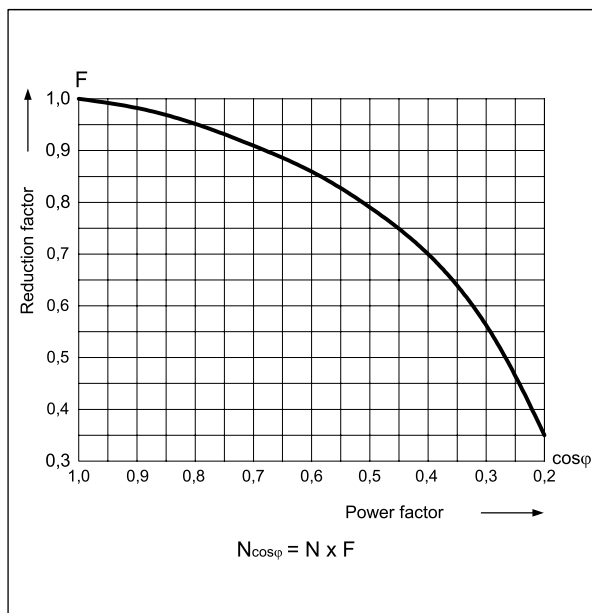
**Electrical life at AC resistive load.**  
Switching frequency: 600 cycles/hour

Fig. 1



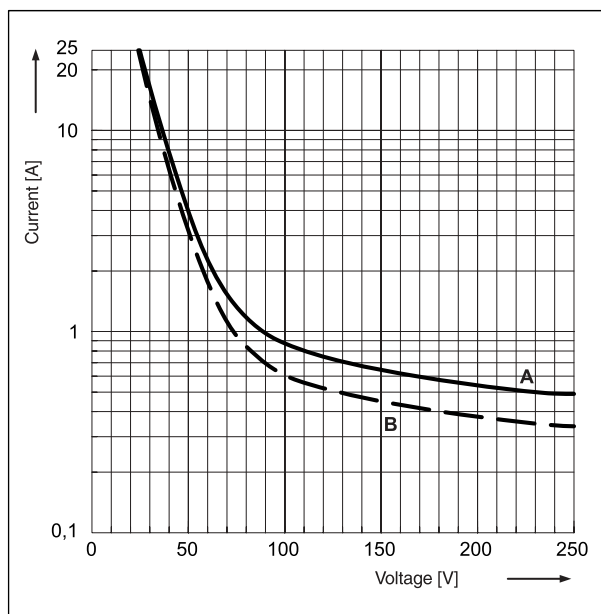
**Electrical life reduction factor at AC inductive load**

Fig. 2



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

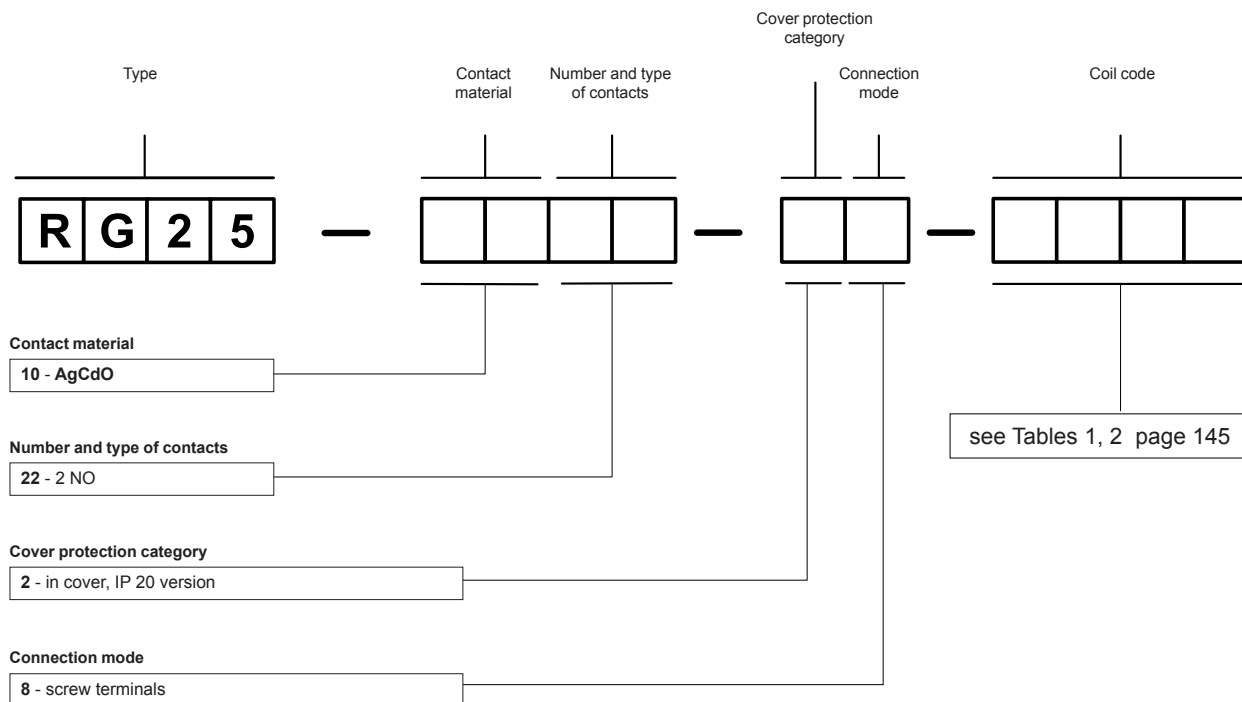
Fig. 3



## Mounting

Relays **RG25** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - screw terminals of coil downwards. Maximum size of wires  $2 \times 2,5 \text{ mm}^2$  (2 x 14 AWG). Rated cross-sectional area of conductors  $2 \times 1,5 \text{ mm}^2$  (2 x 16 AWG). Maximum screw torque: 0,7 Nm.

## Ordering codes



Example of ordering code:

**RG25-1022-28-3230** relay **RG25**, contact material AgCdO, with two normally open contacts, in cover IP 20, screw terminals, voltage version 230 V AC 50 Hz



- High switching capacity up to 30 A
- "Bridge" type contacts which open the circuit with double break
- Flat insert connectors - faston 6,3 x 0,8 mm
- High resistance to interference • High strength of insulation
- Applications: household equipment, air-conditioning and ventilation systems, audio equipment, control devices, automation systems, etc.
- Recognitions, certifications, directives: RoHS,

### Contact data

|                                |                          |                                                  |
|--------------------------------|--------------------------|--------------------------------------------------|
| Number and type of contacts    | 1 NO, 2 NO               |                                                  |
| Contact material               | <b>AgSnO<sub>2</sub></b> |                                                  |
| Rated / max. switching voltage | AC                       | 250 V / 440 V                                    |
| Min. switching voltage         |                          | 10 V                                             |
| Rated load                     | AC1                      | 1 NO: 30 A / 250 V AC      2 NO: 25 A / 250 V AC |
| Min. switching current         |                          | 10 mA                                            |
| Rated current                  |                          | 1 NO: 30 A      2 NO: 25 A                       |
| Max. breaking capacity         | AC1                      | 1 NO: 7 000 VA      2 NO: 6 250 VA               |
| Min. breaking capacity         |                          | 0,1 W                                            |
| Contact resistance             |                          | ≤ 100 mΩ                                         |

### Coil data

|                                   |             |                          |
|-----------------------------------|-------------|--------------------------|
| Rated voltage                     | 50/60 Hz AC | 24 ... 230 V             |
|                                   | DC          | 12 ... 110 V             |
| Must release voltage              |             | DC: ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage |             | see Tables 1, 2          |
| Rated power consumption           | AC          | 1,7...2,5 VA             |
|                                   | DC          | 1,9 W                    |

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

|                             |            |                                       |
|-----------------------------|------------|---------------------------------------|
| Insulation rated voltage    | 250 V AC   |                                       |
| Dielectric strength         |            |                                       |
| • between coil and contacts | 4 000 V AC | type of insulation: reinforced        |
| • contact clearance         | 2 000 V AC | type of clearance: full-disconnection |
| Contact - coil distance     |            |                                       |
| • clearance                 | ≥ 9 mm     |                                       |
| • creepage                  | ≥ 11 mm    |                                       |

### General data

|                                           |                                |                                                              |
|-------------------------------------------|--------------------------------|--------------------------------------------------------------|
| Operating / release time (typical values) | 30 ms / 30 ms                  |                                                              |
| Electrical life                           |                                |                                                              |
| • resistive AC1                           | 1 200 cycles/hour              | 10 <sup>5</sup> 1 NO: 30 A, 250 V AC    2 NO: 25 A, 250 V AC |
| Mechanical life (cycles)                  | > 10 <sup>7</sup>              |                                                              |
| Dimensions (L x W x H)                    | 67 x 33 x 35 mm                |                                                              |
| Weight                                    | 90 g                           |                                                              |
| Ambient temperature                       | • operating                    | -25...+75 °C                                                 |
| Cover protection category                 | IP 50 ❶                        | PN-EN 60529                                                  |
| Shock resistance                          | 10 g                           |                                                              |
| Vibration resistance                      | 1,5 mm DA (constant amplitude) | 10...55 Hz                                                   |

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

❶ In cover with mounting flange.

**Coil data - DC voltage version**

Table 1

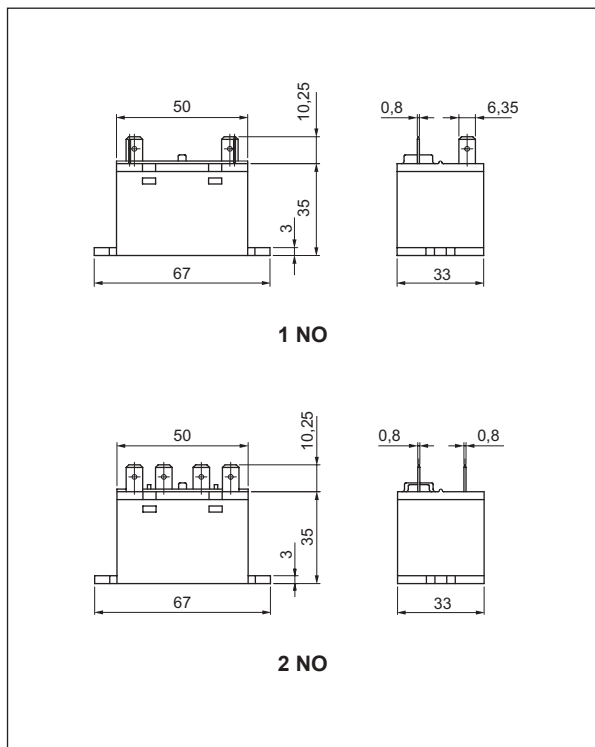
| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>at 20°C<br>V DC |       | Power<br>consumption<br>W |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------|-------|---------------------------|
|           |                       |                                                   | min.                                    | max.  |                           |
| 1012      | 12                    | 75,8                                              | 9,0                                     | 13,2  | 1,9                       |
| 1024      | 24                    | 303,0                                             | 18,0                                    | 26,4  | 1,9                       |
| 1110      | 110                   | 6 400,0                                           | 82,5                                    | 121,0 | 1,9                       |

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

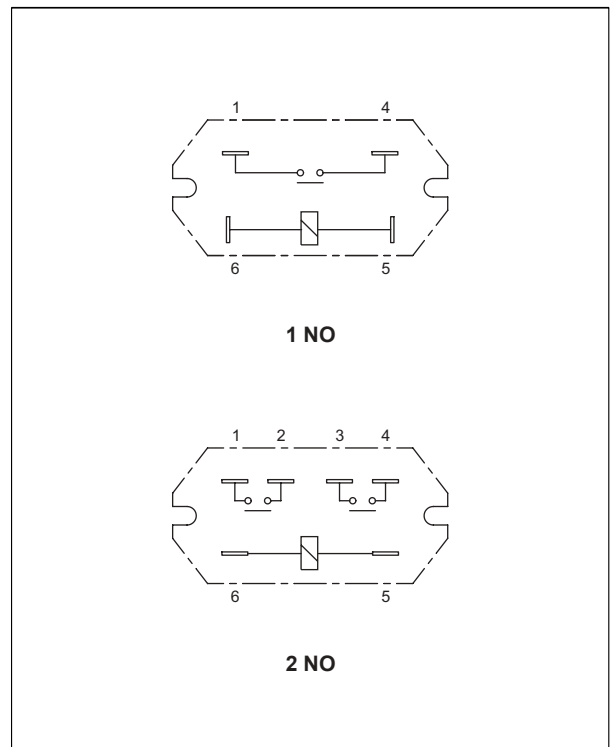
Table 2

| Coil code | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>at 20°C<br>V AC |       | Power<br>consumption<br>VA |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------|-------|----------------------------|
|           |                       |                                                   | min.                                    | max.  |                            |
| 5024      | 24                    | 338                                               | 18,0                                    | 26,4  | 1,7                        |
| 5048      | 48                    |                                                   | 36,0                                    | 52,8  | 1,7                        |
| 5115      | 115                   | 5 260                                             | 86,3                                    | 126,5 | 2,5                        |
| 5230      | 230                   | 21 000                                            | 172,5                                   | 253,0 | 2,5                        |

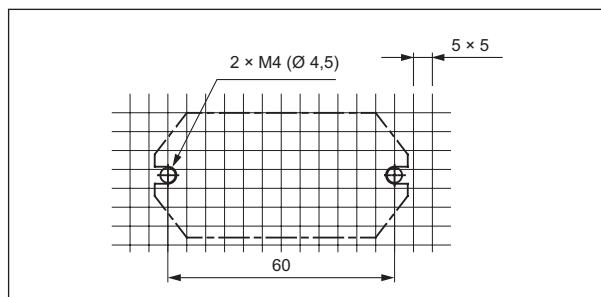
**Dimensions**



**Connection diagrams (pin side view)**



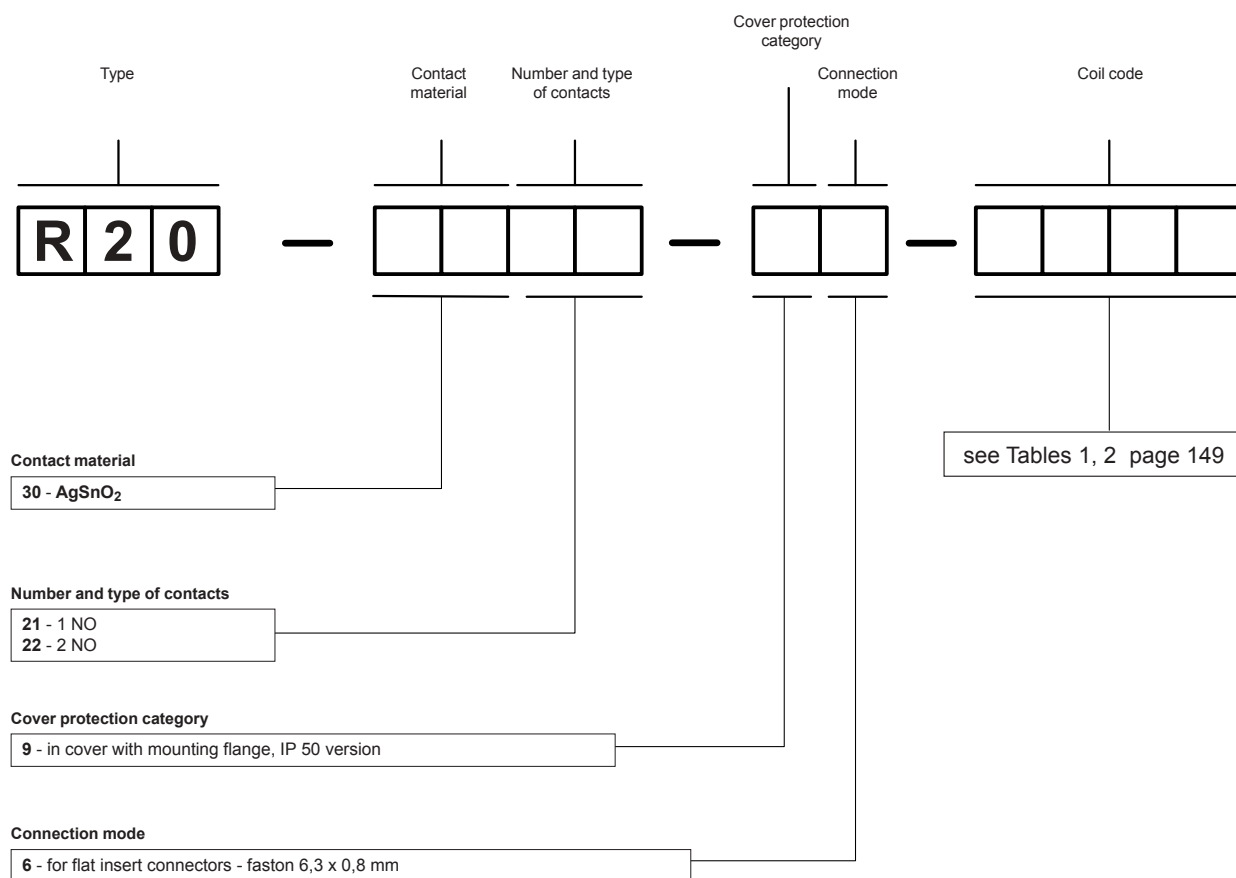
## Pinout



## Mounting

Relays **R20** are designed for flat insert connectors - faston 6,3 x 0,8 mm. Relays are on panel mounting with two M4 screws.

## Ordering codes



Example of ordering code:

**R20-3021-96-1012**

relay **R20**, contact material AgSnO<sub>2</sub>, with one normally open contact, in cover with mounting flange IP 50, for flat insert connectors - faston 6,3 x 0,8 mm, voltage version 12 V DC



- High switching capacity up to 30 A
- For PCB
- Available also with sealed cover (standard with no sealing)
- Applications: internal applications, heating systems, ventilation, automotive electric systems, other electric applications
- Recognitions, certifications, directives: RoHS, 

### Contact data

|                                |     |                                       |                       |
|--------------------------------|-----|---------------------------------------|-----------------------|
| Number and type of contacts    |     | 1 C/O, 1 NO                           |                       |
| Contact material               |     | <b>AgSnO<sub>2</sub></b>              |                       |
| Rated / max. switching voltage | AC  | 240 V / 250 V                         |                       |
| Min. switching voltage         |     | 10 V                                  |                       |
| Rated load                     | AC1 | 1 C/O: 20 A / 10 A (NO/NC) / 240 V AC | 1 NO: 30 A / 240 V AC |
|                                | DC1 | 1 C/O: 20 A / 10 A (NO/NC) / 30 V DC  | 1 NO: 30 A / 30 V DC  |
| Min. switching current         |     | 10 mA                                 | 10 mA                 |
| Rated current                  |     | 1 C/O: 20 A / 10 A (NO/NC)            | 1 NO: 30 A            |
| Max. breaking capacity         | AC1 | 1 C/O: 4 800 VA                       | 1 NO: 7 200 VA        |
|                                | AC3 | 0,5 HP 240 V AC                       | 0,5 HP 240 V AC       |
| Min. breaking capacity         |     | 0,1 W                                 |                       |
| Contact resistance             |     | ≤ 100 mΩ                              |                       |

### Coil data

|                                   |    |                           |
|-----------------------------------|----|---------------------------|
| Rated voltage                     | DC | 12 ... 24 V               |
| Must release voltage              |    | DC: ≥ 0,05 U <sub>n</sub> |
| Operating range of supply voltage |    | see Table 1               |
| Must operate voltage              |    | ≤ 0,8 U <sub>n</sub>      |
| Rated power consumption           | DC | 1,0 W                     |

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

|                             |  |                                                   |
|-----------------------------|--|---------------------------------------------------|
| Insulation rated voltage    |  | 250 V AC                                          |
| Overvoltage category        |  | II                                                |
| Flammability degree         |  | V-0 UL94                                          |
| Insulation resistance       |  | > 100 MΩ 500 V DC, 60 s                           |
| Dielectric strength         |  |                                                   |
| • between coil and contacts |  | 1 500 V AC type of insulation: basic              |
| • contact clearance         |  | 1 500 V AC type of clearance: micro-disconnection |

### General data

|                                           |                   |                                                      |                      |
|-------------------------------------------|-------------------|------------------------------------------------------|----------------------|
| Operating / release time (typical values) |                   | 15 ms / 10 ms                                        |                      |
| Electrical life                           |                   |                                                      |                      |
| • resistive AC1                           | 1 200 cycles/hour | 10 <sup>5</sup> 1 C/O: 20 A / 10 A (NO/NC), 240 V AC | 1 NO: 30 A, 240 V AC |
| Mechanical life (cycles)                  |                   | > 10 <sup>7</sup>                                    |                      |
| Dimensions (L x W x H)                    |                   | 32,2 x 27,5 x 20,5 mm                                |                      |
| Weight                                    |                   | 22 g                                                 |                      |
| Ambient temperature                       | • operating       | -30...+55 °C                                         |                      |
| Cover protection category                 |                   | IP 64                                                | PN-EN 60529          |
| Shock resistance                          |                   | 5 g                                                  |                      |
| Vibration resistance                      |                   | 1,5 mm DA (constant amplitude)                       | 10...55 Hz           |

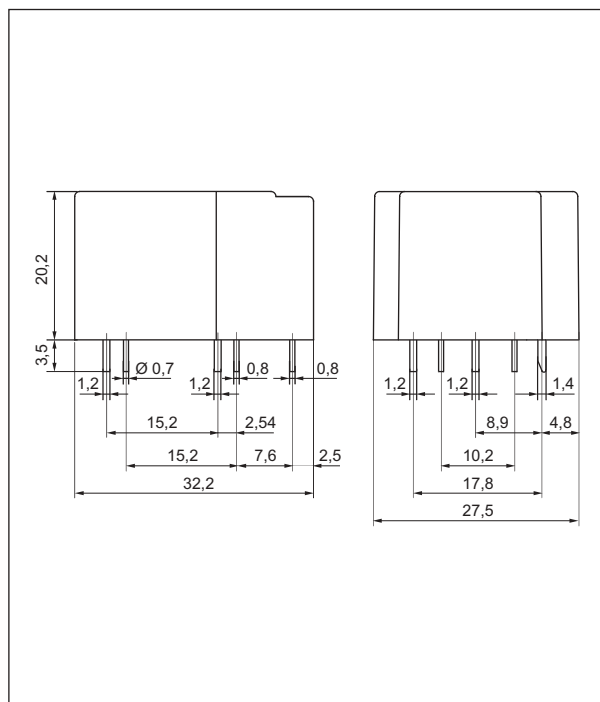
The data in bold type pertain to the standard versions of the relays.

Coil data - DC voltage version

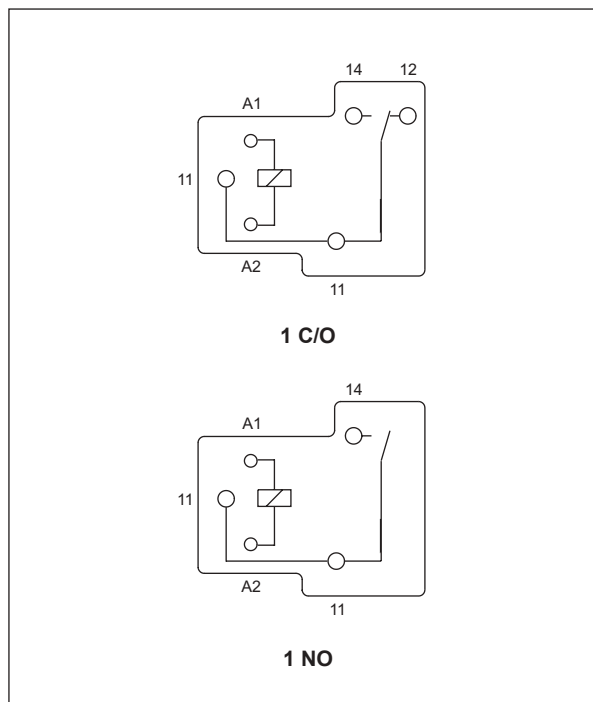
Table 1

| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>at 20°C<br>V DC |      | Power<br>consumption<br>W |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------|------|---------------------------|
|           |                       |                                                   | min.                                    | max. |                           |
| 1012      | 12                    | 155                                               | 9,6                                     | 18   | 1,0                       |
| 1024      | 24                    | 660                                               | 19,2                                    | 36   | 1,0                       |

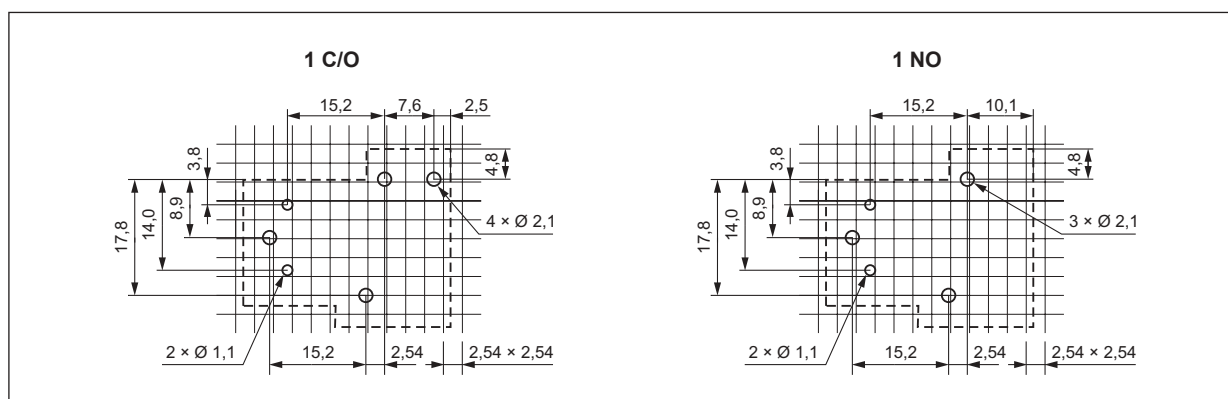
## Dimensions



## Connection diagrams (pin side view)



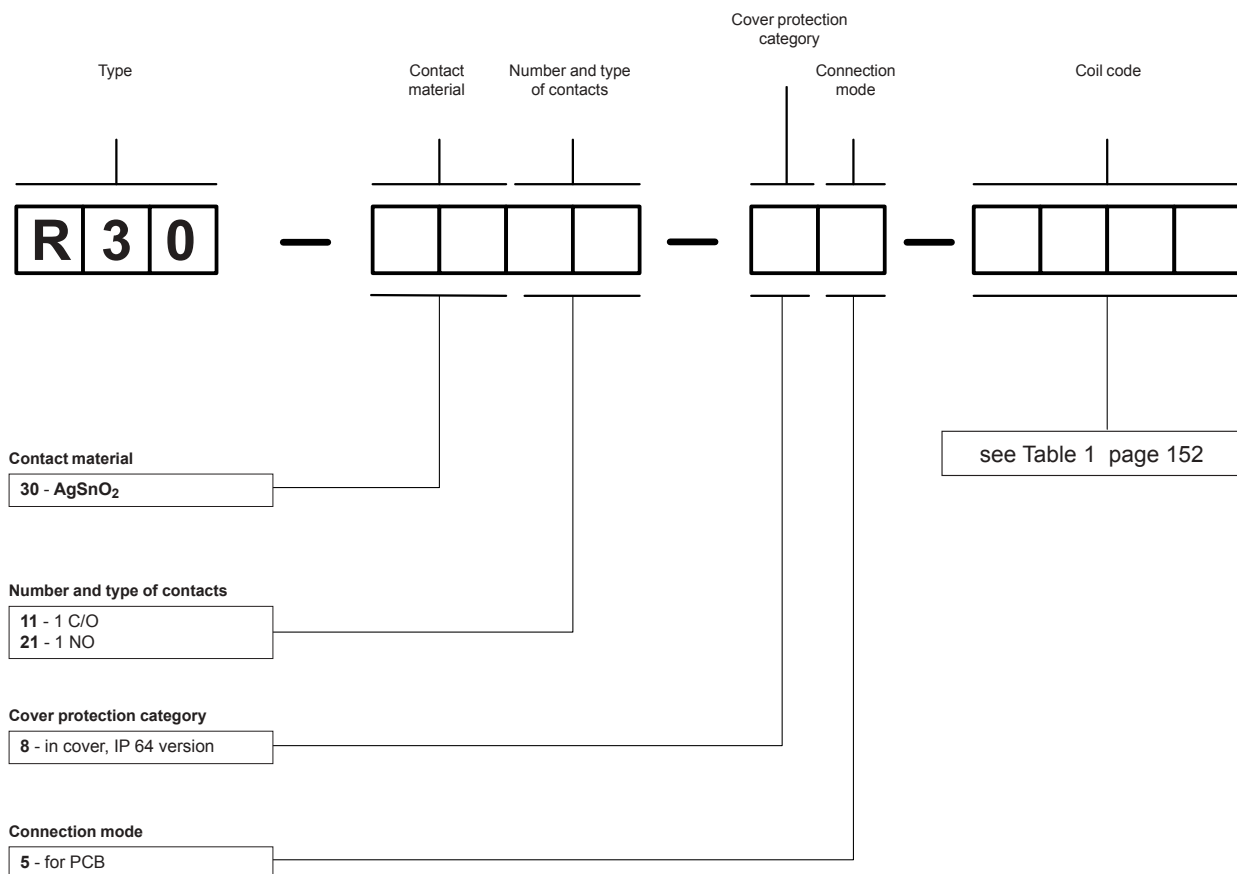
## Pinout (solder side view)



## Mounting

Relays **R30** are designed for direct PCB mounting.

## Ordering codes



Examples of ordering codes:

**R30-3011-85-1012**

relay **R30**, contact material AgSnO<sub>2</sub>, with one changeover contact, in cover IP 64, for PCB, voltage version 12 V DC

**R30-3021-85-1024**

relay **R30**, contact material AgSnO<sub>2</sub>, with one normally open contact, in cover IP 64, for PCB, voltage version 24 V DC



RS35



RS50



- **Relays for power control in solar systems generating energy**
- Max. switching current: 35 A (version RS35); 50 A (version RS50)
- 5000 V / 10 mm reinforced insulation
- Contact gap > 1,75 mm • Holding power 0,1 W
- For PCB • DC coils • Reinforced insulation, acc. PN-EN 60730-1 (VDE 0631, part 1); PN-EN 60335-1 (VDE 0700, part 1)
- Recognitions, certifications, directives: RoHS,

## Contact data

|                                |                          |                          |                          |
|--------------------------------|--------------------------|--------------------------|--------------------------|
| Number and type of contacts    | 2 NO                     |                          |                          |
| Contact material               | <b>AgSnO<sub>2</sub></b> |                          |                          |
| Rated / max. switching voltage | AC                       | 250 V / 440 V            |                          |
| Min. switching voltage         |                          | 10 V                     |                          |
| Rated load                     | AC1                      | RS35: 35 A / 250 V AC    | RS50: 48 A / 250 V AC    |
|                                | DC1                      | RS35: 35 A / 24 V DC     | RS50: 48 A / 24 V DC     |
| Min. switching current         | 10 mA                    |                          |                          |
| Rated current                  |                          | RS35: 35 A               | RS50: 50 A               |
| Max. breaking capacity         | AC1                      | RS35: 8 750 VA           | RS50: 12 500 VA          |
|                                | DC1                      | RS35: 90 W 0,3 A / 300 V | RS50: 90 W 0,3 A / 300 V |
| Min. breaking capacity         | 1 W                      |                          |                          |
| Contact resistance             | ≤ 50 mΩ                  |                          |                          |
| Max. operating frequency       | AC1                      |                          |                          |
| • at rated load                |                          | 360 cycles/hour          |                          |
| • no load                      |                          | 3 600 cycles/hour        |                          |

## Coil data

|                                     |                           |             |
|-------------------------------------|---------------------------|-------------|
| Rated voltage                       | DC                        | 5 ... 110 V |
| Must release voltage                | DC: ≥ 0,05 U <sub>n</sub> |             |
| Operating range of supply voltage   | see Table 1               |             |
| Rated power consumption             | DC                        | 0,48 W      |
| Power consumption at pickup voltage | 0,3 W                     |             |
| Max. continuous dissipation         | 1,9 W at 20 °C            |             |

## Insulation according to PN-EN 60664-1

|                             |                     |                                       |
|-----------------------------|---------------------|---------------------------------------|
| Insulation rated voltage    | 250 V AC            |                                       |
| Rated surge voltage         | 4 000 V 1,2 / 50 μs |                                       |
| Overvoltage category        | III                 |                                       |
| Insulation pollution degree | 3                   |                                       |
| Insulation resistance       | 1000 MΩ             |                                       |
| Dielectric strength         |                     |                                       |
| • between coil and contacts | 5 000 V AC          | type of insulation: reinforced        |
| • contact clearance         | 2 500 V AC          | type of clearance: full-disconnection |
| • pole - pole               | 2 500 V AC          | type of insulation: basic             |
| Contact - coil distance     |                     |                                       |
| • clearance                 | ≥ 10 mm             |                                       |
| • creepage                  | ≥ 10 mm             |                                       |

## General data

|                                           |                                           |                                           |
|-------------------------------------------|-------------------------------------------|-------------------------------------------|
| Operating / release time (typical values) | 30 ms / 5 ms                              |                                           |
| Electrical life                           |                                           |                                           |
| • resistive AC1                           | 5 x 10 <sup>4</sup> 35 A, 250 V AC, 20 °C | 5 x 10 <sup>4</sup> 50 A, 250 V AC, 20 °C |
| • AC7a                                    | 3 x 10 <sup>4</sup> 35 A, 250 V AC, 20 °C | 3 x 10 <sup>4</sup> 50 A, 250 V AC, 20 °C |
| Mechanical life (cycles)                  | 10 <sup>6</sup>                           |                                           |
| Dimensions (L x W x H)                    | 40 x 25 x 49,2 mm                         |                                           |
| Weight                                    | 105 g                                     |                                           |
| Ambient temperature                       | • storage                                 | -40...+105 °C                             |
|                                           | • operating                               | -40...+85 °C                              |
| Cover protection category                 | IP 40                                     | PN-EN 60529                               |
| Environmental protection                  | RTI                                       | PN-EN 116000-3                            |
| Shock resistance                          | 10 g                                      |                                           |
| Vibration resistance                      | 1,5 mm DA (constant amplitude)            | 10...55 Hz                                |
| Solder bath temperature                   | max. 270 °C                               |                                           |
| Soldering time                            | max. 5 s                                  |                                           |

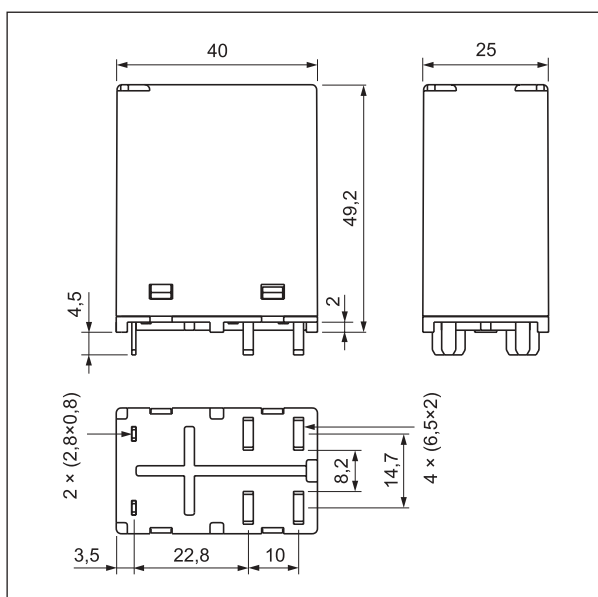
The data in bold type pertain to the standard versions of the relays.

Coil data - DC voltage version

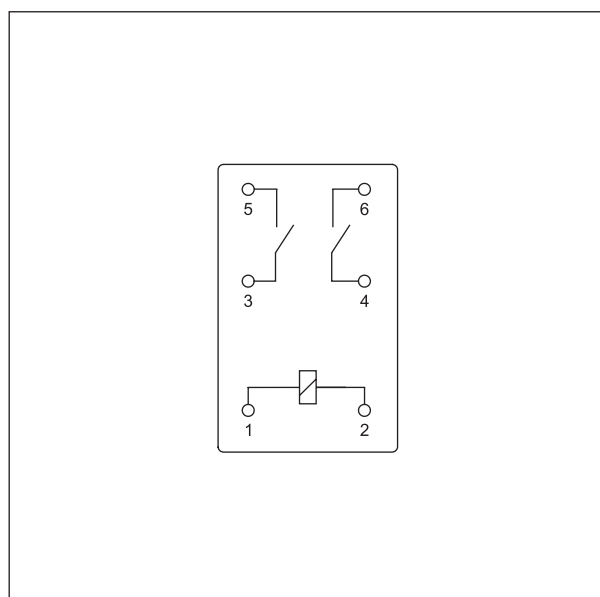
Table 1

| Coil code | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20°C<br>$\Omega$ | Coil operating range<br>V DC |                |
|-----------|-----------------------|---------------------------------------------------|------------------------------|----------------|
|           |                       |                                                   | min. (at 20°C)               | max. (at 55°C) |
| 1005      | 5                     | 50                                                | 3,75                         | 10             |
| 1009      | 9                     | 170                                               | 6,75                         | 18             |
| 1012      | 12                    | 300                                               | 9,00                         | 24             |
| 1018      | 18                    | 675                                               | 13,50                        | 36             |
| 1024      | 24                    | 1 200                                             | 18,00                        | 48             |
| 1100      | 110                   | 25 000                                            | 82,50                        | 220            |

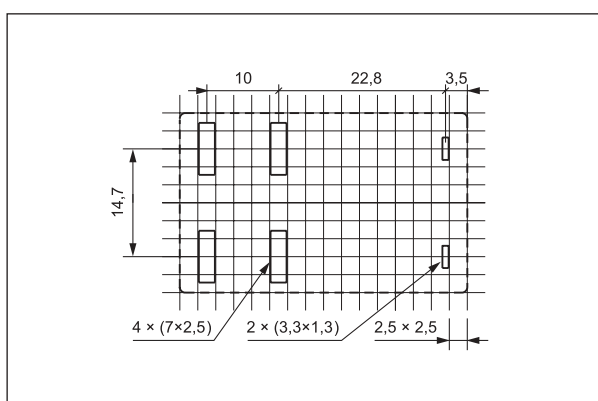
Dimensions



Connection diagram (pin side view)



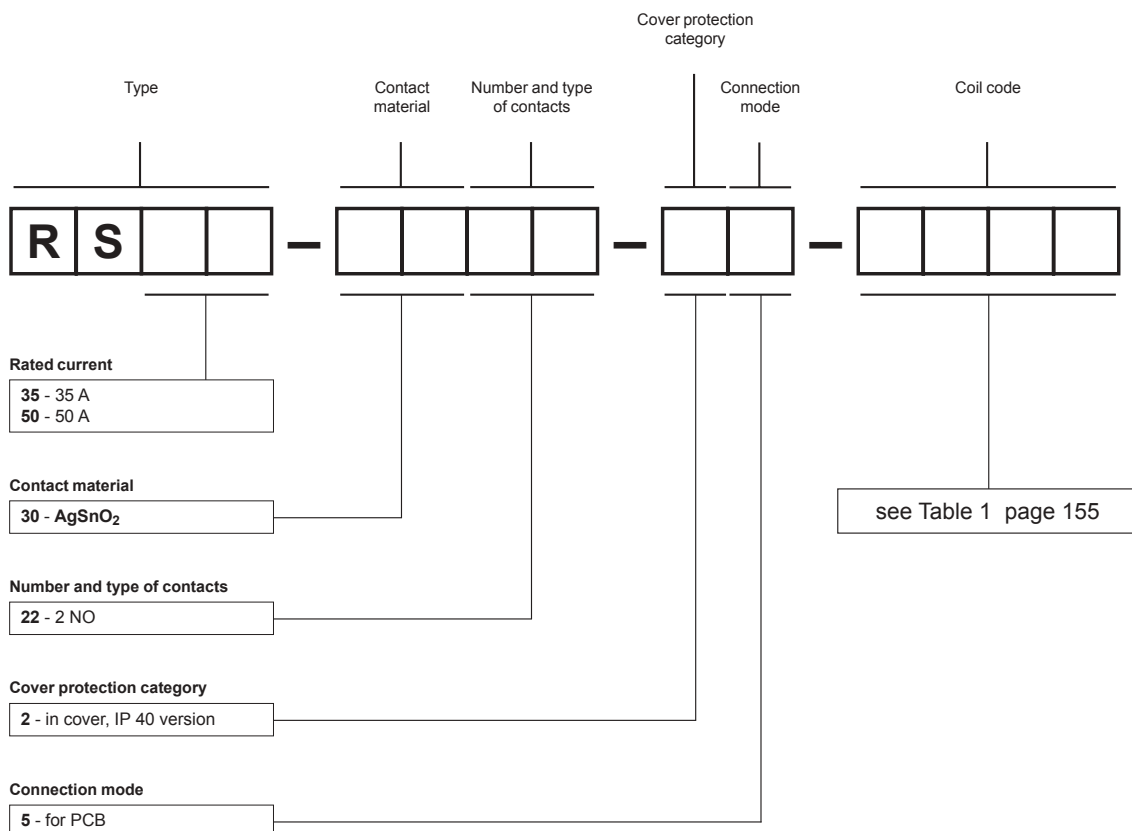
Pinout (solder side view)



## Mounting

Relays **RS35**, **RS50** are designed for direct PCB mounting.

## Ordering codes



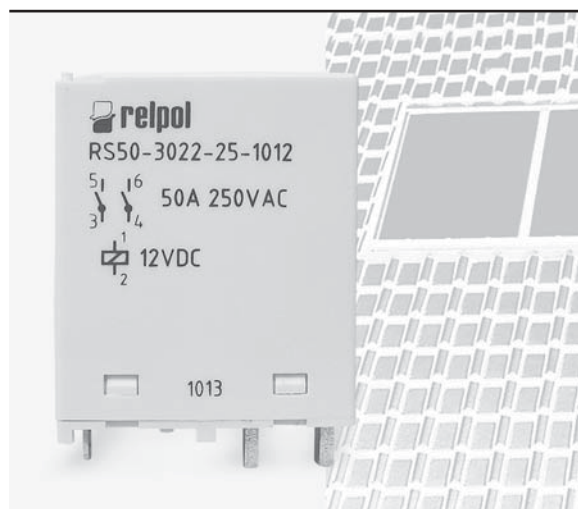
Examples of ordering code:

**RS35-3022-25-1005**

relay **RS35**, rated current 35 A, contact material AgSnO<sub>2</sub>, with two normally open contacts, in cover IP 40, for PCB, voltage version 5 V DC

**RS50-3022-25-1110**

relay **RS35**, rated current 50 A, contact material AgSnO<sub>2</sub>, with two normally open contacts, in cover IP 40, for PCB, voltage version 110 V DC



### Interface relays

|                              |     |                      |     |
|------------------------------|-----|----------------------|-----|
| PI84 with socket GZT80 ..... | 158 |                      |     |
| PI85 with socket GZT80 ..... | 162 | PI6-1P .....         | 186 |
| PI84 with socket GZM80 ..... | 166 | PI6-1T .....         | 188 |
| PI85 with socket GZM80 ..... | 170 | PI6-OC .....         | 190 |
| PIR2 with socket GZM2 .....  | 174 | PIR6W-1P-... .....   | 192 |
| PIR3 with socket GZM3 .....  | 177 | PIR6W-1PS-... .....  | 195 |
| PIR4 with socket GZM4 .....  | 180 | PIR6WB-1PS-... ..... | 198 |
| PIR2M with socket GZ2 .....  | 183 | PI6W-1P .....        | 201 |

The interface relays perform the function of input/output separation in the applications with PLC controllers, and they are applied in numerous other electric devices as interface and output elements.

The basic features of the relays are:

- quick mounting,
- separation of control circuits from output circuits,
- coil overvoltage suppression devices,
- light indicators of operation,
- number of contacts: from 1 to 4.

The high quality and reliability of the interface relays have been proved by their numerous successful applications. Miniature and industrial relays of the types: RM699BV, RM84, RM85, R2, R3, R4 are the basis for these relays.

The relays are recognized and certified by:       
They meet the requirements of RoHS Directive.

RM84 + GZT80



- Interface relay **PI84 with socket GZT80** consists of:
  - electromagnetic relay **RM84**, plug-in socket **GZT80** black,
  - signalling / protecting module **type M...** LED green: version **LD** (polarization N: +A1/-A2) - M41G or M43G; version **LV** - M91G or M93G,
  - retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw
- May be linked with interconnection strip type **ZGGZ80**
- Recognitions, certifications, directives: recognitions RM84, RoHS,  

### Contact data

|                                |      |                                        |
|--------------------------------|------|----------------------------------------|
| Number and type of contacts    |      | 2 C/O                                  |
| Contact material               |      | <b>AgNi</b>                            |
| Rated / max. switching voltage | AC   | 250 V / 440 V                          |
| Min. switching voltage         |      | 5 V                                    |
| Rated load (capacity)          | AC1  | 8 A / 250 V AC                         |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)  |
|                                | AC3  | 550 W (single-phase motor)             |
|                                | DC1  | 8 A / 24 V DC (see Fig. 3)             |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |      | 5 mA                                   |
| Max. inrush current            |      | 15 A                                   |
| Rated current                  |      | 8 A                                    |
| Max. breaking capacity         | AC1  | 2 000 VA                               |
| Min. breaking capacity         |      | 0,3 W                                  |
| Contact resistance             |      | ≤ 100 mΩ                               |
| Max. operating frequency       |      |                                        |
| • at rated load                | AC1  | 600 cycles/hour                        |
| • no load                      |      | 72 000 cycles/hour                     |

### Coil data

|                                   |             |                                                    |
|-----------------------------------|-------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 230 V                                       |
|                                   | DC          | 12 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC          | 0,75 VA                                            |
|                                   | DC          | 0,4...0,48 W                                       |

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

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 300 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 μs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| • pole - pole               |  | 2 500 V AC    type of insulation: basic              |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

### General data

|                                           |             |                                            |
|-------------------------------------------|-------------|--------------------------------------------|
| Operating / release time (typical values) |             | 7 ms / 3 ms                                |
| Electrical life                           |             |                                            |
| • resistive AC1                           |             | > 10 <sup>5</sup> 8 A, 250 V AC            |
| • cos φ                                   |             | see Fig. 2                                 |
| • L/R=40 ms                               |             | > 10 <sup>5</sup> 0,12 A, 220 V DC         |
| Mechanical life (cycles)                  |             | > 3 x 10 <sup>7</sup>                      |
| Dimensions (L x W x H)                    |             | 75,3 x 15,5 x 67 mm                        |
| Weight                                    |             | 62 g                                       |
| Ambient temperature                       | • storage   | -40...+85 °C                               |
|                                           | • operating | AC: -40...+70 °C    DC: -40...+85 °C       |
| Cover protection category                 |             | IP 20    PN-EN 60529                       |
| Environmental protection                  |             | RM84: RTII    GZT80: RT0    PN-EN 116000-3 |
| Shock resistance                          |             | 20 g                                       |
| Vibration resistance                      | (NO/NC)     | 10 g / 5 g    10...150 Hz                  |

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

**Coil data - DC voltage version**

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|-------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|             |                       |                                                    | min.                                  | max.        |
| 12DC        | 12                    | 360                                                | 8,4                                   | 30,6        |
| <b>24DC</b> | <b>24</b>             | <b>1 440</b>                                       | <b>16,8</b>                           | <b>61,2</b> |
| 110DC       | 110                   | 25 200                                             | 77,0                                  | 280,0       |

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

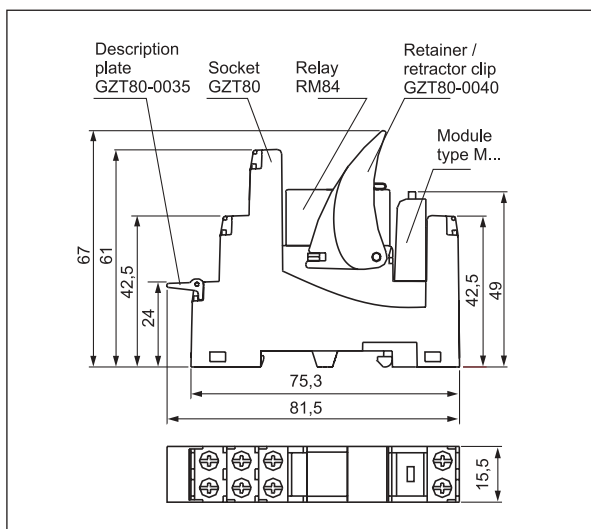
**Coil data - AC 50/60 Hz voltage version**

Table 2

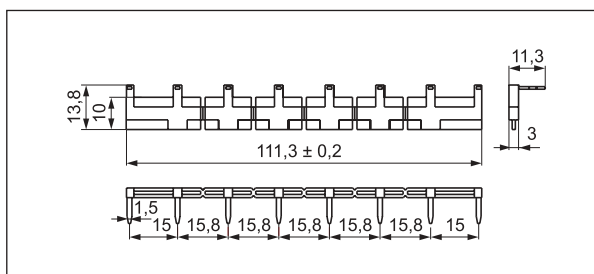
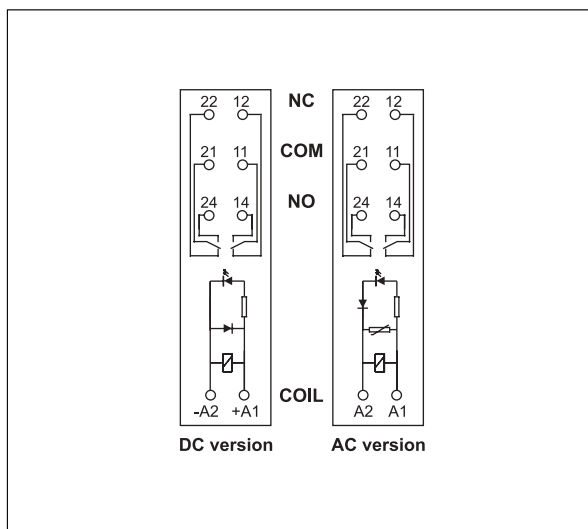
| Coil code    | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V AC - 50 Hz |              |
|--------------|-----------------------|----------------------------------------------------|-----------------------------------------------|--------------|
|              |                       |                                                    | min.                                          | max.         |
| 12AC         | 12                    | 100                                                | 9,6                                           | 13,2         |
| <b>24AC</b>  | <b>24</b>             | 400                                                | <b>19,2</b>                                   | <b>26,4</b>  |
| 120AC        | 120                   | 10 200                                             | 96,0                                          | 144,0        |
| <b>230AC</b> | <b>230</b>            | 38 500                                             | <b>184,0</b>                                  | <b>253,0</b> |

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

## Dimensions

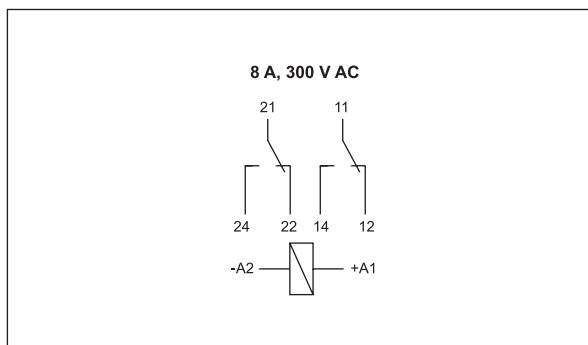


## Connection diagrams (screw terminals side view)



Interconnection strip type **ZGGZ80**

## Connection of GZT80



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

Fig. 1

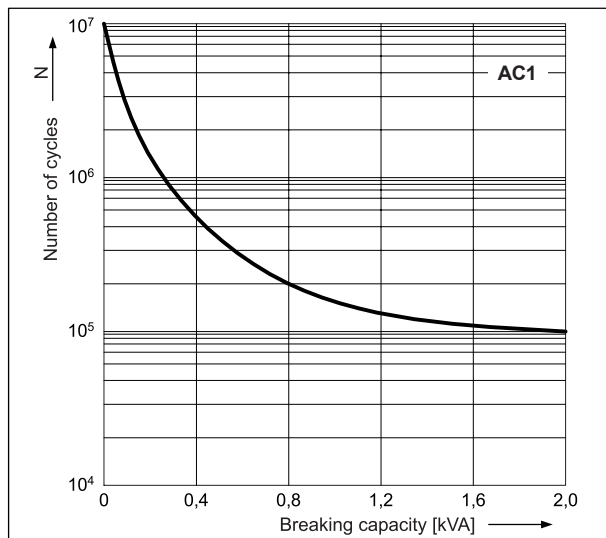

**Electrical life reduction factor at AC inductive load**

Fig. 2

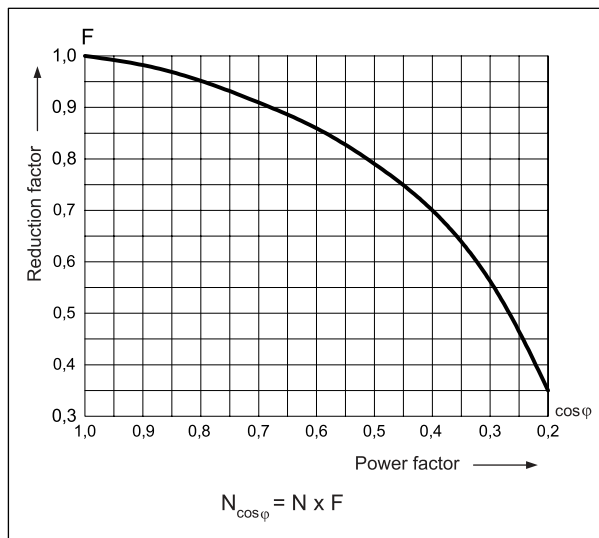

**Max. DC resistive load breaking capacity**

Fig. 3

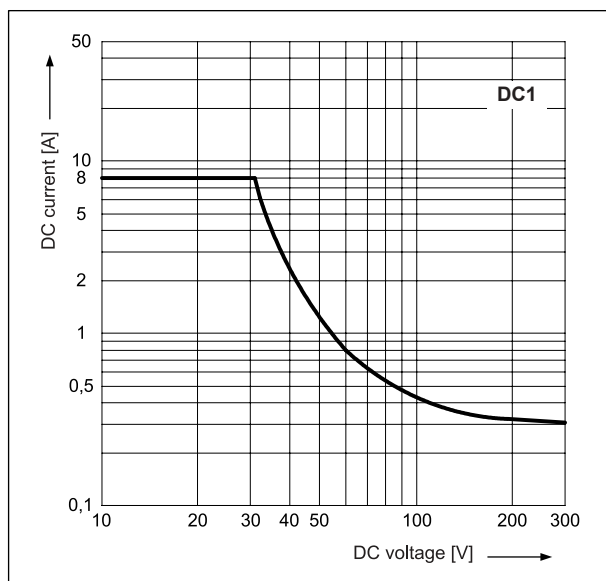

**Coil operating range - DC**

Fig. 4

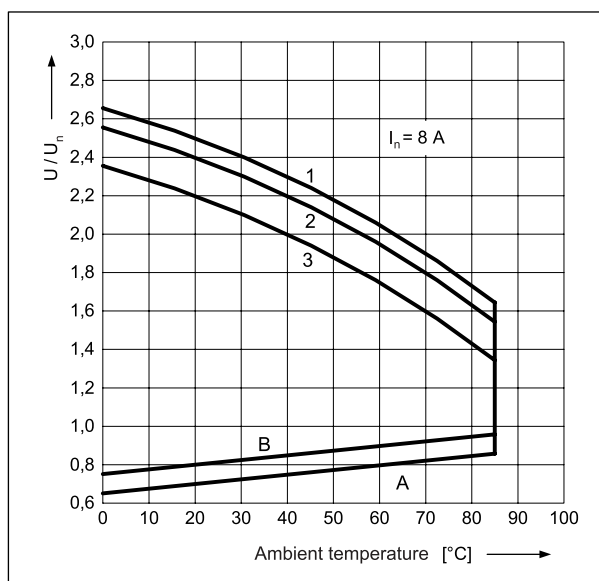
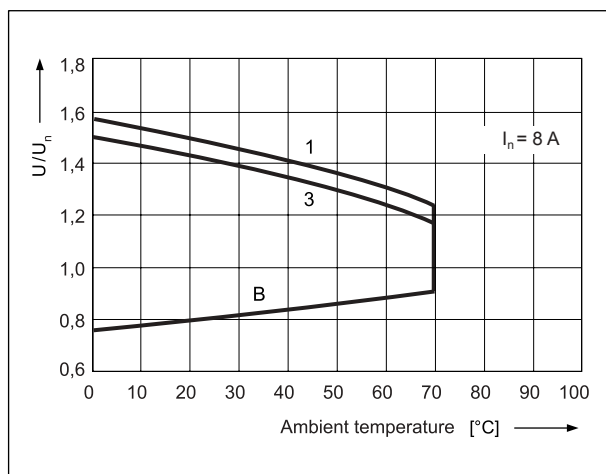

**Coil operating range - AC 50 Hz**

Fig. 5


**Description of Fig. 4 and 5**

**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:

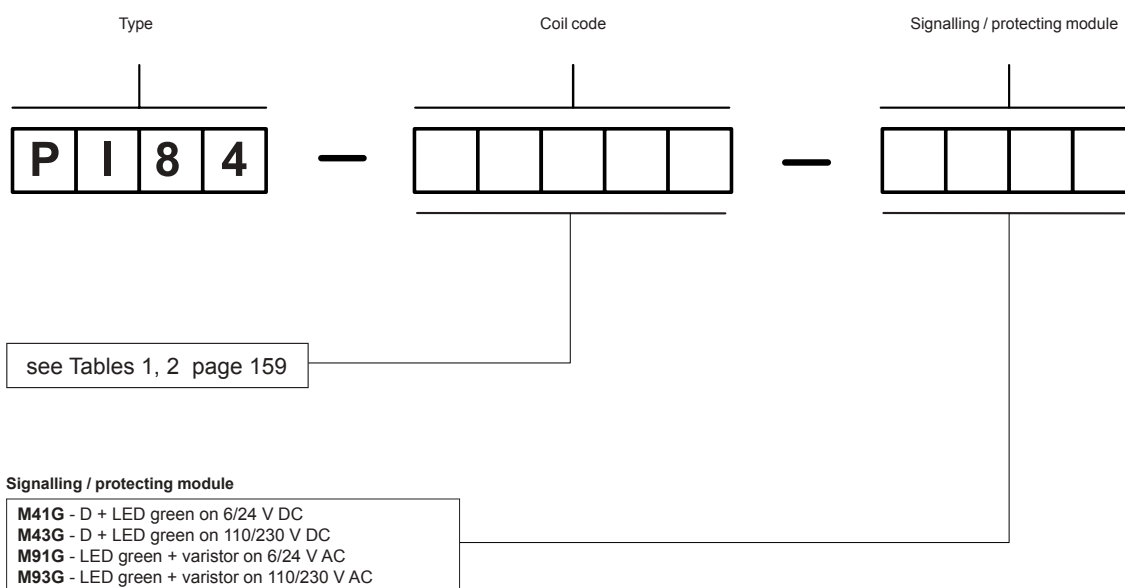
- 1** - no load
- 2** - 50% of rated load
- 3** - rated load

### Mounting

Relays **PI84 with socket GZT80** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw.

❶ Plug-in sockets **GZT80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 261).

### Ordering codes



Examples of ordering codes:

- PI84-12DC-M41G** interface relay **PI84**, which consists of: relay **RM84**, voltage version 12 V DC, plug-in socket **GZT80** black (screw terminals), signalling / protecting module **M41G** (version **LD**, polarization N: +A1/-A2, LED green), retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**
- PI84-24AC-M91G** interface relay **PI84**, which consists of: relay **RM84**, voltage version 24 V AC 50/60 Hz, plug-in socket **GZT80** black (screw terminals), signalling / protecting module **M91G** (version **LV**, LED green), retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**

## RM85 + GZT80



- Interface relay **PI85 with socket GZT80** consists of:
  - electromagnetic relay **RM85**, plug-in socket **GZT80** black,
  - signalling / protecting module **type M...** LED green: version **LD** (polarization N: +A1/-A2) - M41G or M43G; version **LV** - M91G or M93G,
  - retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw
- May be linked with interconnection strip type **ZGGZ80**
- Recognitions, certifications, directives: recognitions RM85, RoHS,  

### Contact data

|                                |      |                                        |
|--------------------------------|------|----------------------------------------|
| Number and type of contacts    |      | 1 C/O                                  |
| Contact material               |      | <b>AgNi</b>                            |
| Rated / max. switching voltage | AC   | 250 V / 440 V                          |
| Min. switching voltage         |      | 5 V                                    |
| Rated load (capacity)          | AC1  | 16 A / 250 V AC                        |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)  |
|                                | AC3  | 750 W (single-phase motor)             |
|                                | DC1  | 16 A / 24 V DC (see Fig. 3)            |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |      | 5 mA                                   |
| Max. inrush current            |      | 30 A                                   |
| Rated current                  |      | 16 A                                   |
| Max. breaking capacity         | AC1  | 4 000 VA                               |
| Min. breaking capacity         |      | 0,3 W                                  |
| Contact resistance             |      | ≤ 100 mΩ                               |
| Max. operating frequency       |      |                                        |
| • at rated load                | AC1  | 600 cycles/hour                        |
| • no load                      |      | 72 000 cycles/hour                     |

### Coil data

|                                   |             |                                                    |
|-----------------------------------|-------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 230 V                                       |
|                                   | DC          | 12 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC          | 0,75 VA                                            |
|                                   | DC          | 0,4...0,48 W                                       |

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

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 300 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 μs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

### General data

|                                           |             |                                            |
|-------------------------------------------|-------------|--------------------------------------------|
| Operating / release time (typical values) |             | 7 ms / 3 ms                                |
| Electrical life                           |             |                                            |
| • resistive AC1                           |             | > 0,7 x 10 <sup>5</sup> 16 A, 250 V AC     |
| • cos φ                                   |             | see Fig. 2                                 |
| • L/R=40 ms                               |             | > 10 <sup>5</sup> 0,12 A, 220 V DC         |
| Mechanical life (cycles)                  |             | > 3 x 10 <sup>7</sup>                      |
| Dimensions (L x W x H)                    |             | 75,3 x 15,5 x 67 mm                        |
| Weight                                    |             | 62 g                                       |
| Ambient temperature                       | • storage   | -40...+85 °C                               |
|                                           | • operating | AC: -40...+70 °C    DC: -40...+85 °C       |
| Cover protection category                 |             | IP 20    PN-EN 60529                       |
| Environmental protection                  |             | RM85: RTII    GZT80: RT0    PN-EN 116000-3 |
| Shock resistance                          |             | 30 g                                       |
| Vibration resistance                      |             | 10 g    10...150 Hz                        |

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

**Coil data - DC voltage version**

Table 1

| Coil code   | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|-------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|             |                       |                                                    | min.                                  | max.        |
| 12DC        | 12                    | 360                                                | 8,4                                   | 30,6        |
| <b>24DC</b> | <b>24</b>             | <b>1 440</b>                                       | <b>16,8</b>                           | <b>61,2</b> |
| 110DC       | 110                   | 25 200                                             | 77,0                                  | 280,0       |

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

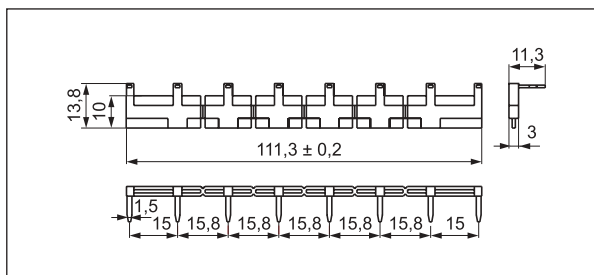
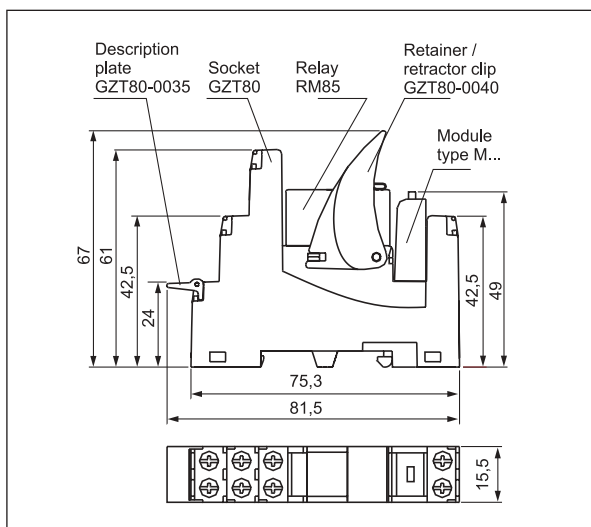
**Coil data - AC 50/60 Hz voltage version**

Table 2

| Coil code    | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V AC - 50 Hz |              |
|--------------|-----------------------|----------------------------------------------------|-----------------------------------------------|--------------|
|              |                       |                                                    | min.                                          | max.         |
| 12AC         | 12                    | 100                                                | 9,6                                           | 13,2         |
| <b>24AC</b>  | <b>24</b>             | 400                                                | <b>19,2</b>                                   | <b>26,4</b>  |
| 120AC        | 120                   | 10 200                                             | 96,0                                          | 144,0        |
| <b>230AC</b> | <b>230</b>            | 38 500                                             | <b>184,0</b>                                  | <b>253,0</b> |

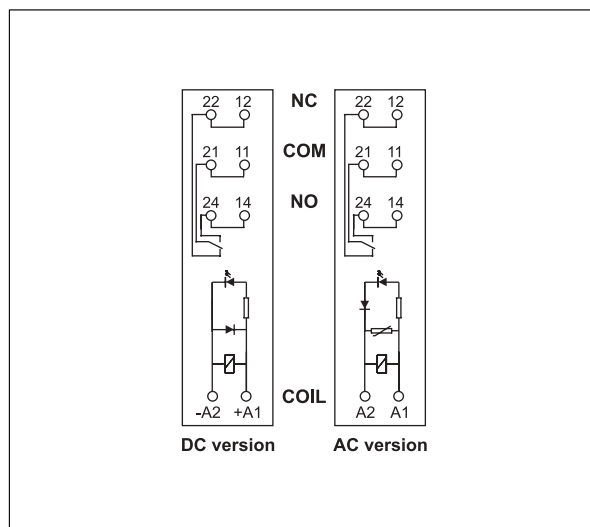
The data in bold type pertain to the standard versions of the relays.

## Dimensions

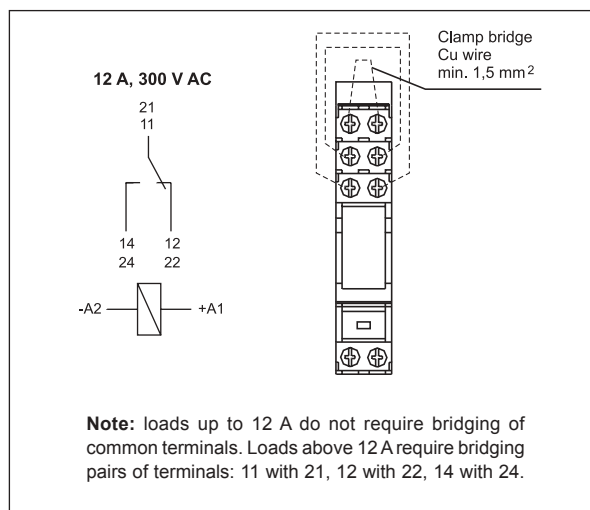


Interconnection strip type **ZGGZ80**

## Connection diagrams (screw terminals side view)



## Connection of GZT80



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

Fig. 1

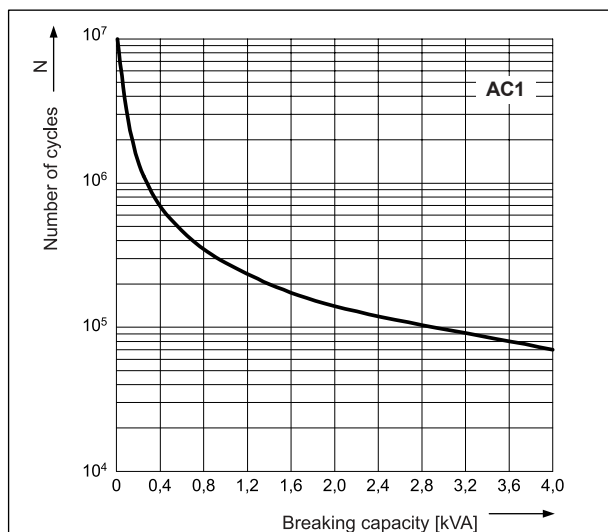

**Electrical life reduction factor**  
**at AC inductive load**

Fig. 2

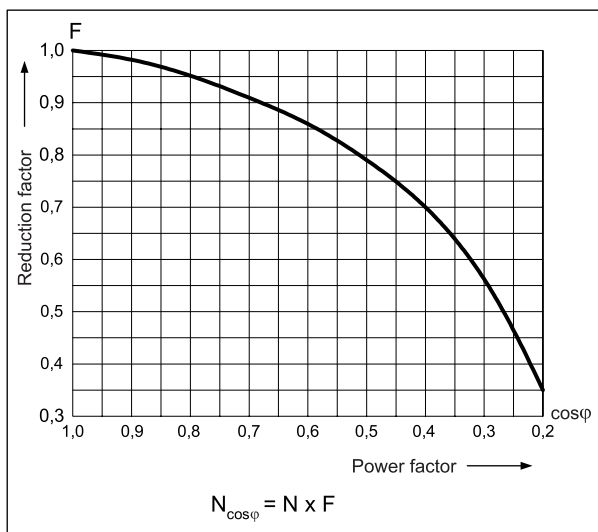

**Max. DC resistive load breaking capacity**

Fig. 3

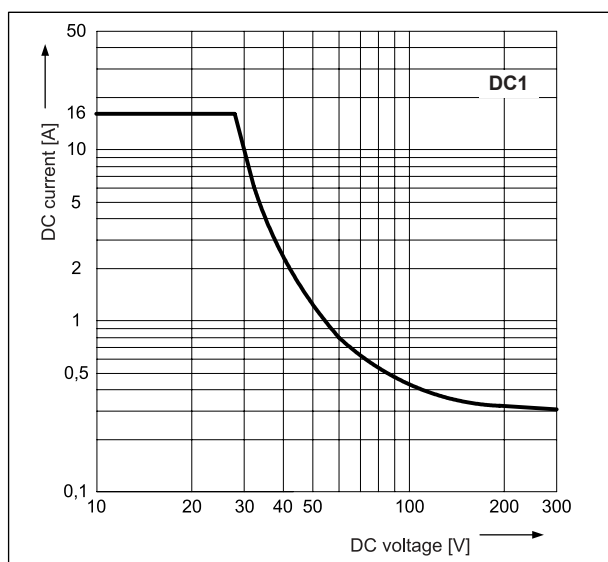

**Coil operating range - DC**

Fig. 4

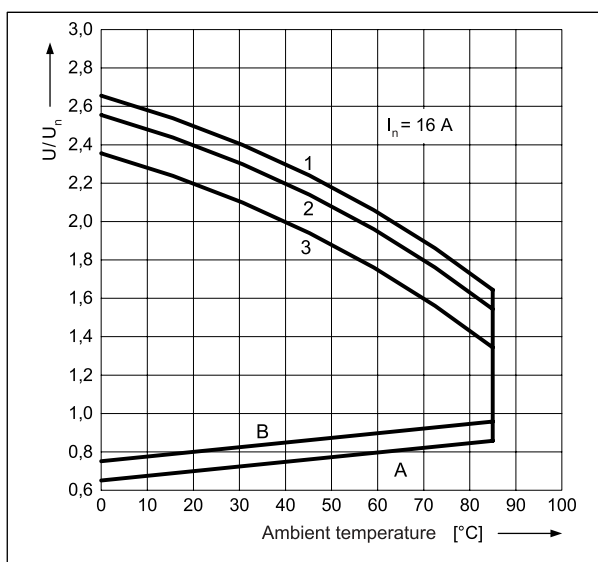
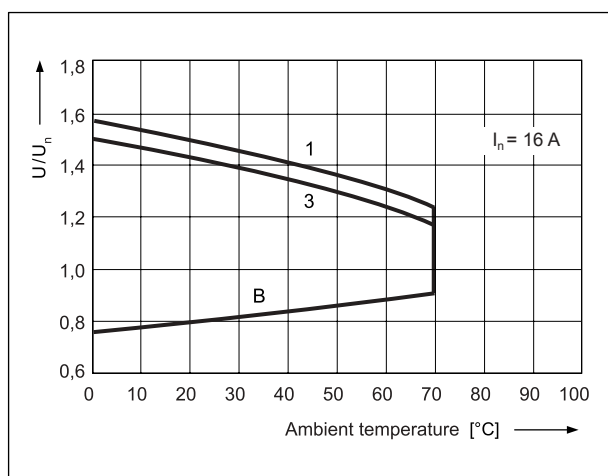

**Coil operating range - AC 50 Hz**

Fig. 5


**Description of Fig. 4 and 5**

**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:

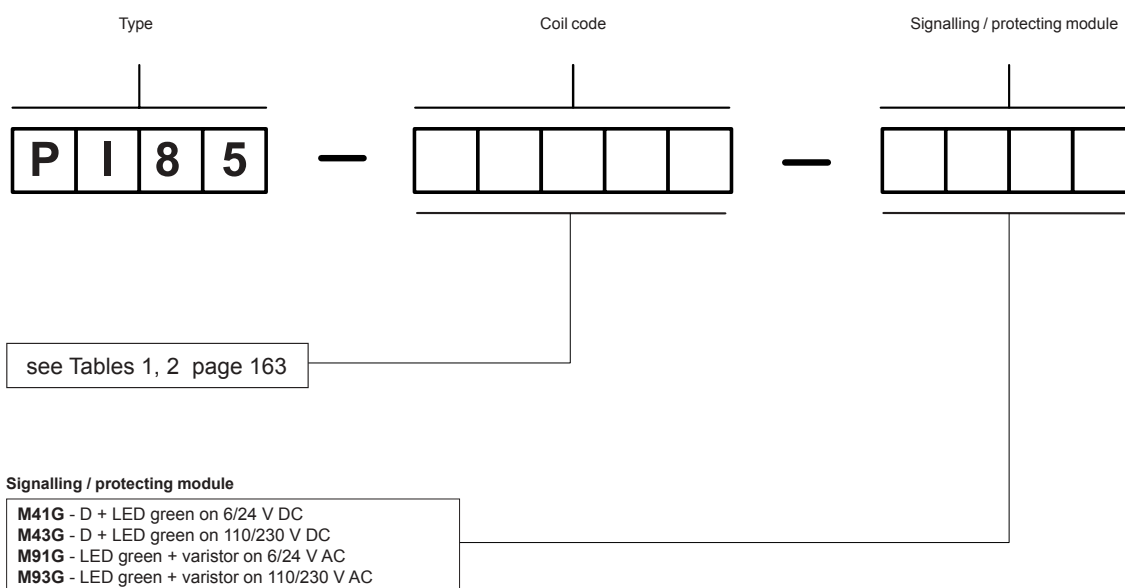
- 1** - no load
- 2** - 50% of rated load
- 3** - rated load

### Mounting

Relays **PI85 with socket GZT80** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw.

❶ Plug-in sockets **GZT80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 261).

### Ordering codes



Examples of ordering codes:

- PI85-12DC-M41G** interface relay **PI85**, which consists of: relay **RM85**, voltage version 12 V DC, plug-in socket **GZT80** black (screw terminals), signalling / protecting module **M41G** (version **LD**, polarization N: +A1/-A2, LED green), retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**
- PI85-24AC-M91G** interface relay **PI85**, which consists of: relay **RM85**, voltage version 24 V AC 50/60 Hz, plug-in socket **GZT80** black (screw terminals), signalling / protecting module **M91G** (version **LV**, LED green), retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**

## RM84 + GZM80



- Interface relay **PI84 with socket GZM80** consists of:
  - electromagnetic relay **RM84**, plug-in socket **GZM80** grey,
  - signalling / protecting module **type M...** LED green:
- version **LD** (polarization N: +A1/-A2) - M41G or M43G; version **LV** - M91G or M93G,
- retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw
- May be linked with interconnection strip type **ZGGZ80**
- Recognitions, certifications, directives: recognitions RM84, RoHS,

### Contact data

|                                |      |                                        |
|--------------------------------|------|----------------------------------------|
| Number and type of contacts    |      | 2 C/O                                  |
| Contact material               |      | <b>AgNi</b>                            |
| Rated / max. switching voltage | AC   | 250 V / 440 V                          |
| Min. switching voltage         |      | 5 V                                    |
| Rated load (capacity)          | AC1  | 8 A / 250 V AC                         |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)  |
|                                | AC3  | 550 W (single-phase motor)             |
|                                | DC1  | 8 A / 24 V DC (see Fig. 3)             |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |      | 5 mA                                   |
| Max. inrush current            |      | 15 A                                   |
| Rated current                  |      | 8 A                                    |
| Max. breaking capacity         | AC1  | 2 000 VA                               |
| Min. breaking capacity         |      | 0,3 W                                  |
| Contact resistance             |      | ≤ 100 mΩ                               |
| Max. operating frequency       |      |                                        |
| • at rated load                | AC1  | 600 cycles/hour                        |
| • no load                      |      | 72 000 cycles/hour                     |

### Coil data

|                                   |             |                                                    |
|-----------------------------------|-------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 230 V                                       |
|                                   | DC          | 12 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC          | 0,75 VA                                            |
|                                   | DC          | 0,4...0,48 W                                       |

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

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 300 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 μs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| • pole - pole               |  | 2 500 V AC    type of insulation: basic              |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

### General data

|                                           |             |                                            |
|-------------------------------------------|-------------|--------------------------------------------|
| Operating / release time (typical values) |             | 7 ms / 3 ms                                |
| Electrical life                           |             |                                            |
| • resistive AC1                           |             | > 10 <sup>5</sup> 8 A, 250 V AC            |
| • cos φ                                   |             | see Fig. 2                                 |
| • cos φ = 0,4                             |             | 10 <sup>5</sup> 3 A, 250 V AC              |
| • L/R=40 ms                               |             | > 10 <sup>5</sup> 0,12 A, 220 V DC         |
| Mechanical life (cycles)                  |             | > 3 x 10 <sup>7</sup>                      |
| Dimensions (L x W x H)                    |             | 78,1 x 15,9 x 66,5 mm                      |
| Weight                                    |             | 59 g                                       |
| Ambient temperature                       | • storage   | -40...+85 °C                               |
|                                           | • operating | AC: -40...+70 °C    DC: -40...+85 °C       |
| Cover protection category                 |             | IP 20    PN-EN 60529                       |
| Environmental protection                  |             | RM84: RTII    GZM80: RT0    PN-EN 116000-3 |
| Shock resistance                          |             | 20 g                                       |
| Vibration resistance                      | (NO/NC)     | 10 g / 5 g 10...150 Hz                     |

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

**Coil data - DC voltage version**

Table 1

| Coil code    | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|--------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|              |                       |                                                    | min.                                  | max.        |
| 012DC        | 12                    | 360                                                | 8,4                                   | 30,6        |
| <b>024DC</b> | <b>24</b>             | <b>1 440</b>                                       | <b>16,8</b>                           | <b>61,2</b> |
| 110DC        | 110                   | 25 200                                             | 77,0                                  | 280,0       |

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

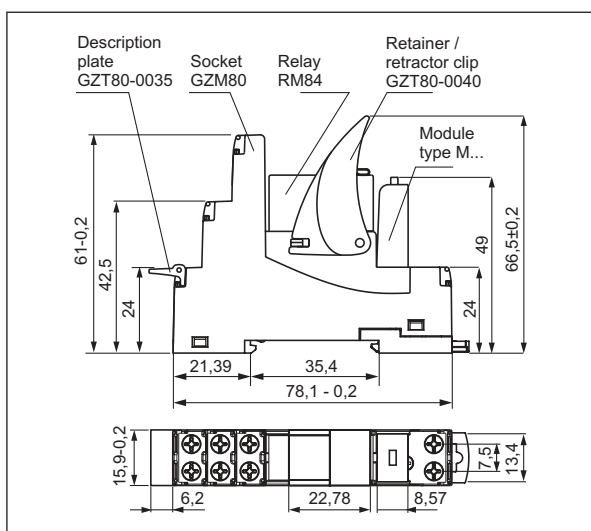
**Coil data - AC 50/60 Hz voltage version**

Table 2

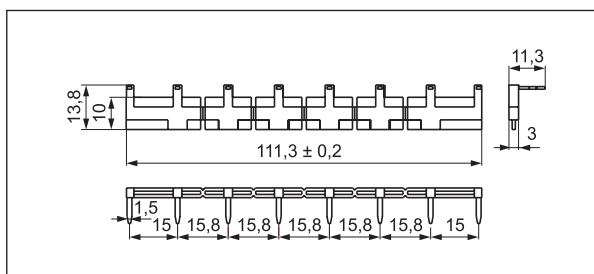
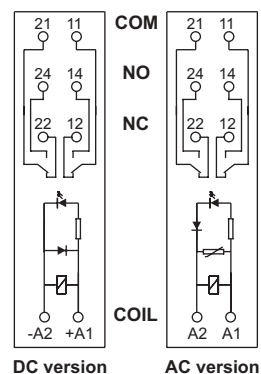
| Coil code    | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V AC - 50 Hz |              |
|--------------|-----------------------|----------------------------------------------------|-----------------------------------------------|--------------|
|              |                       |                                                    | min.                                          | max.         |
| 012AC        | 12                    | 100                                                | 9,6                                           | 13,2         |
| <b>024AC</b> | <b>24</b>             | 400                                                | <b>19,2</b>                                   | <b>26,4</b>  |
| 120AC        | 120                   | 10 200                                             | 96,0                                          | 144,0        |
| <b>230AC</b> | <b>230</b>            | 38 500                                             | <b>184,0</b>                                  | <b>253,0</b> |

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

## Dimensions

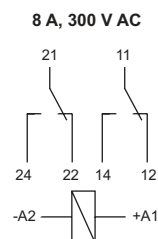


## Connection diagrams (screw terminals side view)



Interconnection strip type **ZGGZ80**

## Connection of GZM80



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

Fig. 1

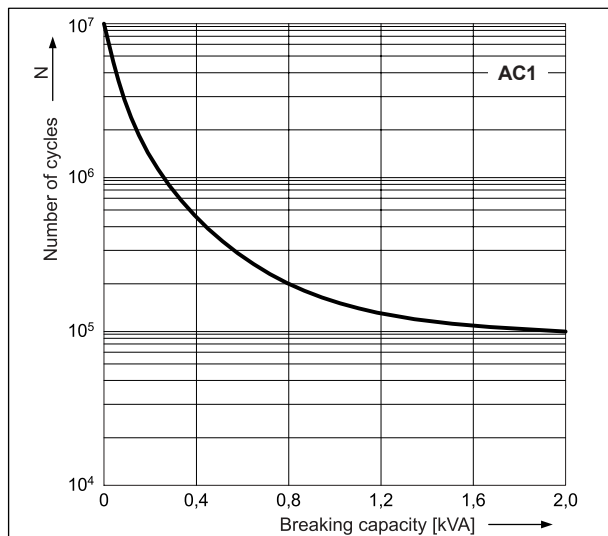

**Electrical life reduction factor at AC inductive load**

Fig. 2

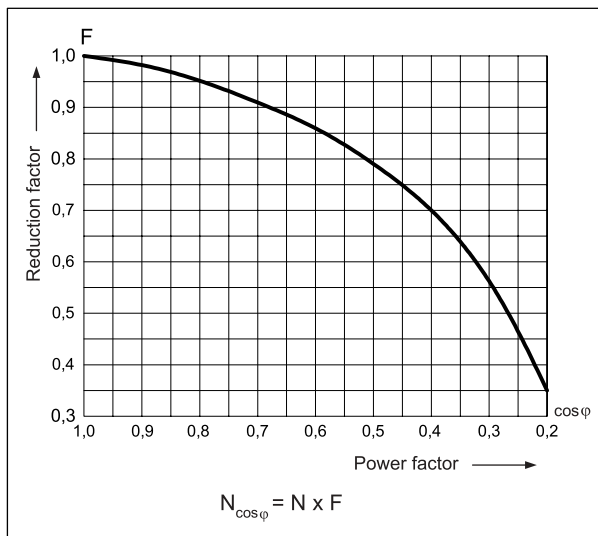

**Max. DC resistive load breaking capacity**

Fig. 3

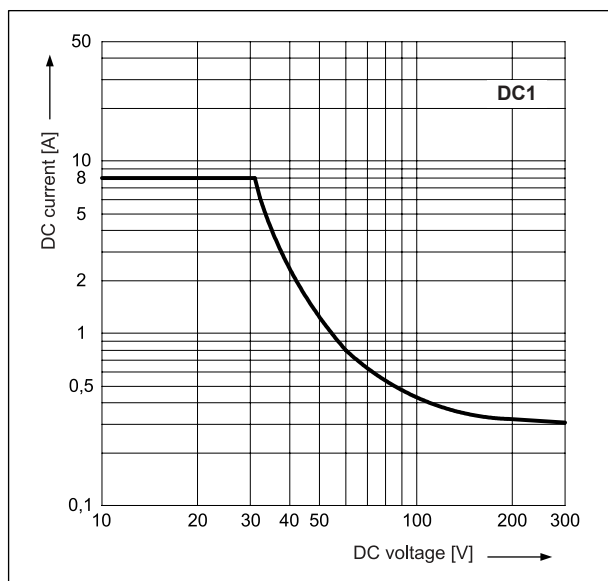

**Coil operating range - DC**

Fig. 4

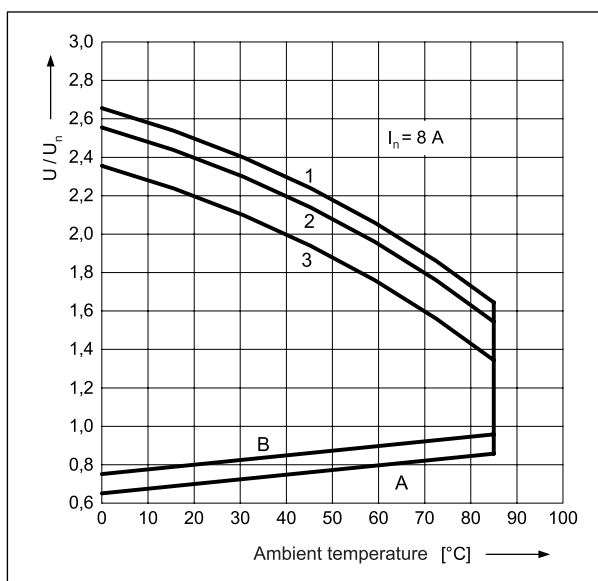
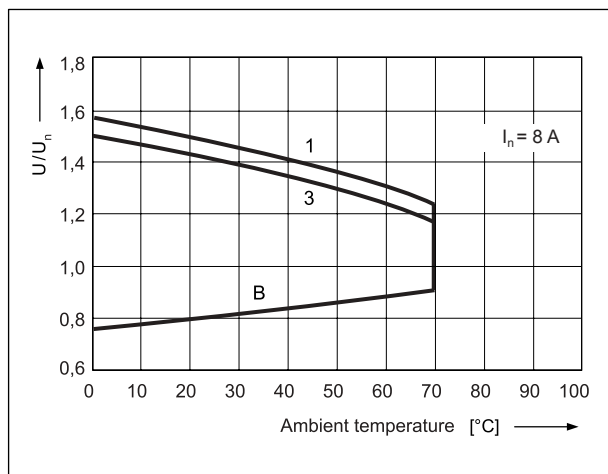

**Coil operating range - AC 50 Hz**

Fig. 5


**Description of Fig. 4 and 5**

**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:

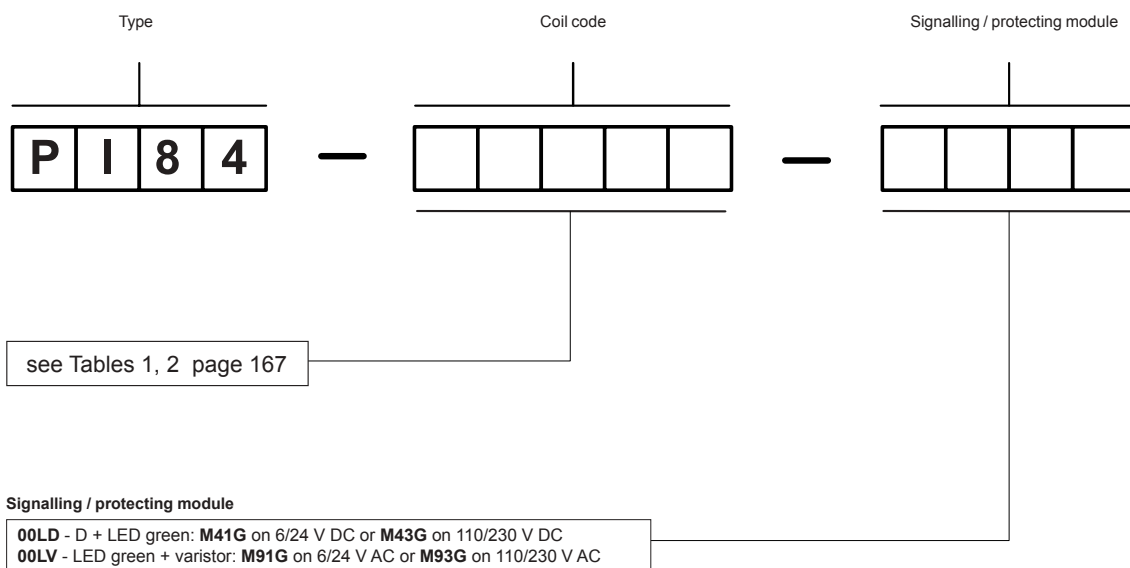
- 1** - no load
- 2** - 50% of rated load
- 3** - rated load

### Mounting

Relays **PI84 with socket GZM80** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw.

❶ Plug-in sockets **GZM80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 261).

### Ordering codes



Examples of ordering codes:

- PI84-012DC-00LD** interface relay **PI84**, which consists of: relay **RM84**, voltage version 12 V DC, plug-in socket **GZM80** grey (screw terminals), signalling / protecting module **M41G** (version **LD**, polarization N: +A1/-A2, LED green), retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**
- PI84-230AC-00LV** interface relay **PI84**, which consists of: relay **RM84**, voltage version 230 V AC 50/60 Hz, plug-in socket **GZM80** grey (screw terminals), signalling / protecting module **M93G** (version **LV**, LED green), retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**

## RM85 + GZM80



- Interface relay **PI85 with socket GZM80** consists of:
  - electromagnetic relay **RM85**, plug-in socket **GZM80** grey,
  - signalling / protecting module **type M...** LED green:
  - version **LD** (polarization N: +A1/-A2) - M41G or M43G; version **LV** - M91G or M93G,
  - retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw
- May be linked with interconnection strip type **ZGGZ80**
- Recognitions, certifications, directives: recognitions RM85, RoHS,  

### Contact data

|                                |      |                                        |
|--------------------------------|------|----------------------------------------|
| Number and type of contacts    |      | 1 C/O                                  |
| Contact material               |      | <b>AgNi</b>                            |
| Rated / max. switching voltage | AC   | 250 V / 440 V                          |
| Min. switching voltage         |      | 5 V                                    |
| Rated load (capacity)          | AC1  | 16 A / 250 V AC                        |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)  |
|                                | AC3  | 750 W (single-phase motor)             |
|                                | DC1  | 16 A / 24 V DC (see Fig. 3)            |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |      | 5 mA                                   |
| Max. inrush current            |      | 30 A                                   |
| Rated current                  |      | 16 A                                   |
| Max. breaking capacity         | AC1  | 4 000 VA                               |
| Min. breaking capacity         |      | 0,3 W                                  |
| Contact resistance             |      | ≤ 100 mΩ                               |
| Max. operating frequency       |      |                                        |
| • at rated load                | AC1  | 600 cycles/hour                        |
| • no load                      |      | 72 000 cycles/hour                     |

### Coil data

|                                   |             |                                                    |
|-----------------------------------|-------------|----------------------------------------------------|
| Rated voltage                     | 50/60 Hz AC | 12 ... 230 V                                       |
|                                   | DC          | 12 ... 110 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 and Fig. 4, 5                      |
| Rated power consumption           | AC          | 0,75 VA                                            |
|                                   | DC          | 0,4...0,48 W                                       |

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

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 300 V AC                                             |
| Rated surge voltage         |  | 4 000 V    1,2 / 50 μs                               |
| Overvoltage category        |  | III                                                  |
| Insulation pollution degree |  | 3                                                    |
| Dielectric strength         |  |                                                      |
| • between coil and contacts |  | 5 000 V AC    type of insulation: reinforced         |
| • contact clearance         |  | 1 000 V AC    type of clearance: micro-disconnection |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 10 mm                                              |
| • creepage                  |  | ≥ 10 mm                                              |

### General data

|                                           |             |                                            |
|-------------------------------------------|-------------|--------------------------------------------|
| Operating / release time (typical values) |             | 7 ms / 3 ms                                |
| Electrical life                           |             |                                            |
| • resistive AC1                           |             | > 0,7 x 10 <sup>5</sup> 16 A, 250 V AC     |
| • cos φ                                   |             | see Fig. 2                                 |
| • L/R=40 ms                               |             | > 10 <sup>5</sup> 0,12 A, 220 V DC         |
| Mechanical life (cycles)                  |             | > 3 x 10 <sup>7</sup>                      |
| Dimensions (L x W x H)                    |             | 78,1 x 15,9 x 66,5 mm                      |
| Weight                                    |             | 59 g                                       |
| Ambient temperature                       | • storage   | -40...+85 °C                               |
|                                           | • operating | AC: -40...+70 °C    DC: -40...+85 °C       |
| Cover protection category                 |             | IP 20    PN-EN 60529                       |
| Environmental protection                  |             | RM85: RTII    GZM80: RT0    PN-EN 116000-3 |
| Shock resistance                          |             | 30 g                                       |
| Vibration resistance                      |             | 10 g 10...150 Hz                           |

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

**Coil data - DC voltage version**

Table 1

| Coil code    | Rated voltage<br>V DC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V DC |             |
|--------------|-----------------------|----------------------------------------------------|---------------------------------------|-------------|
|              |                       |                                                    | min.                                  | max.        |
| 012DC        | 12                    | 360                                                | 8,4                                   | 30,6        |
| <b>024DC</b> | <b>24</b>             | <b>1 440</b>                                       | <b>16,8</b>                           | <b>61,2</b> |
| 110DC        | 110                   | 25 200                                             | 77,0                                  | 280,0       |

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

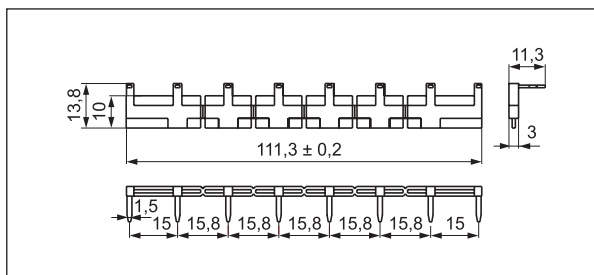
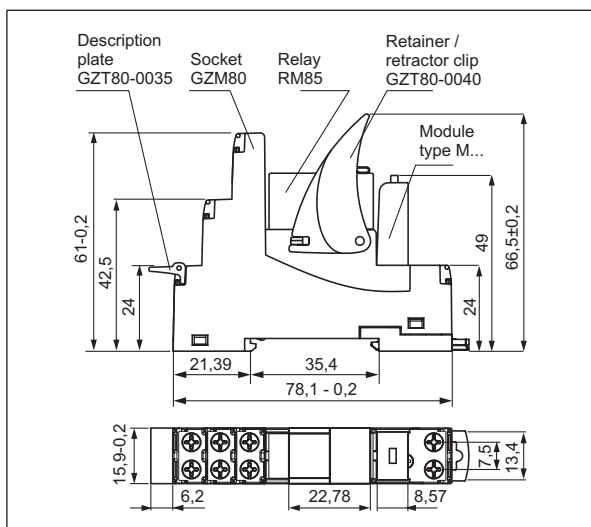
**Coil data - AC 50/60 Hz voltage version**

Table 2

| Coil code    | Rated voltage<br>V AC | Coil resistance<br>$\pm 10\%$ at 20 °C<br>$\Omega$ | Coil operating range at 20 °C<br>V AC - 50 Hz |              |
|--------------|-----------------------|----------------------------------------------------|-----------------------------------------------|--------------|
|              |                       |                                                    | min.                                          | max.         |
| 012AC        | 12                    | 100                                                | 9,6                                           | 13,2         |
| <b>024AC</b> | <b>24</b>             | 400                                                | <b>19,2</b>                                   | <b>26,4</b>  |
| 120AC        | 120                   | 10 200                                             | 96,0                                          | 144,0        |
| <b>230AC</b> | <b>230</b>            | 38 500                                             | <b>184,0</b>                                  | <b>253,0</b> |

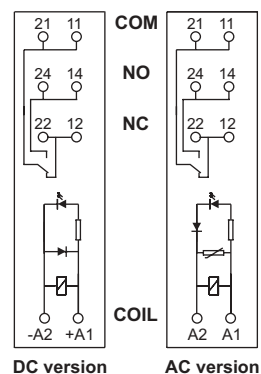
The data in bold type pertain to the standard versions of the relays.

## Dimensions

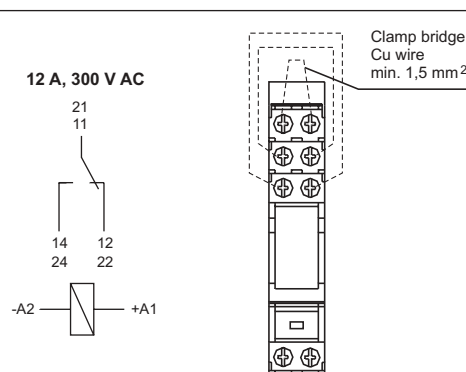


Interconnection strip type **ZGGZ80**

## Connection diagrams (screw terminals side view)



## Connection of GZM80



**Note:** loads up to 12 A do not require bridging of common terminals. Loads above 12 A require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24.

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

Fig. 1

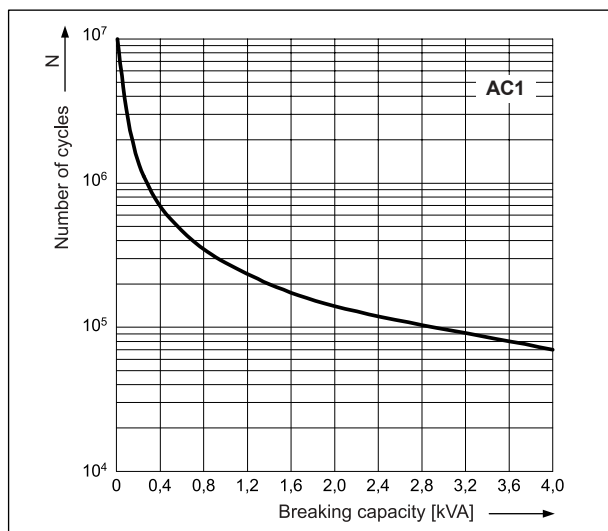

**Electrical life reduction factor**  
at AC inductive load

Fig. 2

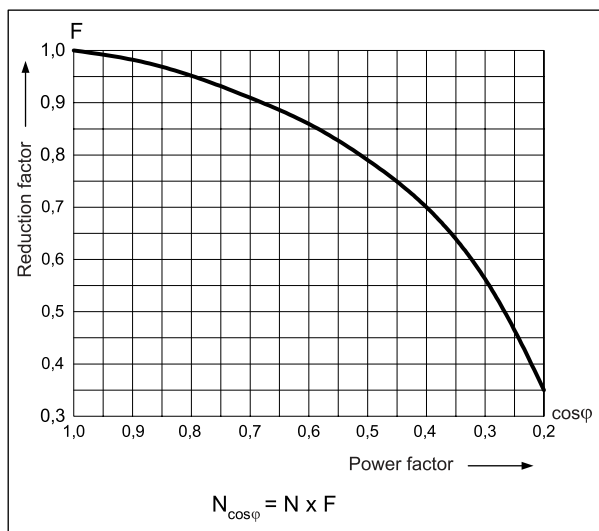

**Max. DC resistive load breaking capacity**

Fig. 3

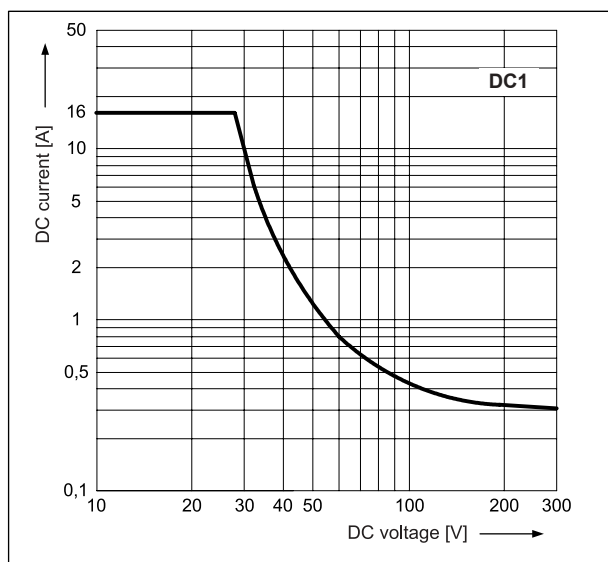

**Coil operating range - DC**

Fig. 4

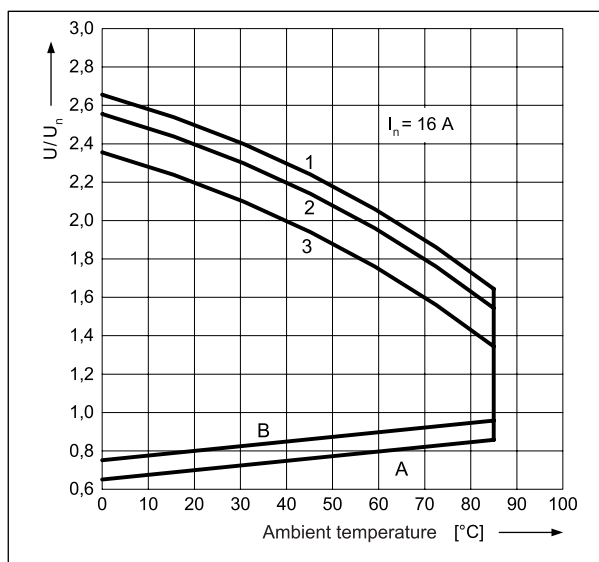
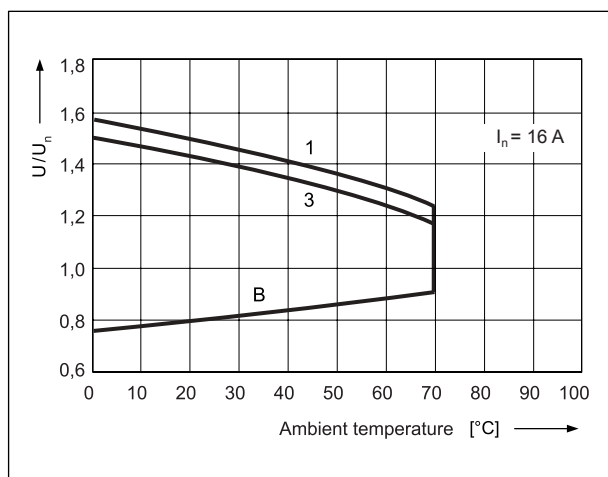

**Coil operating range - AC 50 Hz**

Fig. 5


**Description of Fig. 4 and 5**

**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:

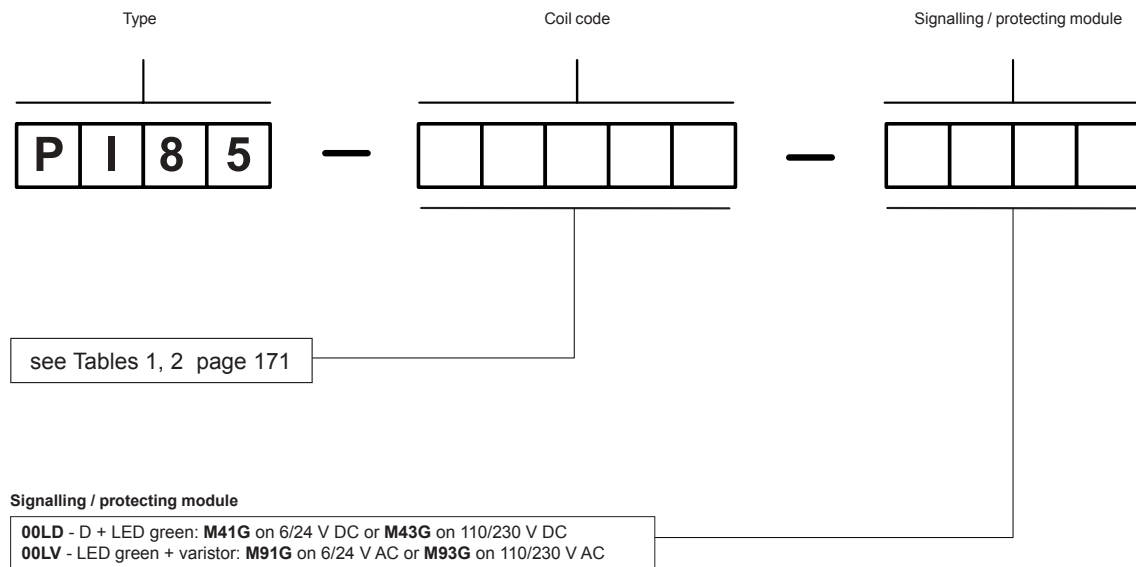
- 1** - no load
- 2** - 50% of rated load
- 3** - rated load

### Mounting

Relays **PI85 with socket GZM80** ① are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw.

① Plug-in sockets **GZM80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 261).

### Ordering codes



Examples of ordering codes:

- PI85-012DC-00LD** interface relay **PI85**, which consists of: relay **RM85**, voltage version 12 V DC, plug-in socket **GZM80** grey (screw terminals), signalling / protecting module **M41G** (version **LD**, polarization N: +A1/-A2, LED green), retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**
- PI85-230AC-00LV** interface relay **PI85**, which consists of: relay **RM85**, voltage version 230 V AC 50/60 Hz, plug-in socket **GZM80** grey (screw terminals), signalling / protecting module **M93G** (version **LV**, LED green), retainer / retractor clip **GZT80-0040**, white description plate **GZT80-0035**



R2 + GZM2

- Interface relay **PIR2** consists of: electromagnetic relay **R2**, plug-in socket **GZM2** grey, signalling / protecting module **type M...** LED green: version **LD** (polarization N: +A1/-A2) - M41G or M42G or M43G; version **LV** - M91G or M92G or M93G, retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- May be linked with interconnection strip type **ZGGZ4**
- Recognitions, certifications, directives: recognitions R2, RoHS, AUCOTEAM GmbH Berlin - railway standards, **CE**

### Contact data

|                                |      |                                        |
|--------------------------------|------|----------------------------------------|
| Number and type of contacts    |      | 2 C/O                                  |
| Contact material               |      | <b>AgNi</b>                            |
| Rated / max. switching voltage | AC   | 250 V / 440 V                          |
| Min. switching voltage         |      | 5 V                                    |
| Rated load (capacity)          | AC1  | 12 A / 250 V AC                        |
|                                | AC15 | 3 A / 120 V      1,5 A / 240 V (B300)  |
|                                | AC3  | 370 W (single-phase motor)             |
|                                | DC1  | 12 A / 24 V DC (see Fig. 3)            |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |      | 5 mA                                   |
| Max. inrush current            |      | 24 A                                   |
| Rated current                  |      | 12 A                                   |
| Max. breaking capacity         | AC1  | 3 000 VA                               |
| Min. breaking capacity         |      | 0,3 W                                  |
| 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 | 12 ... 230 V                                      |
|                                   | DC          | 12 ... 110 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          | 50 Hz: 1,6 VA      60 Hz: 1,3 VA                  |
|                                   | DC          | 0,9 W                                             |

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

|                             |  |                                                      |
|-----------------------------|--|------------------------------------------------------|
| Insulation rated voltage    |  | 250 V AC                                             |
| Rated surge voltage         |  | 4 000 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               |  | 2 500 V AC    type of insulation: basic              |
| Contact - coil distance     |  |                                                      |
| • clearance                 |  | ≥ 2,5 mm                                             |
| • creepage                  |  | ≥ 4 mm                                               |

### General data

|                                           |             |                                        |
|-------------------------------------------|-------------|----------------------------------------|
| Operating / release time (typical values) |             | AC: 10 ms / 8 ms      DC: 13 ms / 3 ms |
| Electrical life                           |             |                                        |
| • resistive AC1                           |             | > 10 <sup>5</sup> 12 A, 250 V AC       |
| • cos φ                                   |             | see Fig. 2                             |
| Mechanical life (cycles)                  |             | > 2 x 10 <sup>7</sup>                  |
| Dimensions (L x W x H)                    |             | 75 x 27 x 82 mm                        |
| Weight                                    |             | 97 g                                   |
| Ambient temperature                       | • storage   | -40...+85 °C                           |
|                                           | • operating | AC: -40...+55 °C    DC: -40...+70 °C   |
| Cover protection category                 |             | IP 20    PN-EN 60529                   |
| Environmental protection                  |             | R2: RTI    GZM2: RT0    PN-EN 116000-3 |
| Shock resistance                          | (NO/NC)     | 10 g / 5 g                             |
| Vibration resistance                      |             | 5 g    10...150 Hz                     |

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

**Coil data - DC voltage version**

Table 1

| Coil code    | Rated voltage<br>V DC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                 |
|--------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|              |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 012DC        | 12                    | 160                                                    | 9,6                          | 13,2            |
| <b>024DC</b> | <b>24</b>             | <b>640</b>                                             | <b>19,2</b>                  | <b>26,4</b>     |
| 048DC        | 48                    | 2 600                                                  | 38,4                         | 52,8            |
| 110DC        | 110                   | 13 600                                                 | 88,0                         | 121,0           |

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

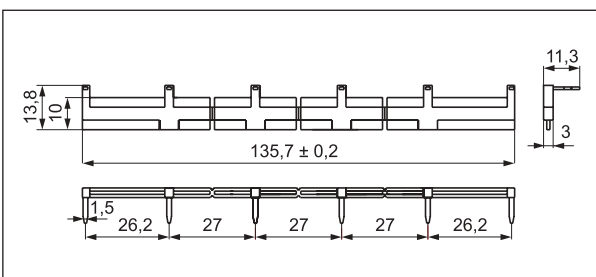
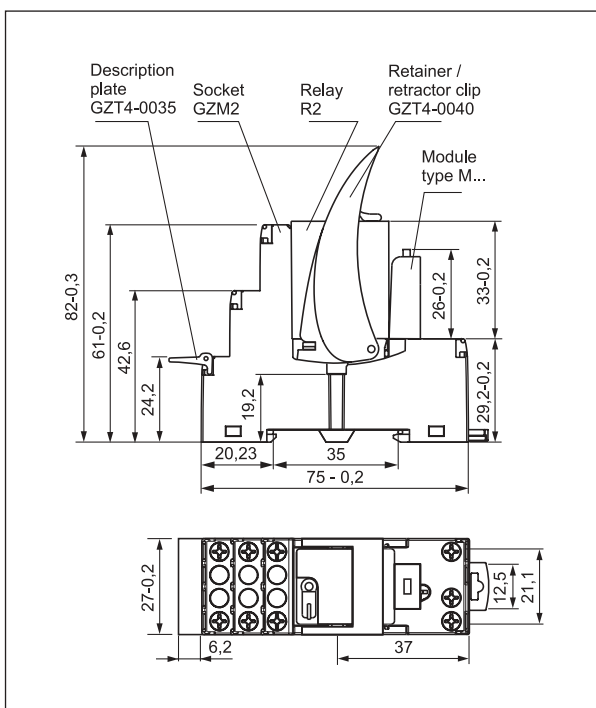
**Coil data - AC 50/60 Hz voltage version**

Table 2

| Coil code    | Rated voltage<br>V AC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                 |
|--------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|              |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 012AC        | 12                    | 39,5                                                   | 9,6                          | 13,2            |
| <b>024AC</b> | <b>24</b>             | <b>158,0</b>                                           | <b>19,2</b>                  | <b>26,4</b>     |
| 048AC        | 48                    | 640,0                                                  | 38,4                         | 52,8            |
| 120AC        | 120                   | 3 770,0                                                | 96,0                         | 132,0           |
| <b>230AC</b> | <b>230</b>            | <b>16 100,0</b>                                        | <b>184,0</b>                 | <b>253,0</b>    |

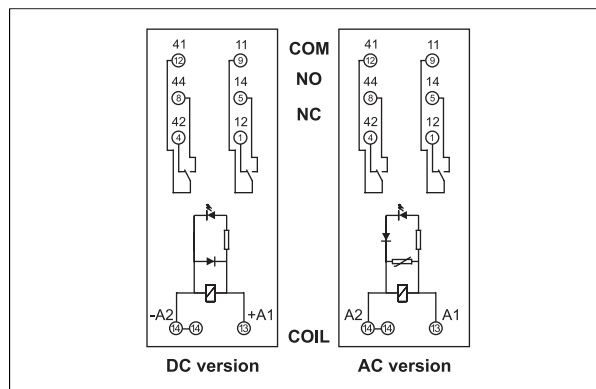
The data in bold type pertain to the standard versions of the relays.

## Dimensions



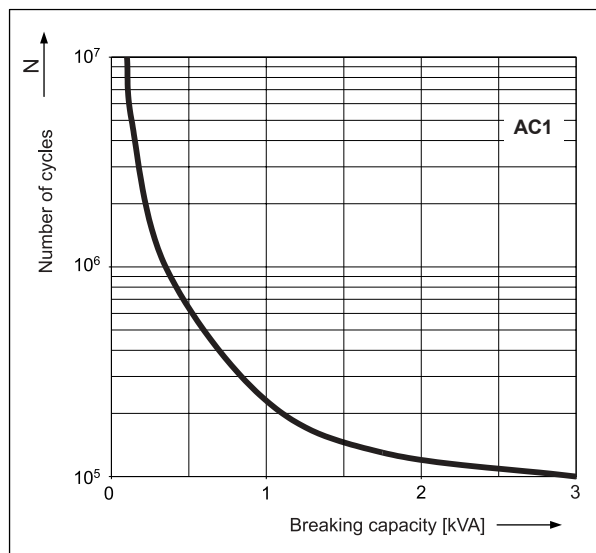
Interconnection strip type **ZGGZ4**

## Connection diagrams (screw terminals side view)



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

Fig. 1



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

Fig. 2

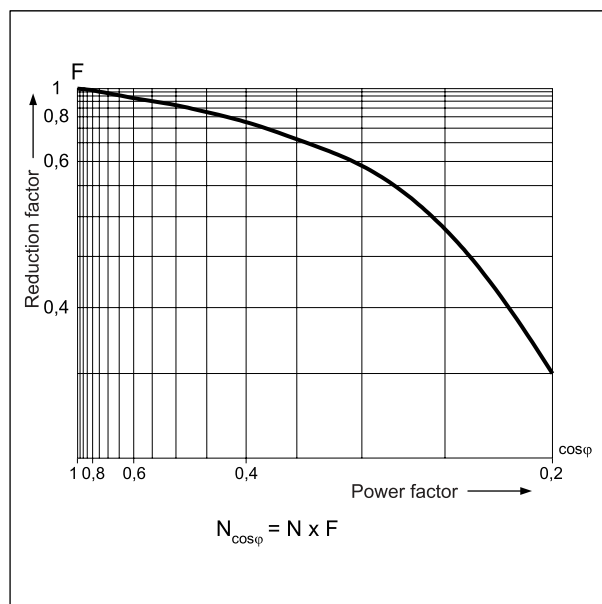
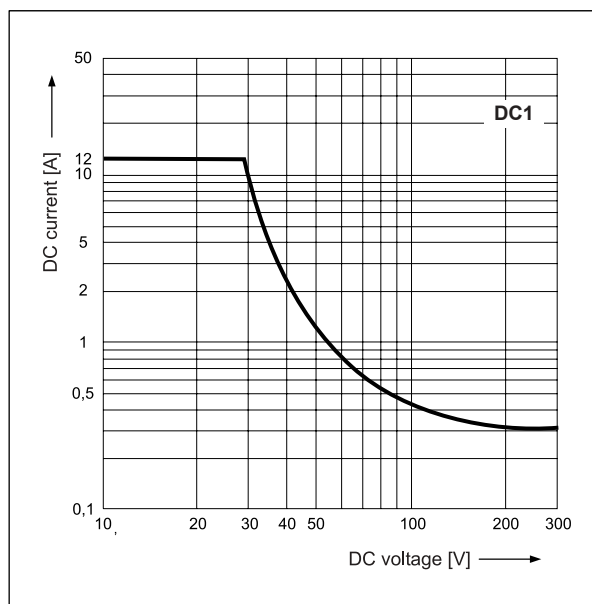

**Max. DC resistive load breaking capacity**

Fig. 3

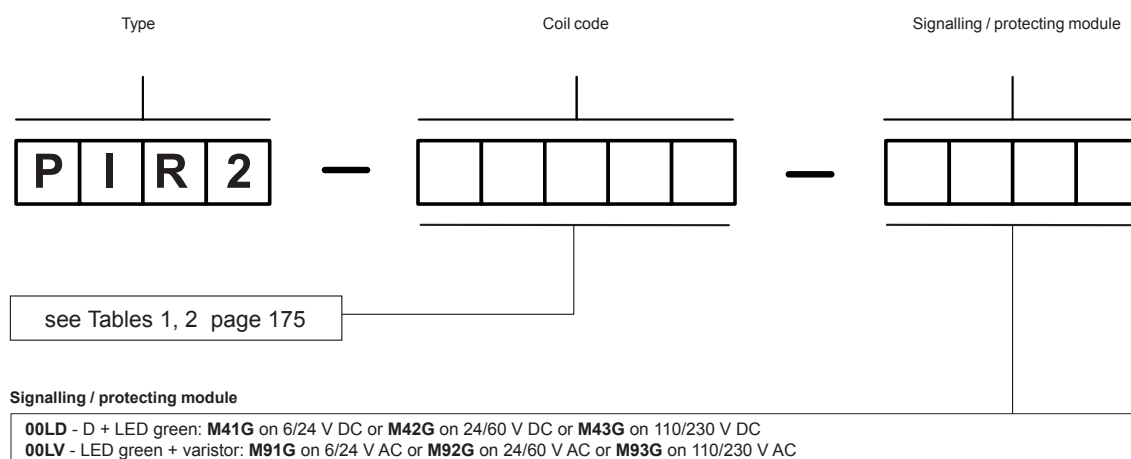


### Mounting

Relays **PIR2 with socket GZM2** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws.

Plug-in sockets **GZM2** may be linked with interconnection strip type **ZGGZ4**. Strip **ZGGZ4** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 6 sockets. Colours of strips: **ZGGZ4-1** grey, **ZGGZ4-2** black (see page 262).

### Ordering codes



Examples of ordering codes:

- PIR2-012DC-00LD** interface relay **PIR2**, which consists of: relay **R2**, voltage version 12 V DC, plug-in socket **GZM2** grey (screw terminals), signalling / protecting module **M41G** (version **LD**, polarization N: +A1/-A2, LED green), retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**
- PIR2-230AC-00LV** interface relay **PIR2**, which consists of: relay **R2**, voltage version 230 V AC 50/60 Hz, plug-in socket **GZM2** grey (screw terminals), signalling / protecting module **M93G** (version **LV**, LED green), retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**



R3 + GZM3

- Interface relay **PIR3** consists of: electromagnetic relay **R3**, plug-in socket **GZM3** grey, signalling / protecting module **type M...** LED green: version **LD** (polarization N: +A1/-A2) - M41G or M42G or M43G; version **LV** - M91G or M92G or M93G, retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- May be linked with interconnection strip type **ZGGZ4**
- Recognitions, certifications, directives: recognitions R3, RoHS, AUCOTEAM GmbH Berlin - railway standards,

### Contact data

|                                |      |                                     |
|--------------------------------|------|-------------------------------------|
| Number and type of contacts    |      | 3 C/O                               |
| Contact material               |      | <b>AgNi</b>                         |
| Rated / max. switching voltage | AC   | 250 V / 440 V                       |
| Min. switching voltage         |      | 5 V                                 |
| Rated load (capacity)          | AC1  | 10 A / 250 V AC                     |
|                                | AC15 | 3 A / 120 V 1,5 A / 240 V (B300)    |
|                                | AC3  | 370 W (single-phase motor)          |
|                                | DC1  | 10 A / 24 V DC (see Fig. 3)         |
|                                | DC13 | 0,22 A / 120 V 0,1 A / 250 V (R300) |
| 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                               |
| 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 | 12 ... 230 V                                      |
|                                   | DC          | 12 ... 110 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          | 50 Hz: 1,6 VA 60 Hz: 1,3 VA                       |
|                                   | DC          | 0,9 W                                             |

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

|                             |  |                                                                          |
|-----------------------------|--|--------------------------------------------------------------------------|
| Insulation rated voltage    |  | 250 V AC                                                                 |
| Rated surge voltage         |  | with AC coils: 2 500 V 1,2 / 50 μs<br>with DC coils: 4 000 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               |  | 2 500 V AC type of insulation: basic                                     |
| Contact - coil distance     |  |                                                                          |
| • clearance                 |  | ≥ 2,5 mm                                                                 |
| • creepage                  |  | ≥ 4 mm                                                                   |

### General data

|                                           |             |                                   |
|-------------------------------------------|-------------|-----------------------------------|
| Operating / release time (typical values) |             | AC: 10 ms / 8 ms DC: 13 ms / 3 ms |
| Electrical life                           |             |                                   |
| • resistive AC1                           |             | > 10 <sup>5</sup> 10 A, 250 V AC  |
| • cos φ                                   |             | see Fig. 2                        |
| Mechanical life (cycles)                  |             | > 2 x 10 <sup>7</sup>             |
| Dimensions (L x W x H)                    |             | 75 x 27 x 82 mm                   |
| Weight                                    |             | 107 g                             |
| Ambient temperature                       | • storage   | -40...+85 °C                      |
|                                           | • operating | AC: -40...+55 °C DC: -40...+70 °C |
| Cover protection category                 |             | IP 20 PN-EN 60529                 |
| Environmental protection                  |             | R3: RTI GZM3: RT0 PN-EN 116000-3  |
| Shock resistance                          | (NO/NC)     | 10 g / 5 g                        |
| Vibration resistance                      |             | 5 g 10...150 Hz                   |

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

Coil data - DC voltage version

Table 1

| Coil code    | Rated voltage<br>V DC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                 |
|--------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|              |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 012DC        | 12                    | 160                                                    | 9,6                          | 13,2            |
| <b>024DC</b> | <b>24</b>             | <b>640</b>                                             | <b>19,2</b>                  | <b>26,4</b>     |
| 048DC        | 48                    | 2 600                                                  | 38,4                         | 52,8            |
| 110DC        | 110                   | 13 600                                                 | 88,0                         | 121,0           |

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

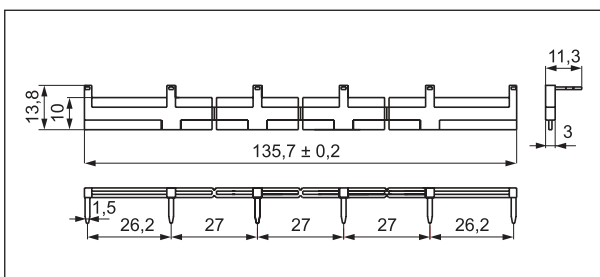
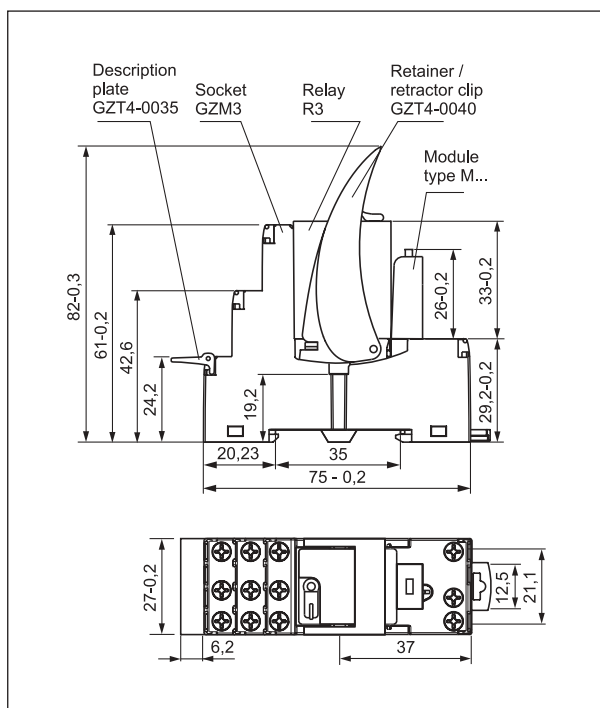
Coil data - AC 50/60 Hz voltage version

Table 2

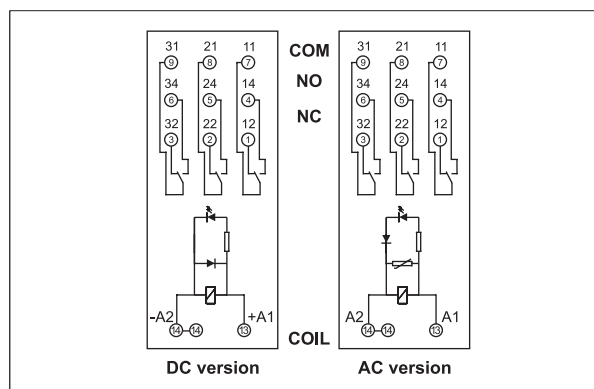
| Coil code    | Rated voltage<br>V AC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                 |
|--------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|              |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 012AC        | 12                    | 39,5                                                   | 9,6                          | 13,2            |
| <b>024AC</b> | <b>24</b>             | <b>158,0</b>                                           | <b>19,2</b>                  | <b>26,4</b>     |
| 048AC        | 48                    | 640,0                                                  | 38,4                         | 52,8            |
| 120AC        | 120                   | 3 770,0                                                | 96,0                         | 132,0           |
| <b>230AC</b> | <b>230</b>            | <b>16 100,0</b>                                        | <b>184,0</b>                 | <b>253,0</b>    |

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

### Dimensions

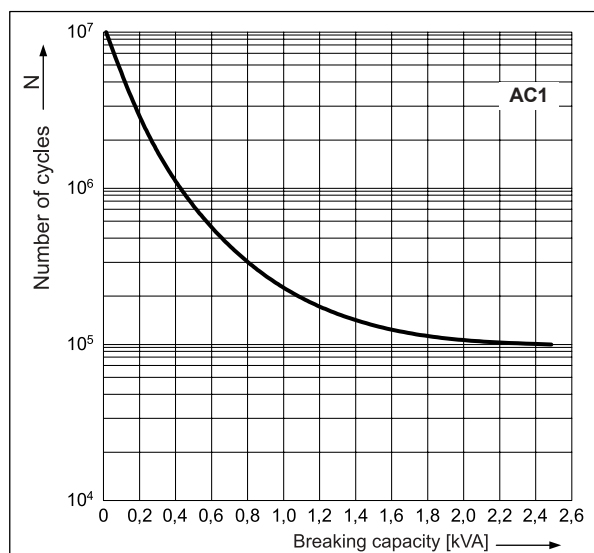
Interconnection strip type **ZGGZ4**

### Connection diagrams (screw terminals side view)



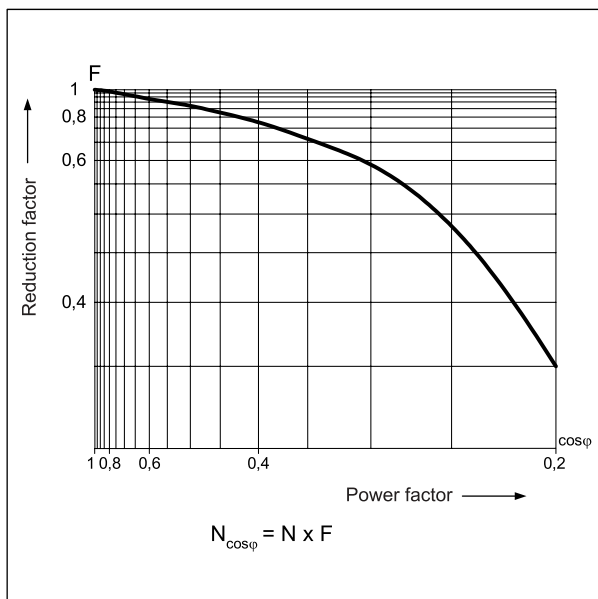
### Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour

Fig. 1



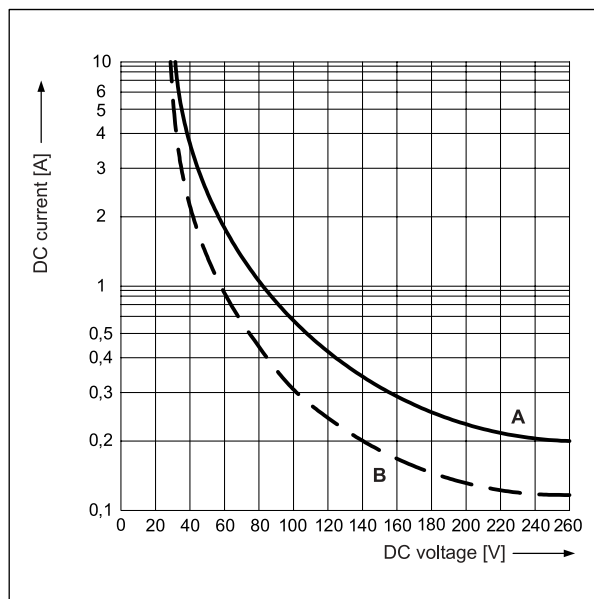
**Electrical life reduction factor  
at AC inductive load**

Fig. 2



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

Fig. 3

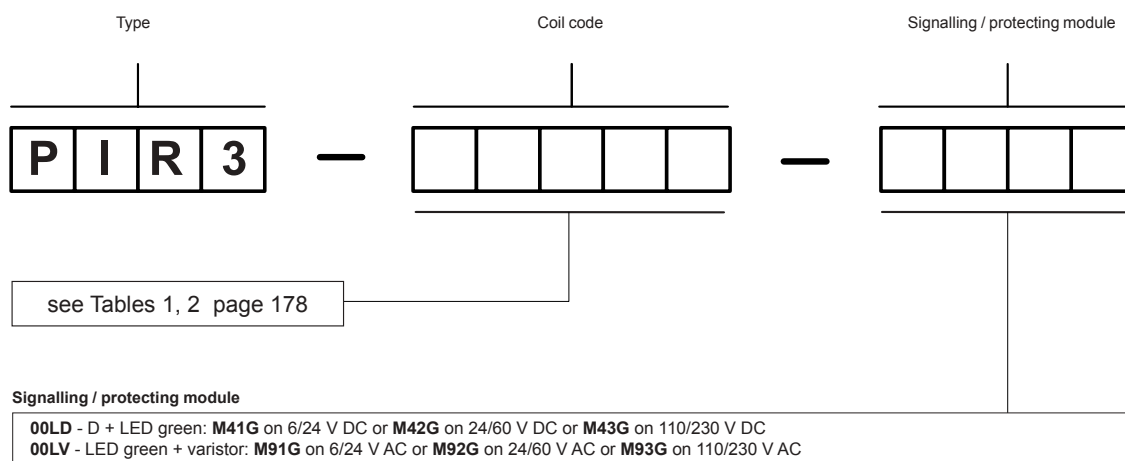


## Mounting

Relays **PIR3** with socket **GZM3** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws.

❶ Plug-in sockets **GZM3** may be linked with interconnection strip type **ZGGZ4**. Strip **ZGGZ4** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 6 sockets. Colours of strips: **ZGGZ4-1** grey, **ZGGZ4-2** black (see page 262).

## Ordering codes



Examples of ordering codes:

**PIR3-012DC-00LD**

interface relay **PIR3**, which consists of: relay **R3**, voltage version 12 V DC, plug-in socket **GZM3** grey (screw terminals), signalling / protecting module **M41G** (version **LD**, polarization N: +A1/-A2, LED green), retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**

**PIR3-230AC-00LV**

interface relay **PIR3**, which consists of: relay **R3**, voltage version 230 V AC 50/60 Hz, plug-in socket **GZM3** grey (screw terminals), signalling / protecting module **M93G** (version **LV**, LED green), retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**



R4 + GZM4

- Interface relay **PIR4** consists of: electromagnetic relay **R4**, plug-in socket **GZM4** grey, signalling / protecting module **type M...** LED green: version **LD** (polarization N: +A1/-A2) - M41G or M42G or M43G; version **LV** - M91G or M92G or M93G, retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- May be linked with interconnection strip type **ZGGZ4**
- Recognitions, certifications, directives: recognitions R4, RoHS, AUCOTEAM GmbH Berlin - railway standards,

### Contact data

|                                |      |                                        |
|--------------------------------|------|----------------------------------------|
| Number and type of contacts    |      | 4 C/O                                  |
| Contact material               |      | <b>AgNi</b>                            |
| Rated / max. switching voltage | AC   | 250 V / 250 V                          |
| Min. switching voltage         |      | 5 V                                    |
| Rated load (capacity)          | AC1  | 6 A / 250 V AC                         |
|                                | AC15 | 1,5 A / 120 V    0,75 A / 240 V (C300) |
|                                | AC3  | 125 W (single-phase motor)             |
|                                | DC1  | 6 A / 24 V DC (see Fig. 3)             |
|                                | DC13 | 0,22 A / 120 V    0,1 A / 250 V (R300) |
| Min. switching current         |      | 5 mA                                   |
| Max. inrush current            |      | 12 A                                   |
| Rated current                  |      | 6 A                                    |
| Max. breaking capacity         | AC1  | 1 500 VA                               |
| Min. breaking capacity         |      | 0,3 W                                  |
| 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 | 12 ... 230 V                                      |
|                                   | DC          | 12 ... 110 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          | 50 Hz: 1,6 VA    60 Hz: 1,3 VA                    |
|                                   | DC          | 0,9 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        |  | 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                 |  | ≥ 1,6 mm                                             |
| • creepage                  |  | ≥ 3,2 mm                                             |

### General data

|                                           |             |                                        |
|-------------------------------------------|-------------|----------------------------------------|
| Operating / release time (typical values) |             | AC: 10 ms / 8 ms    DC: 13 ms / 3 ms   |
| Electrical life                           |             |                                        |
| • resistive AC1                           |             | > 10 <sup>5</sup> 6 A, 250 V AC        |
| • cos φ                                   |             | see Fig. 2                             |
| Mechanical life (cycles)                  |             | > 2 x 10 <sup>7</sup>                  |
| Dimensions (L x W x H)                    |             | 75 x 27 x 82 mm                        |
| Weight                                    |             | 108 g                                  |
| Ambient temperature                       | • storage   | -40...+85 °C                           |
|                                           | • operating | AC: -40...+55 °C    DC: -40...+70 °C   |
| Cover protection category                 |             | IP 20    PN-EN 60529                   |
| Environmental protection                  |             | R4: RTI    GZM4: RT0    PN-EN 116000-3 |
| Shock resistance                          | (NO/NC)     | 10 g / 5 g                             |
| Vibration resistance                      |             | 5 g    10...150 Hz                     |

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

**Coil data - DC voltage version**

Table 1

| Coil code    | Rated voltage<br>V DC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                 |
|--------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|              |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 012DC        | 12                    | 160                                                    | 9,6                          | 13,2            |
| <b>024DC</b> | <b>24</b>             | <b>640</b>                                             | <b>19,2</b>                  | <b>26,4</b>     |
| 048DC        | 48                    | 2 600                                                  | 38,4                         | 52,8            |
| 110DC        | 110                   | 13 600                                                 | 88,0                         | 121,0           |

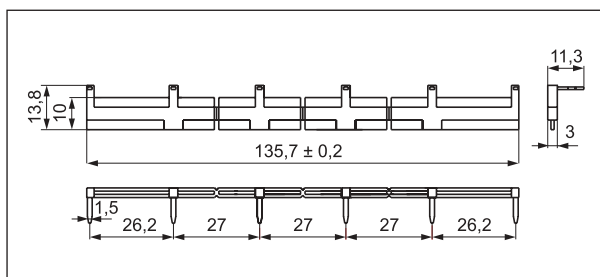
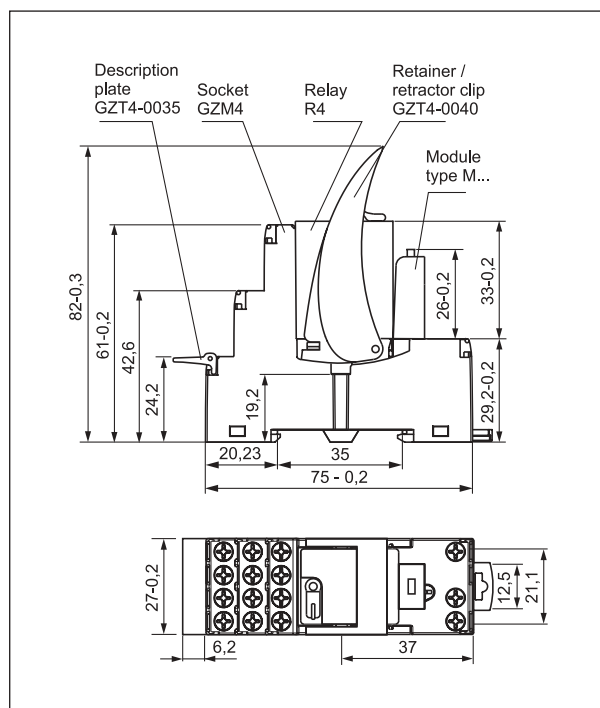
The data in bold type pertain to the standard versions of the relays.

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

| Coil code    | Rated voltage<br>V AC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                 |
|--------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|              |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 012AC        | 12                    | 39,5                                                   | 9,6                          | 13,2            |
| <b>024AC</b> | <b>24</b>             | <b>158,0</b>                                           | <b>19,2</b>                  | <b>26,4</b>     |
| 048AC        | 48                    | 640,0                                                  | 38,4                         | 52,8            |
| 120AC        | 120                   | 3 770,0                                                | 96,0                         | 132,0           |
| <b>230AC</b> | <b>230</b>            | <b>16 100,0</b>                                        | <b>184,0</b>                 | <b>253,0</b>    |

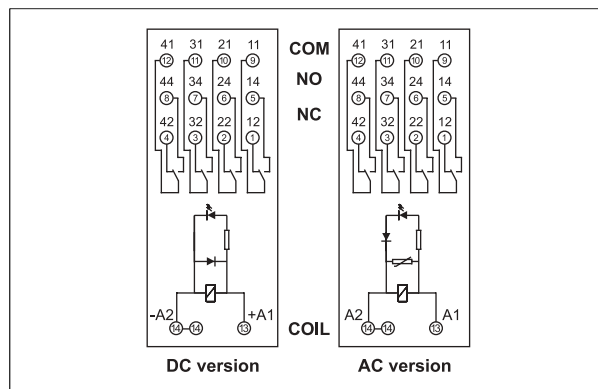
The data in bold type pertain to the standard versions of the relays.

## Dimensions



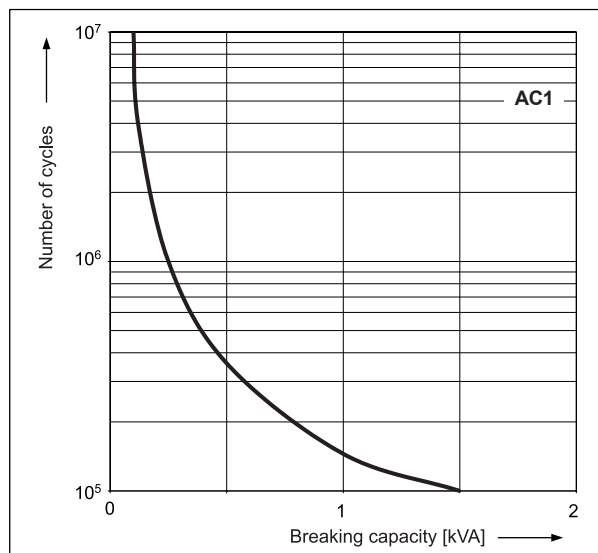
Interconnection strip type **ZGGZ4**

## Connection diagrams (screw terminals side view)



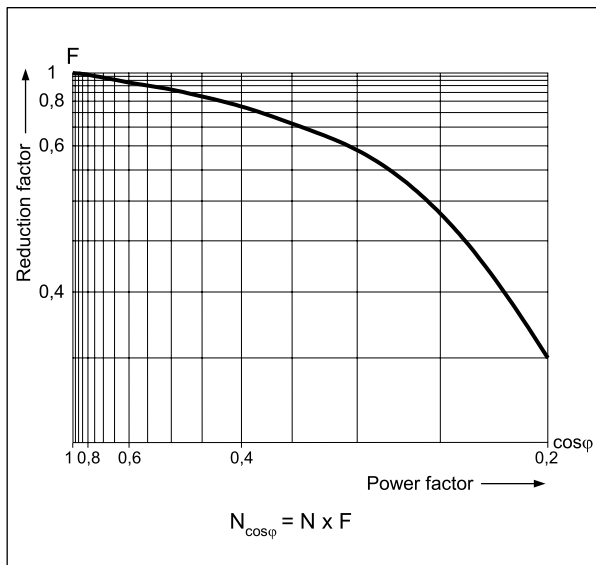
## Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour

Fig. 1



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

Fig. 2

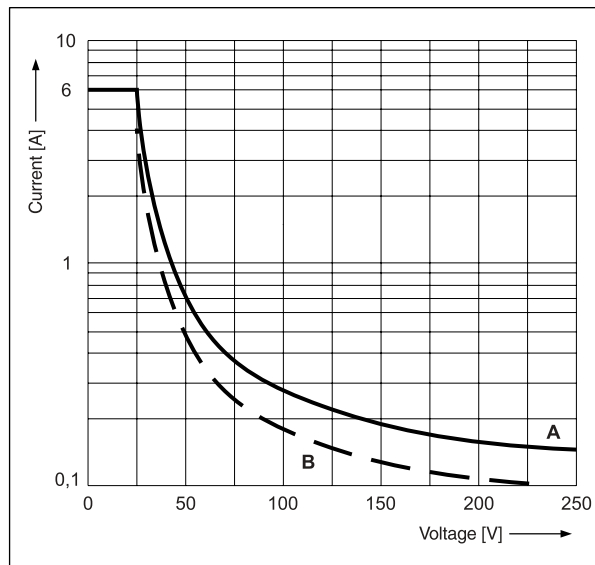


**Max. DC breaking capacity**

**A - resistive load DC1**

**B - inductive load  $L/R = 40$  ms**

Fig. 3

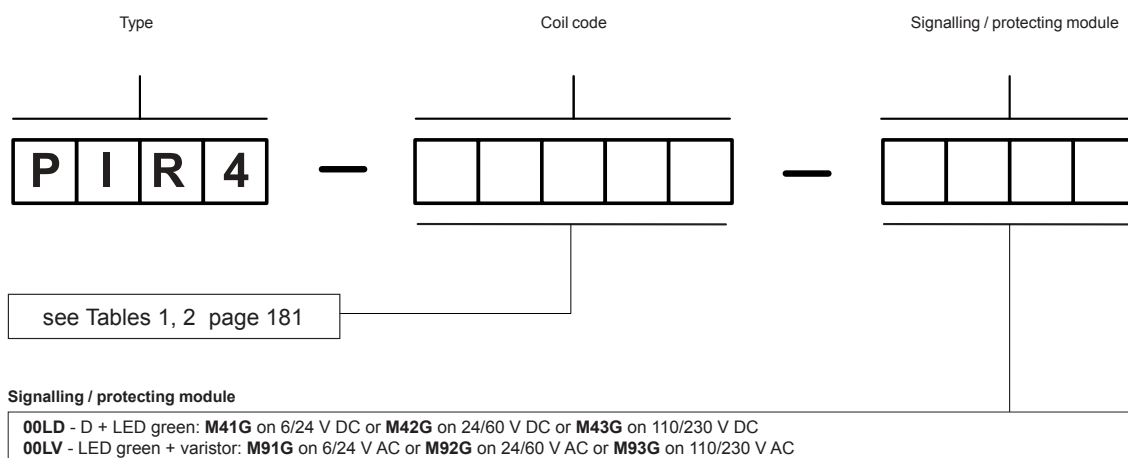


### Mounting

Relays **PIR4 with socket GZM4** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws.

Plug-in sockets **GZM4** may be linked with interconnection strip type **ZGGZ4**. Strip **ZGGZ4** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 6 sockets. Colours of strips: **ZGGZ4-1** grey, **ZGGZ4-2** black (see page 262).

### Ordering codes



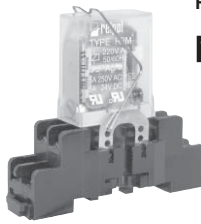
Examples of ordering codes:

**PIR4-012DC-00LD**

interface relay **PIR4**, which consists of: relay **R4**, voltage version 12 V DC, plug-in socket **GZM4** grey (screw terminals), signalling / protecting module **M41G** (version **LD**, polarization N: +A1/-A2, LED green), retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**

**PIR4-230AC-00LV**

interface relay **PIR4**, which consists of: relay **R4**, voltage version 230 V AC 50/60 Hz, plug-in socket **GZM4** grey (screw terminals), signalling / protecting module **M93G** (version **LV**, LED green), retainer / retractor clip **GZT4-0040**, white description plate **GZT4-0035**



R2M + GZ2



- Interface relay **PIR2M** consists of:
  - electromagnetic relay **R2M**, plug-in socket **GZ2** black,
  - spring wire clip **GZ2 1060**, two spring clamps **GZ2 1111**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- Recognitions, certifications, directives: recognitions R2M, RoHS,

### Contact data

|                                |     |                    |
|--------------------------------|-----|--------------------|
| Number and type of contacts    |     | 2 C/O              |
| Contact material               |     | <b>AgNi</b>        |
| Rated / max. switching voltage | AC  | 250 V / 250 V      |
| Min. switching voltage         |     | 5 V                |
| Rated load (capacity)          | AC1 | 5 A / 250 V AC     |
|                                | DC1 | 5 A / 24 V DC      |
| Min. switching current         |     | 5 mA               |
| Rated current                  |     | 5 A                |
| Max. breaking capacity         | AC1 | 1 250 VA           |
| Min. breaking capacity         |     | 0,3 W              |
| Contact resistance             |     | ≤ 100 mΩ           |
| Max. operating frequency       | AC1 |                    |
| • at rated load                |     | 1 200 cycles/hour  |
| • no load                      |     | 36 000 cycles/hour |

### Coil data

|                                   |             |                       |
|-----------------------------------|-------------|-----------------------|
| Rated voltage                     | 50/60 Hz AC | 6 ... 230 V           |
|                                   | DC          | 6 ... 110 V           |
| Must release voltage              |             | ≥ 0,05 U <sub>n</sub> |
| Operating range of supply voltage |             | see Tables 1, 2       |
| Rated power consumption           | AC          | 1,2 VA                |
|                                   | DC          | 0,9 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        |                                                                     | II                                                |
| Insulation pollution degree |                                                                     | 3                                                 |
| Dielectric strength         | • between coil and contacts<br>• contact clearance<br>• pole - pole | 2 000 V AC type of insulation: basic              |
|                             |                                                                     | 1 000 V AC type of clearance: micro-disconnection |
|                             |                                                                     | 2 000 V AC type of insulation: basic              |
|                             |                                                                     |                                                   |
| Contact - coil distance     | • clearance<br>• creepage                                           | ≥ 3 mm                                            |
|                             |                                                                     | ≥ 4 mm                                            |
|                             |                                                                     |                                                   |

### General data

|                                           |             |                                     |                  |
|-------------------------------------------|-------------|-------------------------------------|------------------|
| Operating / release time (typical values) |             | AC: 8 ms / 7 ms                     | DC: 10 ms / 3 ms |
| Electrical life                           |             |                                     |                  |
| • resistive AC1                           |             | ≥ 2 x 10 <sup>5</sup> 5 A, 250 V AC |                  |
| • cos ϕ                                   |             | see Fig. 2                          |                  |
| Mechanical life (cycles)                  |             | ≥ 10 <sup>7</sup>                   |                  |
| Dimensions (L x W x H)                    |             | 65,2 x 20 x 60,6 mm                 |                  |
| Weight                                    |             | 44,5 g                              |                  |
| Ambient temperature                       | • storage   | -40...+70 °C                        |                  |
|                                           | • operating | -40...+55 °C                        |                  |
| Cover protection category                 |             | IP 00                               | PN-EN 60529      |
| Shock resistance                          |             | 10 g                                |                  |
| Vibration resistance                      |             | 5 g                                 | 10...150 Hz      |

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

Coil data - DC voltage version

Table 1

| Coil code    | Rated voltage<br>V DC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V DC |                 |
|--------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|              |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 006DC        | 6                     | 47                                                     | 4,8                          | 6,6             |
| <b>012DC</b> | <b>12</b>             | <b>188</b>                                             | <b>9,6</b>                   | <b>13,2</b>     |
| <b>024DC</b> | <b>24</b>             | <b>750</b>                                             | <b>19,2</b>                  | <b>26,4</b>     |
| 048DC        | 48                    | 2 660                                                  | 38,4                         | 52,8            |
| 110DC        | 110                   | 13 480                                                 | 88,0                         | 121,0           |

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

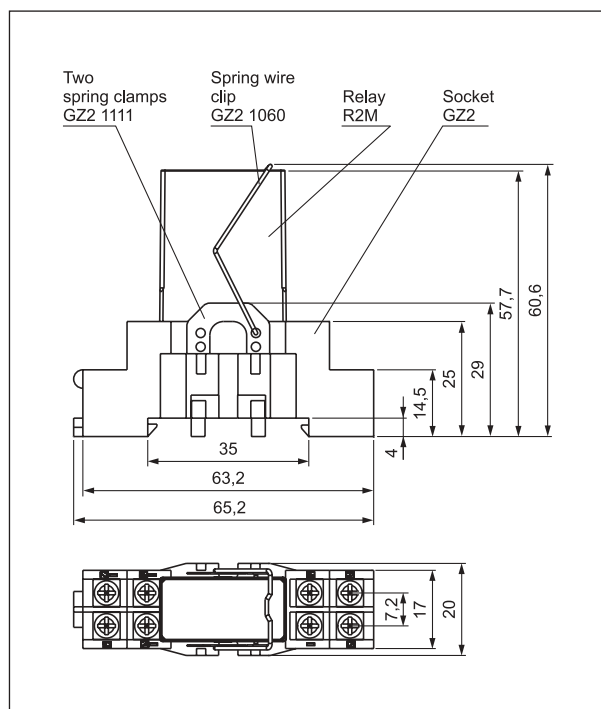
Coil data - AC 50/60 Hz voltage version

Table 2

| Coil code    | Rated voltage<br>V AC | Coil resistance<br>( $\pm 10\%$ ) at 20 °C<br>$\Omega$ | Coil operating range<br>V AC |                 |
|--------------|-----------------------|--------------------------------------------------------|------------------------------|-----------------|
|              |                       |                                                        | min. (at 20 °C)              | max. (at 55 °C) |
| 006AC        | 6                     | 16                                                     | 4,8                          | 6,6             |
| 012AC        | 12                    | 68                                                     | 9,6                          | 13,2            |
| <b>024AC</b> | <b>24</b>             | <b>270</b>                                             | <b>19,2</b>                  | <b>26,4</b>     |
| 115AC        | 115                   | 5 990                                                  | 92,0                         | 126,0           |
| <b>230AC</b> | <b>230</b>            | <b>21 470</b>                                          | <b>184,0</b>                 | <b>253,0</b>    |

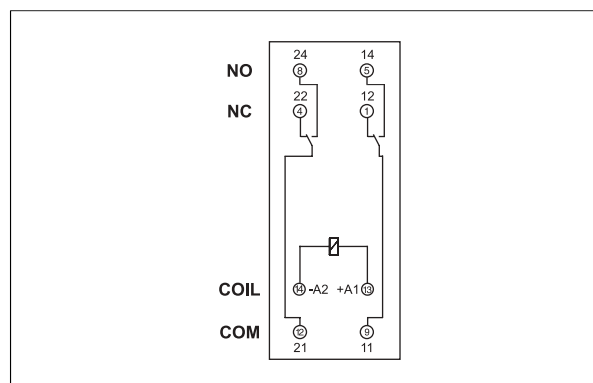
The data in bold type pertain to the standard versions of the relays.

### Dimensions



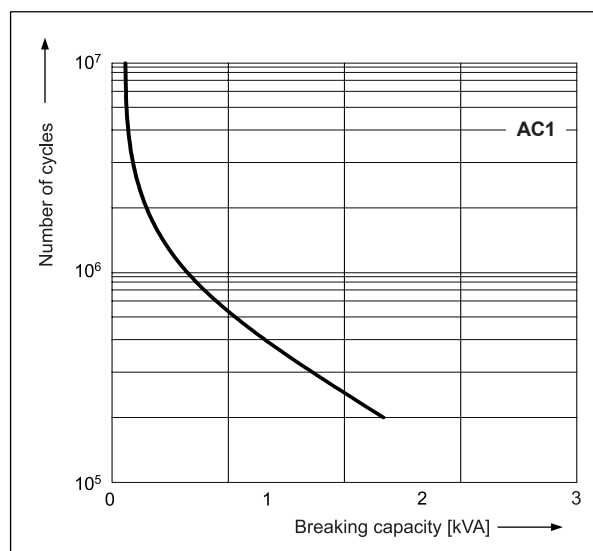
### Connection diagrams

(screw terminals side view)



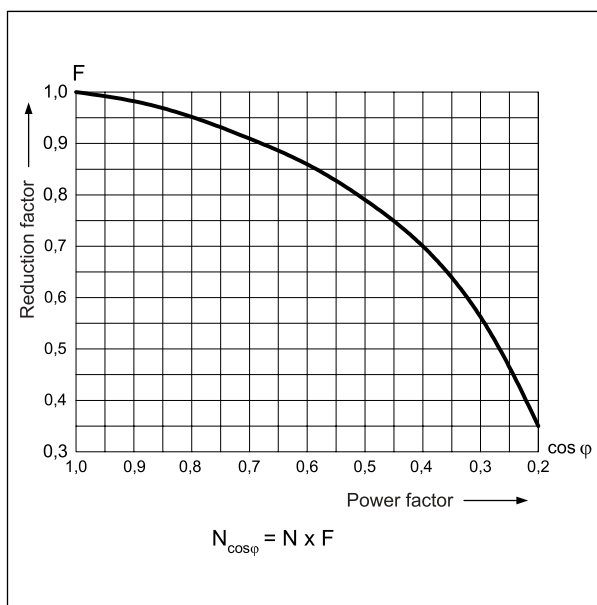
Electrical life at AC resistive load.  
Switching frequency: 1 200 cycles/hour

Fig. 1



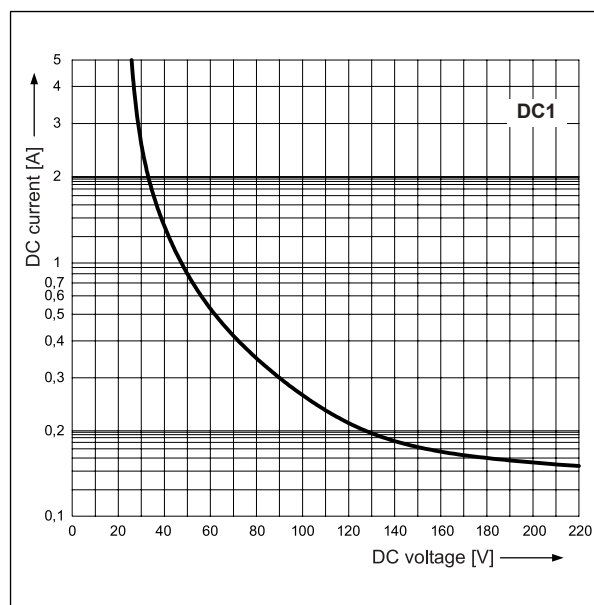
**Electrical life reduction factor  
at AC inductive load**

Fig. 2



**Max. DC resistive load breaking capacity**

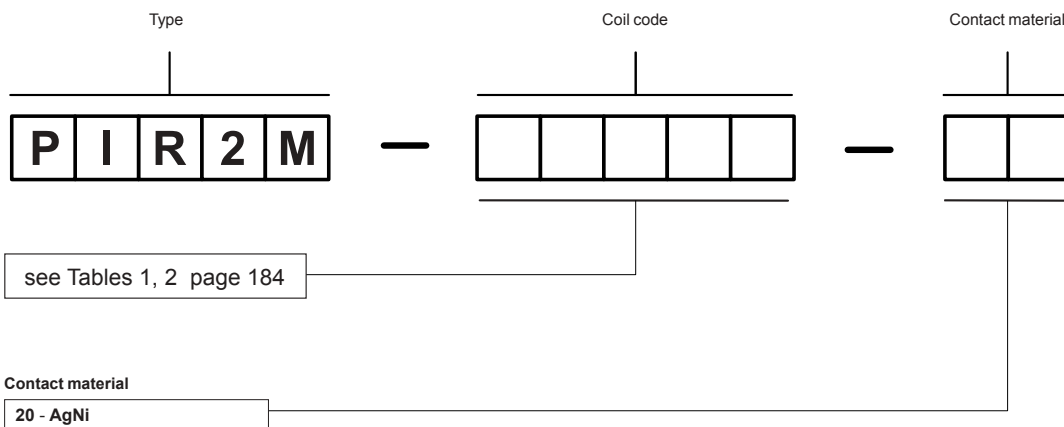
Fig. 3



## Mounting

Relays **PIR2M** with socket **GZ2** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws.

## Ordering codes



Examples of ordering codes:

**PIR2M-012DC-20**

interface relay **PIR2M**, which consists of: relay **R2M**, voltage version 12 V DC, contact material AgNi, socket **GZ2** black (screw terminals), spring wire clip **GZ2 1060**, two spring clamps **GZ2 1111**

**PIR2M-230AC-20**

interface relay **PIR2M**, which consists of: relay **R2M**, voltage version 230 V AC 50/60 Hz, contact material AgNi, socket **GZ2** black (screw terminals), spring wire clip **GZ2 1060**, two spring clamps **GZ2 1111**



- Interface relay **PI6-1P** - with changeover relay, rated load 6 A / 250 V (AC1)
- 35 mm rail mount acc. to PN-EN 60715
- May be linked with interconnection strip type **ZG20**
- Equipped in LED green
- Version for long lines, with anti-interference filter (**PI6-1P-230VAC/DC-10**)
- Recognitions, certifications, directives:    



## Contact data

|                                |                          |                    |                               |
|--------------------------------|--------------------------|--------------------|-------------------------------|
| Number and type of contacts    | 1 C/O                    |                    |                               |
| Contact material               | <b>AgSnO<sub>2</sub></b> |                    | AgSnO <sub>2</sub> /Au 3 μm ❶ |
| Rated / max. switching voltage | AC                       | 250 V / 400 V      | – / 30 V ❶                    |
| Max. switching voltage         | DC                       | 250 V              | 36 V ❶                        |
| Min. switching voltage         | AC/DC                    | 10 V               | 5 V                           |
| Rated load                     | AC1                      | 6 A / 250 V AC     | 0,05 A / 30 V AC ❶            |
|                                | DC1                      | 6 A / 24 V DC      | 0,05 A / 36 V DC ❶            |
| Min. switching current         | 100 mA                   |                    | 10 mA                         |
| Max. inrush current            | 10 A 20 ms               |                    | 0,1 A 20 ms ❶                 |
| Rated current                  | 6 A                      |                    | 0,05 A ❶                      |
| Max. breaking capacity         | AC1                      | 1 500 VA           | 1,2 VA ❶                      |
| Min. breaking capacity         | 1 W                      |                    | 0,05 W                        |
| Contact resistance             | ≤ 100 mΩ 100 mA, 24 V    |                    | ≤ 30 mΩ 10 mA, 5 V            |
| Max. operating frequency       |                          |                    |                               |
| • at rated load                | AC1                      | 360 cycles/hour    |                               |
| • no load                      |                          | 72 000 cycles/hour |                               |

## Input control circuit

|                                   |                                                                                                 |                            |  |  |
|-----------------------------------|-------------------------------------------------------------------------------------------------|----------------------------|--|--|
| Rated voltage                     | DC                                                                                              | 12 ... 36 V                |  |  |
|                                   | AC: 50/60 Hz AC/DC                                                                              | 24 ... 230 V               |  |  |
| Must release voltage              | AC: ≥ 0,2 U <sub>n</sub> AC: ≥ 0,35 U <sub>n</sub> ❷      DC: ≥ 0,1 U <sub>n</sub>              |                            |  |  |
| Operating range of supply voltage | see Table 1                                                                                     |                            |  |  |
| Must operate voltage              | AC and DC: ≤ 0,8 U <sub>n</sub> AC: 0,6...0,85 U <sub>n</sub> ❷      DC: ≤ 0,8 U <sub>n</sub> ❷ |                            |  |  |
| Input polarization current        | AC: 8 mA < I <sub>p</sub> < 10 mA 230 V AC ❷                                                    |                            |  |  |
| Rated power consumption           | DC                                                                                              | 0,3...0,7 W                |  |  |
|                                   | AC/DC                                                                                           | 0,3...1,6 VA / 0,3...1,6 W |  |  |
| Max. length of supply line        | ≤ 300 m      AC supply ❷                                                                        |                            |  |  |

## Insulation according to PN-EN 60664-1

|                             |                          |            |                                                          |
|-----------------------------|--------------------------|------------|----------------------------------------------------------|
| Insulation rated voltage    | 400 V AC                 |            |                                                          |
| Rated surge voltage         | 4 000 V      1,2 / 50 μs |            |                                                          |
| Overvoltage category        | III                      |            |                                                          |
| Insulation pollution degree | 3                        |            |                                                          |
| Dielectric strength         | • input - output         | 4 000 V AC | 50/60 Hz, 1 min., type of insulation: reinforced         |
|                             | • input - output         | 6 000 V    | 1,2 / 50 μs, surge voltage                               |
|                             | • mass - input, output   | 2 500 V AC | 50/60 Hz, 1 min.                                         |
|                             | • contact clearance      | 1 000 V AC | 50/60 Hz, 1 min., type of clearance: micro-disconnection |
| Input - output distance     |                          |            |                                                          |
| • clearance \ creepage      | ≥ 6 mm \ ≥ 8 mm          |            |                                                          |

## General data

|                                |                          |                                                      |
|--------------------------------|--------------------------|------------------------------------------------------|
| Operating time (typical value) | AC: 7 ms      DC: 6 ms   |                                                      |
| Release time (typical value)   | AC: 15 ms      DC: 10 ms |                                                      |
| Electrical life                | • resistive AC1          | > 0,6 x 10 <sup>5</sup> 6 A, 250 V AC                |
|                                | • cos φ = 0,4            | > 2 x 10 <sup>5</sup> 2 A, 250 V AC                  |
|                                | • resistive DC1          | 10 <sup>5</sup> 6 A, 30 V DC                         |
| Mechanical life (cycles)       | > 2 x 10 <sup>7</sup>    |                                                      |
| Dimensions (L x W x H)         | 93,8 x 6,2 x 80 mm       |                                                      |
| Weight                         | 40 g                     |                                                      |
| Ambient temperature            | • storage                | -40...+70 °C                                         |
|                                | • operating              | -40...+55 °C      -40...+60 °C 12, 24 V DC           |
|                                |                          | -40...+40 °C 230 V AC ❷      -40...+50 °C 230 V DC ❷ |
| Protection category            | IP 20                    | PN-EN 60529                                          |
| Environmental protection       | RTI                      | PN-EN 116000-3                                       |

The data in bold type pertain to the standard versions of the relays. ❶ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for AgSnO<sub>2</sub> contacts (see beside). In consequence however, the life of the contact may be shorter than that of the normal power contact. ❷ Refers version for long lines (max. 300 m) **PI6-1P-230VAC/DC-10** - relay with integrated anti-interference filter (desigend on the basis of appropriately selected elements R and C, and Zener diode), resistant to occurrence of induced voltages in long distances of control wires.

Input data

Table 1

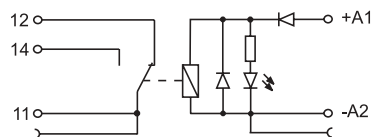
| Interface relay code    | Rated input voltage $U_N$ | Power of input control circuit | Input - voltage range<br>V |                 |
|-------------------------|---------------------------|--------------------------------|----------------------------|-----------------|
|                         |                           |                                | min. (at 20 °C)            | max. (at 55 °C) |
| PI6-1P-12VDC            | 12 V DC                   | 0,3 W                          | 9,6                        | 14,4            |
| <b>PI6-1P-24VDC</b>     | <b>24 V DC</b>            | <b>0,4 W</b>                   | <b>19,2</b>                | <b>28,0</b>     |
| PI6-1P-36VDC            | 36 V DC                   | 0,7 W                          | 28,8                       | 40,0            |
| PI6-1P-24VAC/DC         | 24 V AC/DC                | 0,5 VA / 0,5 W                 | 19,2                       | 26,4            |
| PI6-1P-42VAC/DC         | 42 V AC/DC                | 0,3 VA / 0,3 W                 | 33,6                       | 50,0            |
| PI6-1P-115VAC/DC        | 115 V AC/DC               | 0,8 VA / 0,8 W                 | 92,0                       | 130,0           |
| <b>PI6-1P-230VAC/DC</b> | <b>230 V AC/DC</b>        | <b>0,8 VA / 0,8 W</b>          | <b>184,0</b>               | <b>253,0</b>    |
| PI6-1P-230VAC/DC-10 ②   | 230 V AC/DC               | 1,6 VA / 1,6 W                 | 196,0                      | 253,0           |
| PI6-1P-12VDC-01 ①       | 12 V DC                   | 0,3 W                          | 9,6                        | 14,4            |
| PI6-1P-24VDC-01 ①       | 24 V DC                   | 0,4 W                          | 19,2                       | 28,0            |
| PI6-1P-36VDC-01 ①       | 36 V DC                   | 0,7 W                          | 28,8                       | 40,0            |
| PI6-1P-24VAC/DC-01 ①    | 24 V AC/DC                | 0,5 VA / 0,5 W                 | 19,2                       | 26,4            |
| PI6-1P-230VAC/DC-01 ①   | 230 V AC/DC               | 0,8 VA / 0,8 W                 | 184,0                      | 253,0           |

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

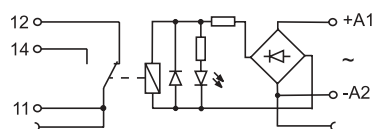
① Version with gold-plated contacts. ② Version for long lines (max. 300 m), with anti-interference filter.

## Connection diagrams

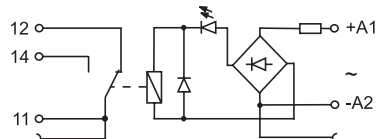
**PI6-1P-12VDC, PI6-1P-12VDC-01**  
**PI6-1P-24VDC, PI6-1P-24VDC-01**  
**PI6-1P-36VDC, PI6-1P-36VDC-01**



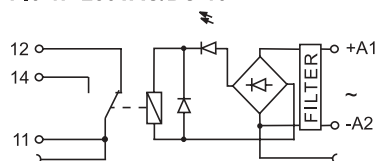
**PI6-1P-24VAC/DC, PI6-1P-24VAC/DC-01**  
**PI6-1P-42VAC/DC**



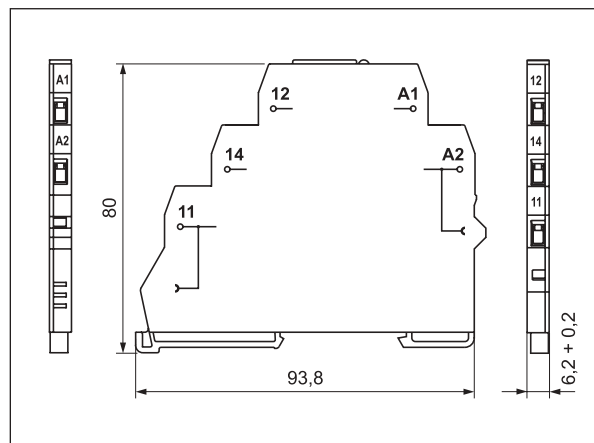
**PI6-1P-115VAC/DC**  
**PI6-1P-230VAC/DC, PI6-1P-230VAC/DC-01**



**PI6-1P-230VAC/DC-10**



## Dimensions



## Mounting

Relays **PI6-1P** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated contactability 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,3 Nm.

**PI6-1P** may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue (see page 189).

## Ordering codes

Ordering codes **PI6-1P** are specified in Table 1, "Interface relay code" column.



- Interface relay **PI6-1T** - with triac output, rated load 1,2 A / 400 V AC
- 35 mm rail mount acc. to PN-EN 60715
- May be linked with interconnection strip type **ZG20**
- Equipped in LED green
- Recognitions, certifications, directives:  



## Output circuit - Triac

|                                     |     |                                |
|-------------------------------------|-----|--------------------------------|
| Number and type of outputs          |     | 1 NO                           |
| Rated / max. switching voltage      | AC  | 400 V / 440 V                  |
| Min. switching voltage              | AC  | 20 V                           |
| Rated load                          | AC1 | 1,2 A / 400 V AC               |
| Min. switching current              |     | 10 mA                          |
| Max. non-repeat surge current       |     | 30 A t=20 ms                   |
| Rated current                       |     | 1,2 A                          |
| I <sup>2</sup> t for fusing         |     | 5,1 A <sup>2</sup> s t=1-10 ms |
| dI/dt                               |     | 50 A/μs                        |
| dV/dt                               |     | 40 V/μs                        |
| R <sub>th</sub> junction to ambient |     | 70 °C/W                        |

## Input control circuit

|                         |                    |                                                   |
|-------------------------|--------------------|---------------------------------------------------|
| Rated voltage           | DC                 | 5...32 V                                          |
|                         | AC: 50/60 Hz AC/DC | 24 ... 230 V                                      |
| Turn-off voltage        |                    | AC: ≥ 0,2 U <sub>n</sub> DC: ≥ 0,1 U <sub>n</sub> |
| Rated power consumption | DC                 | 0,3 W                                             |
|                         | AC/DC              | 0,3 VA / 0,3 W                                    |
|                         | AC/DC              | 1,6 VA / 1,6 W                                    |
|                         |                    | 5...32 V DC at 24 V                               |
|                         |                    | 24 V AC/DC                                        |
|                         |                    | 230 V AC/DC                                       |

## Insulation according to PN-EN 60664-1

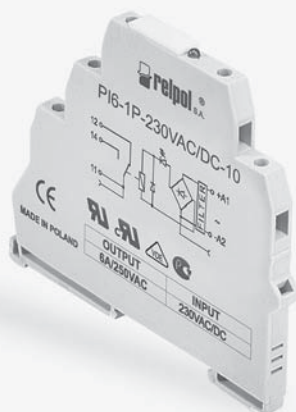
|                             |                  |                                                             |
|-----------------------------|------------------|-------------------------------------------------------------|
| Insulation rated voltage    |                  | 600 V AC                                                    |
| Insulation pollution degree |                  | 2                                                           |
| Dielectric strength         | • input - output | 4 000 V AC 50/60 Hz, 1 min., type of insulation: reinforced |

## General data

|                          |             |                           |
|--------------------------|-------------|---------------------------|
| Operating time           |             | 10 ms max. (zero turn-on) |
| Release time             |             | 10 ms max.                |
| Dimensions (L x W x H)   |             | 93,8 x 6,2 x 80 mm        |
| Weight                   |             | 40 g                      |
| Ambient temperature      | • storage   | -40...+70 °C              |
|                          | • operating | -40...+55 °C              |
| Protection category      |             | IP 20 PN-EN 60529         |
| Environmental protection |             | RTI PN-EN 116000-3        |

**EUROPRODUCT 2003**  
for interface relays **PI6**

**Gold medal**  
**AUTOMATICON 2004**  
for interface relays **PI6**

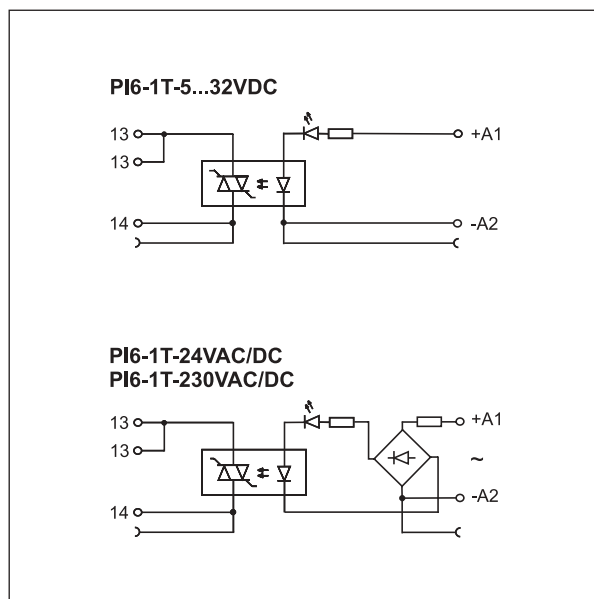


Input data

Table 1

| Interface relay code | Rated input voltage<br>$U_n$ | Power of input<br>control circuit |
|----------------------|------------------------------|-----------------------------------|
| PI6-1T-5...32VDC     | 5...32 V DC                  | 0,3 W at 24 V                     |
| PI6-1T-24VAC/DC      | 24 V AC/DC                   | 0,3 VA / 0,3 W                    |
| PI6-1T-230VAC/DC     | 230 V AC/DC                  | 1,6 VA / 1,6 W                    |

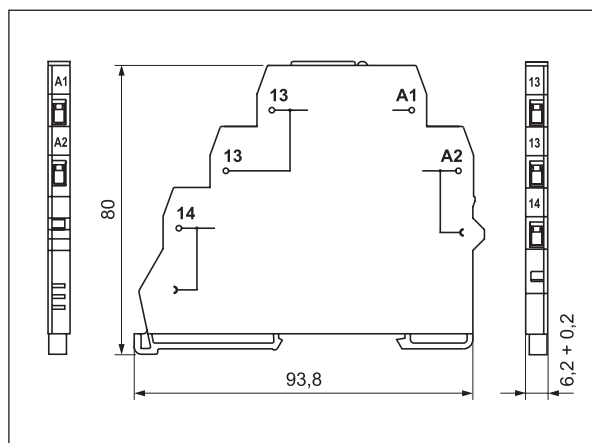
## Connection diagrams



## Ordering codes

Ordering codes **PI6-1T** are specified in Table 1, "Interface relay code" column.

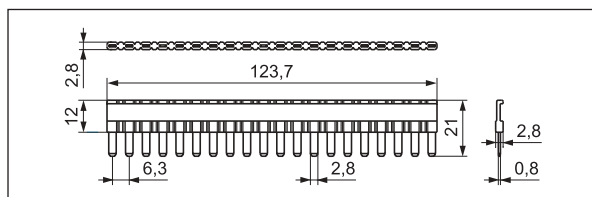
## Dimensions



## Mounting

Relays **PI6-1T** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Maximum size of wires  $1 \times 2,5 \text{ mm}^2$  (1 x 14 AWG). Rated contactability  $2 \times 1,5 \text{ mm}^2$  (2 x 16 AWG). Maximum screw torque: 0,3 Nm.

**PI6-1T** may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue.



Interconnection strip type **ZG20**



- Interface relay **PI6-OC** - with transistor output, rated load 0,5 A / 70 V DC
- 35 mm rail mount acc. to PN-EN 60715
- May be linked with interconnection strip type **ZG20**
- Equipped in LED green
- Recognitions, certifications, directives:  



## Output circuit - Transistor

|                                |     |                 |
|--------------------------------|-----|-----------------|
| Number and type of outputs     |     | 1 NO            |
| Rated / max. switching voltage | DC  | 70 V / 70 V     |
| Min. switching voltage         | DC  | 5 V             |
| Rated load                     | DC1 | 0,5 A / 70 V DC |
| Min. switching current         |     | 1 mA            |
| Rated current                  |     | 0,5 A           |

## Input control circuit

|                         |                    |                                       |
|-------------------------|--------------------|---------------------------------------|
| Rated voltage           | DC                 | 5...32 V                              |
|                         | AC: 50/60 Hz AC/DC | 24 ... 230 V                          |
| Turn-off voltage        |                    | AC: $\geq 0,2 U_n$ DC: $\geq 0,1 U_n$ |
| Rated power consumption | DC                 | 0,3 W                                 |
|                         | AC/DC              | 0,3 VA / 0,3 W                        |
|                         | AC/DC              | 1,0 VA / 1,0 W                        |

## Insulation according to PN-EN 60664-1

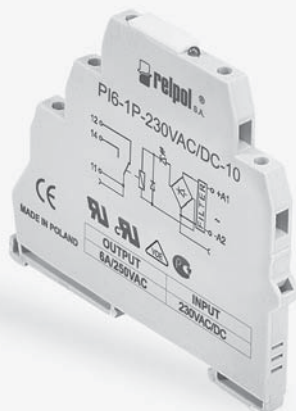
|                             |                  |                                                             |
|-----------------------------|------------------|-------------------------------------------------------------|
| Insulation rated voltage    |                  | 600 V AC                                                    |
| Insulation pollution degree |                  | 2                                                           |
| Dielectric strength         | • input - output | 3 000 V AC 50/60 Hz, 1 min., type of insulation: reinforced |

## General data

|                          |             |                                                     |
|--------------------------|-------------|-----------------------------------------------------|
| Max. switching frequency |             | 10 kHz 5...32 V DC (for load up to 24 V DC: 15 kHz) |
| Dimensions (L x W x H)   |             | 93,8 x 6,2 x 80 mm                                  |
| Weight                   |             | 40 g                                                |
| Ambient temperature      | • storage   | -40...+70 °C                                        |
|                          | • operating | -40...+55 °C                                        |
| Protection category      |             | IP 20 PN-EN 60529                                   |
| Environmental protection |             | RTI PN-EN 116000-3                                  |

**EUROPRODUCT 2003**  
for interface relays **PI6**

**Gold medal**  
**AUTOMATICON 2004**  
for interface relays **PI6**

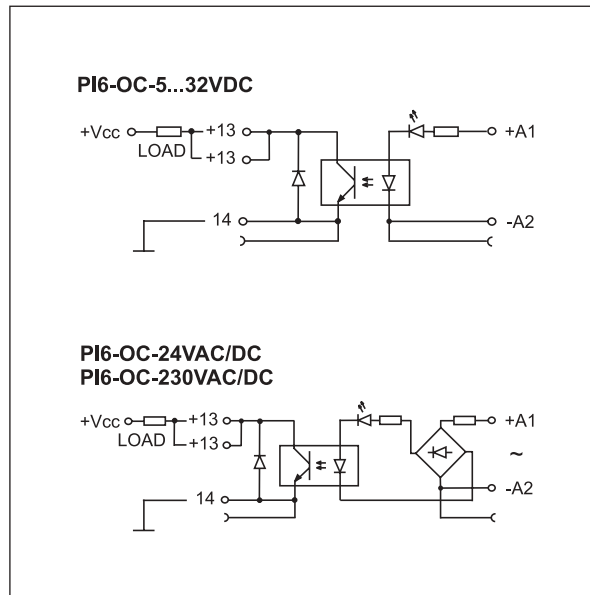


Input data

Table 1

| Interface relay code | Rated input voltage<br>$U_n$ | Power of input<br>control circuit |
|----------------------|------------------------------|-----------------------------------|
| PI6-OC-5...32VDC     | 5...32 V DC                  | 0,3 W at 24 V                     |
| PI6-OC-24VAC/DC      | 24 V AC/DC                   | 0,3 VA / 0,3 W                    |
| PI6-OC-230VAC/DC     | 230 V AC/DC                  | 1,0 VA / 1,0 W                    |

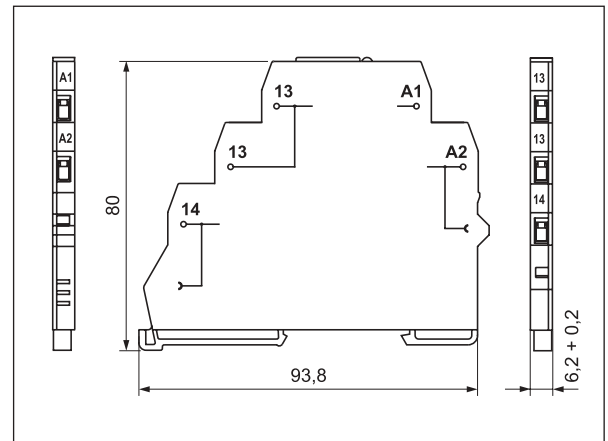
## Connection diagrams



## Ordering codes

Ordering codes **PI6-OC** are specified in Table 1, "Interface relay code" column.

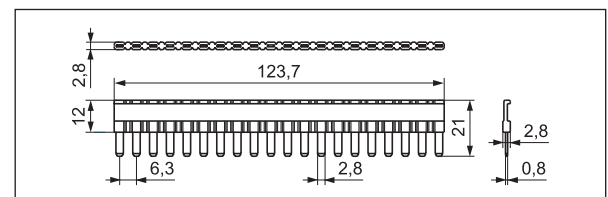
## Dimensions



## Mounting

Relays **PI6-OC** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated contactability 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,3 Nm.

**PI6-OC** may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue.



Interconnection strip type **ZG20**

RM699BV + PI6W-1P-...



- Interface relay **PIR6W-1P-...** consists of:
  - socket with electronic **PI6W-1P-...** with screw terminals,
  - changeover relay **RM699BV**, rated load 6 A / 250 V (AC1) ❶
- 35 mm rail mount acc. to PN-EN 60715 • May be linked with interconnection strip type **ZG20** • Equipped in LED green • Version for long lines, with anti-interference filter (**PIR6W-1P-230VAC/DC-10** ❷) • Accessories: description plates **PI6W-1246** • Recognitions, certifications, directives:

## Output circuit (RM699BV) - contact data ❶



|                                |                          |                               |
|--------------------------------|--------------------------|-------------------------------|
| Number and type of contacts    | 1 C/O                    |                               |
| Contact material               | <b>AgSnO<sub>2</sub></b> | AgSnO <sub>2</sub> /Au 3 μm ❷ |
| Rated / max. switching voltage | AC 250 V / 400 V         | - / 30 V ❷                    |
| Max. switching voltage         | DC 250 V                 | 36 V ❷                        |
| Min. switching voltage         | AC/DC 10 V               | 5 V                           |
| Rated load                     | AC1 6 A / 250 V AC       | 0,05 A / 30 V AC ❷            |
|                                | DC1 6 A / 24 V DC        | 0,05 A / 36 V DC ❷            |
| Min. switching current         | 100 mA                   | 10 mA                         |
| Max. inrush current            | 10 A 20 ms               | 0,1 A 20 ms ❷                 |
| Rated current                  | 6 A                      | 0,05 A ❷                      |
| Max. breaking capacity         | AC1 1 500 VA             | 1,2 VA ❷                      |
| Min. breaking capacity         | 1 W                      | 0,05 W                        |
| Contact resistance             | ≤ 100 mΩ 100 mA, 24 V    | ≤ 30 mΩ 10 mA, 5 V            |
| Max. operating frequency       | AC1                      | 360 cycles/hour               |
| • at rated load                |                          |                               |
| • no load                      |                          | 72 000 cycles/hour            |

## Input control circuit

|                                   |                                  |                                 |                            |
|-----------------------------------|----------------------------------|---------------------------------|----------------------------|
| Rated voltage                     | DC 12 ... 36 V                   |                                 |                            |
|                                   | AC: 50/60 Hz AC/DC 24 ... 230 V  |                                 |                            |
| Must release voltage              | AC: ≥ 0,2 U <sub>n</sub>         | AC: ≥ 0,35 U <sub>n</sub> ❸     | DC: ≥ 0,1 U <sub>n</sub>   |
| Operating range of supply voltage | see Table 1                      |                                 |                            |
| Must operate voltage              | AC and DC: ≤ 0,8 U <sub>n</sub>  | AC: 0,6...0,85 U <sub>n</sub> ❸ | DC: ≤ 0,8 U <sub>n</sub> ❸ |
| Rated power consumption           | DC 0,3 W                         |                                 |                            |
|                                   | AC/DC 0,3...2,1 VA / 0,3...1,0 W |                                 |                            |
| Max. length of supply line        | ≤ 300 m                          | AC supply ❸                     |                            |

## Insulation according to PN-EN 60664-1

|                             |                                                                                       |             |                                                          |
|-----------------------------|---------------------------------------------------------------------------------------|-------------|----------------------------------------------------------|
| Insulation rated voltage    | 250 V AC                                                                              |             |                                                          |
| Rated surge voltage         | 4 000 V                                                                               | 1,2 / 50 μs |                                                          |
| Overvoltage category        | III                                                                                   |             |                                                          |
| Insulation pollution degree | 3                                                                                     |             |                                                          |
| Dielectric strength         | • input - output<br>• input - output<br>• mass - input, output<br>• contact clearance | 4 000 V AC  | 50/60 Hz, 1 min., type of insulation: reinforced         |
|                             |                                                                                       | 6 000 V     | 1,2 / 50 μs, surge voltage                               |
|                             |                                                                                       | 2 500 V AC  | 50/60 Hz, 1 min.                                         |
|                             |                                                                                       | 1 000 V AC  | 50/60 Hz, 1 min., type of clearance: micro-disconnection |
| Input - output distance     |                                                                                       |             |                                                          |
| • clearance \ creepage      | ≥ 6 mm \ ≥ 8 mm                                                                       |             |                                                          |

## General data

|                                                                                                       |                                                          |                                                 |                                         |
|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------|-----------------------------------------|
| Operating time (typical value)                                                                        | AC: 11 ms                                                | DC: 8 ms                                        | AC/DC: 20 ms at U=0,85 U <sub>n</sub> ❸ |
| Release time (typical value)                                                                          | AC: 15 ms                                                | DC: 10 ms                                       | AC/DC: 18 ms ❸                          |
| Electrical life <ul style="list-style-type: none"><li>• resistive AC1</li><li>• cos ϕ = 0,4</li></ul> | > 0,6 x 10 <sup>5</sup><br>> 2 x 10 <sup>5</sup>         | 6 A, 250 V AC, 360 cycles/hour<br>2 A, 250 V AC |                                         |
| Mechanical life (cycles)                                                                              | > 2 x 10 <sup>7</sup>                                    |                                                 |                                         |
| Dimensions (L x W x H) / Weight                                                                       | 98,5 x 6,2 x 85,5 mm / 45 g                              |                                                 |                                         |
| Ambient temperature <ul style="list-style-type: none"><li>• storage</li><li>• operating</li></ul>     | -40...+70 °C<br>-40...+55 °C<br>-40...+60 °C 12, 24 V DC |                                                 |                                         |
| Protection category                                                                                   | IP 20                                                    | PN-EN 60529                                     |                                         |
| Environmental protection                                                                              | RTI                                                      | PN-EN 116000-3                                  |                                         |
| Shock resistance                                                                                      | 10 g                                                     |                                                 |                                         |
| Vibration resistance                                                                                  | 5 g 10...500 Hz                                          |                                                 |                                         |

The data in bold type pertain to the standard versions of the relays. ❶ Characteristics of the contact capacity of relays **PIR6W-1P-...** with **RM699BV** - see page 42. ❷ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for AgSnO<sub>2</sub> contacts (see beside). In consequence however, the life of the contact may be shorter than that of the normal power contact. ❸ Refers version for long lines (max. 300 m) **PIR6W-1P-230VAC/DC-10** - relay which includes the socket **PI6W-1P-230VAC/DC-10** with integrated anti-interference filter (designed on the basis of appropriately selected elements R and C, and Zener diode), resistant to occurrence of induced voltages in long distances of control wires, designed exclusively for cooperation with operational relay **RM699BV-3011-85-1060**.

Input data

Table 1

| Interface relay code           | Input - voltage range<br>V |              |
|--------------------------------|----------------------------|--------------|
|                                | min.                       | max.         |
| PIR6W-1P-12VDC                 | 9,6                        | 14,4         |
| <b>PIR6W-1P-24VDC</b>          | <b>19,2</b>                | <b>28,0</b>  |
| PIR6W-1P-36VDC                 | 28,8                       | 40,0         |
| PIR6W-1P-24VAC/DC              | 19,2                       | 26,4         |
| PIR6W-1P-42VAC/DC              | 33,6                       | 50,0         |
| PIR6W-1P-115VAC/DC             | 92,0                       | 130,0        |
| <b>PIR6W-1P-230VAC/DC</b>      | <b>184,0</b>               | <b>253,0</b> |
| PIR6W-1P-230VAC/DC-10 ④        | 196,0 ④                    | 253,0        |
| PIR6W-1P-12VDC-01 ②            | 9,6                        | 14,4         |
| <b>PIR6W-1P-24VDC-01 ②</b>     | <b>19,2</b>                | <b>28,0</b>  |
| PIR6W-1P-36VDC-01 ②            | 28,8                       | 40,0         |
| PIR6W-1P-24VAC/DC-01 ②         | 19,2                       | 26,4         |
| PIR6W-1P-42VAC/DC-01 ②         | 33,6                       | 50,0         |
| PIR6W-1P-115VAC/DC-01 ②        | 92,0                       | 130,0        |
| <b>PIR6W-1P-230VAC/DC-01 ②</b> | <b>184,0</b>               | <b>253,0</b> |

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

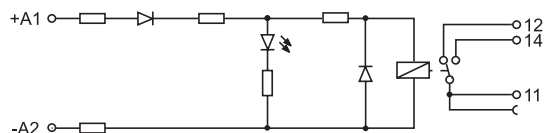
② Version with gold-plated contacts.

④ Version for long lines (max. 300 m), with anti-interference filter.

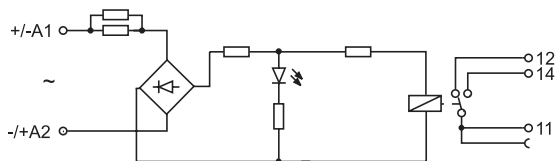
④ 196,0 V at supply voltage AC; 184,0 V at supply voltage DC

## Connection diagrams

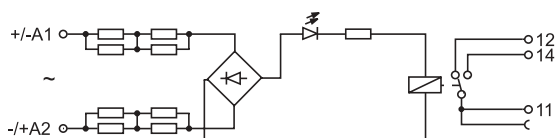
**PIR6W-1P-12VDC, PIR6W-1P-12VDC-01**  
**PIR6W-1P-24VDC, PIR6W-1P-24VDC-01**  
**PIR6W-1P-36VDC, PIR6W-1P-36VDC-01**



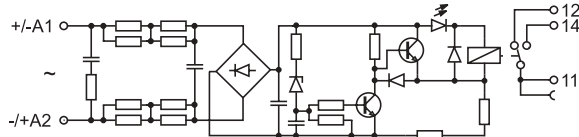
**PIR6W-1P-24VAC/DC, PIR6W-1P-24VAC/DC-01**  
**PIR6W-1P-42VAC/DC, PIR6W-1P-42VAC/DC-01**



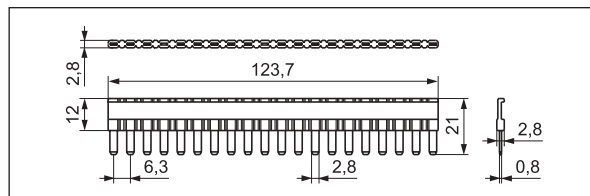
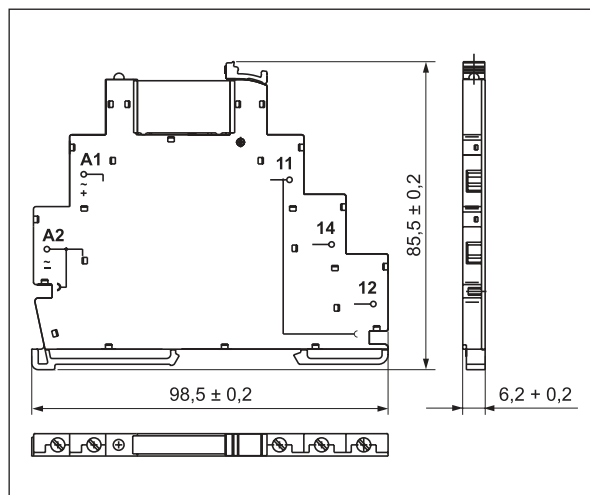
**PIR6W-1P-115VAC/DC, PIR6W-1P-115VAC/DC-01**  
**PIR6W-1P-230VAC/DC, PIR6W-1P-230VAC/DC-01**



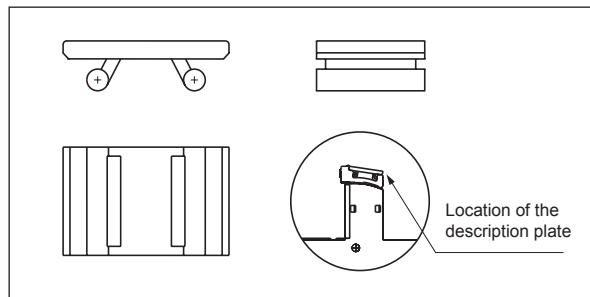
**PIR6W-1P-230VAC/DC-10**



## Dimensions



Interconnection strip type **ZG20**



Description plate **PI6W-1246**

## Ordering codes

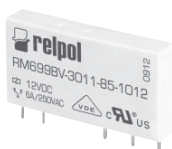
Ordering codes **PIR6W-1P-...** are specified in Tables 1, 2, "Interface relay code" column.

## Mounting

Relays **PIR6W-1P-...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated contactability 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,3 Nm. Interface relay **PIR6W-1P-...** consists of: socket with electronic **PI6W-1P-...** and electromagnetic relay **RM699BV**. **PIR6W-1P-...** may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue. Description plates of **PI6W-1246** type are offered for **PIR6W-1P-...** relays; they are delivered with the relays, not mounted.



PI6W-1P-...



RM699BV



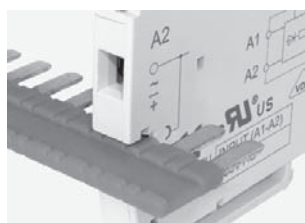
ZG20



PI6W-1246



**Green LED:**  
signalling the operation  
status of the relay.



**Interconnection strip ZG20:**  
bridging of common  
input or output signals.



**Movable ejector:**  
protection and easy replacement  
of the operational relay.

Table of codes

Table 2

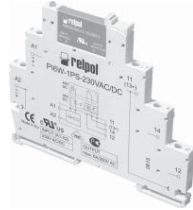
| Interface relay code           | Rated input voltage<br>$U_n$ ⑤ | Power of input control circuit | Socket code              | Operational relay code      | Rated voltage of operational relay<br>$U_s$ ⑤ |
|--------------------------------|--------------------------------|--------------------------------|--------------------------|-----------------------------|-----------------------------------------------|
| PIR6W-1P-12VDC                 | 12 V DC                        | 0,3 W                          | PI6W-1P-12VDC            | RM699BV-3011-85-1012        | 12 V DC                                       |
| <b>PIR6W-1P-24VDC</b>          | <b>24 V DC</b>                 | <b>0,3 W</b>                   | <b>PI6W-1P-24VDC</b>     | <b>RM699BV-3011-85-1024</b> | <b>24 V DC</b>                                |
| PIR6W-1P-36VDC                 | 36 V DC                        | 0,3 W                          | PI6W-1P-36VDC            | RM699BV-3011-85-1024        | 24 V DC                                       |
| PIR6W-1P-24VAC/DC              | 24 V AC/DC                     | 0,3 VA / 0,3 W                 | PI6W-1P-24VAC/DC         | RM699BV-3011-85-1024        | 24 V DC                                       |
| PIR6W-1P-42VAC/DC              | 42 V AC/DC                     | 0,4 VA / 0,4 W                 | PI6W-1P-42VAC/DC         | RM699BV-3011-85-1024        | 24 V DC                                       |
| PIR6W-1P-115VAC/DC             | 115 V AC/DC                    | 0,9 VA / 0,9 W                 | PI6W-1P-115VAC/DC        | RM699BV-3011-85-1024        | 24 V DC                                       |
| <b>PIR6W-1P-230VAC/DC</b>      | <b>230 V AC/DC</b>             | <b>0,8 VA / 0,8 W</b>          | <b>PI6W-1P-230VAC/DC</b> | <b>RM699BV-3011-85-1060</b> | <b>60 V DC</b>                                |
| PIR6W-1P-230VAC/DC-10 ⑥        | 230 V AC/DC                    | 2,1 VA / 1,0 W                 | PI6W-1P-230VAC/DC-10     | RM699BV-3011-85-1060        | 60 V DC                                       |
| PIR6W-1P-12VDC-01 ②            | 12 V DC                        | 0,3 W                          | PI6W-1P-12VDC            | RM699BV-3211-85-1012        | 12 V DC                                       |
| <b>PIR6W-1P-24VDC-01 ②</b>     | <b>24 V DC</b>                 | <b>0,3 W</b>                   | <b>PI6W-1P-24VDC</b>     | <b>RM699BV-3211-85-1024</b> | <b>24 V DC</b>                                |
| PIR6W-1P-36VDC-01 ②            | 36 V DC                        | 0,3 W                          | PI6W-1P-36VDC            | RM699BV-3211-85-1024        | 24 V DC                                       |
| PIR6W-1P-24VAC/DC-01 ②         | 24 V AC/DC                     | 0,3 VA / 0,3 W                 | PI6W-1P-24VAC/DC         | RM699BV-3211-85-1024        | 24 V DC                                       |
| PIR6W-1P-42VAC/DC-01 ②         | 42 V AC/DC                     | 0,4 VA / 0,4 W                 | PI6W-1P-42VAC/DC         | RM699BV-3211-85-1024        | 24 V DC                                       |
| PIR6W-1P-115VAC/DC-01 ②        | 115 V AC/DC                    | 0,9 VA / 0,9 W                 | PI6W-1P-115VAC/DC        | RM699BV-3211-85-1024        | 24 V DC                                       |
| <b>PIR6W-1P-230VAC/DC-01 ②</b> | <b>230 V AC/DC</b>             | <b>0,8 VA / 0,8 W</b>          | <b>PI6W-1P-230VAC/DC</b> | <b>RM699BV-3211-85-1060</b> | <b>60 V DC</b>                                |

The data in bold type pertain to the standard versions of the relays. ② Version with gold-plated contacts. ⑥ Version for long lines (max. 300 m), with anti-interference filter. ⑤ It shall be remarked that rated input voltage of the operational relay  $U_s$  not always complies with the rated input voltage  $U_n$  (which is important on ordering operational relays for sockets).

RM699BV + PI6W-1PS-...



RSR30 + PI6W-1PS-...



- Interface relay **PIR6W-1PS-...** consists of:
  - universal socket with electronic **PI6W-1PS-...** with screw terminals,
  - changeover relay **RM699BV**, rated load 6 A / 250 V (AC1) ❶ or solid state relay **RSR30** ❶
- 35 mm rail mount acc. to PN-EN 60715 • May be linked with interconnection strip type **ZG20** • Equipped in LED green • Accessories: description plates **PI6W-1246** • Recognitions, certifications, directives:



## Output circuit (RM699BV) - contact data ❶

|                                              |                          |                               |
|----------------------------------------------|--------------------------|-------------------------------|
| Number and type of contacts (code of output) | 1 C/O (R)                | 1 C/O (R-01)                  |
| Contact material                             | <b>AgSnO<sub>2</sub></b> | AgSnO <sub>2</sub> /Au 3 μm ❷ |
| Rated / max. switching voltage               | AC 250 V / 400 V         | – / 30 V ❷                    |
| Max. switching voltage                       | DC 250 V                 | 36 V ❷                        |
| Min. switching voltage                       | AC/DC 10 V               | 5 V                           |
| Rated load                                   | AC1 6 A / 250 V AC       | 0,05 A / 30 V AC ❷            |
|                                              | DC1 6 A / 24 V DC        | 0,05 A / 36 V DC ❷            |
| Min. switching current                       | 100 mA                   | 10 mA                         |
| Max. inrush current                          | 10 A 20 ms               | 0,1 A 20 ms ❷                 |
| Rated current                                | 6 A                      | 0,05 A ❷                      |
| Max. breaking capacity                       | AC1 1 500 VA             | 1,2 VA ❷                      |
| Min. breaking capacity                       | 1 W                      | 0,05 W                        |
| Contact resistance                           | ≤ 100 mΩ 100 mA, 24 V    | ≤ 30 mΩ 10 mA, 5 V            |
| Max. operating frequency                     |                          |                               |
| • at rated load                              | AC1 360 cycles/hour      |                               |
| • no load                                    | 72 000 cycles/hour       |                               |

## Output circuit (RSR30) - output data ❶

| Type of output (code of output)                                | Triac (T)<br>max. 2 A | Transistor (C)<br>max. 1 A | Transistor (O)<br>max. 2 A |
|----------------------------------------------------------------|-----------------------|----------------------------|----------------------------|
| Number and type of outputs                                     | 1 NO                  | 1 NO                       | 1 NO                       |
| Rated voltage                                                  | 240 V AC              | 48 V DC                    | 24 V DC                    |
| Max. output voltage                                            | 280 V AC              | 60 V DC                    | 32 V DC                    |
| Min. output voltage                                            | 12 V AC               | 1,5 V DC                   | 1,5 V DC                   |
| Rated continuous output current                                | AC1 1 A               |                            |                            |
|                                                                | DC1                   | 1 A                        | 2 A                        |
| Min. making capacity current                                   | 50 mA                 | 1 mA                       | 1 mA                       |
| Max. off-state leakage current (rest condition)                | 1,5 mA                | 1 mA                       | 1 mA                       |
| Max. on-state voltage drop on the connection (operating state) | 1,2 V                 | 0,4 V                      | 0,24 V                     |
| Operating switching frequency                                  |                       | 10 Hz                      | 10 Hz                      |

## Input control circuit

|                                   |                                  |                                  |
|-----------------------------------|----------------------------------|----------------------------------|
| Rated voltage                     | DC 6 ... 60 V                    |                                  |
|                                   | AC: 50/60 Hz AC/DC 24 ... 230 V  |                                  |
| Must release voltage              | AC: ≥ 0,2 U <sub>n</sub>         | DC: ≥ 0,1 U <sub>n</sub>         |
| Operating range of supply voltage | 0,8...1,2 U <sub>n</sub>         | 0,85...1,2 U <sub>n</sub> 6 V DC |
| Must operate voltage              | ≤ 0,8 U <sub>n</sub>             | ≤ 0,85 U <sub>n</sub> 6 V DC     |
| Rated power consumption           | DC 0,2...0,5 W                   |                                  |
|                                   | AC/DC 0,5...1,2 VA / 0,4...1,2 W |                                  |

## Insulation according to PN-EN 60664-1

|                               |                                                                                                                                                                                                                                                                                                         |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation rated voltage      | 250 V AC                                                                                                                                                                                                                                                                                                |
| Rated surge voltage           | 4 000 V 1,2 / 50 μs                                                                                                                                                                                                                                                                                     |
| Overvoltage category          | III                                                                                                                                                                                                                                                                                                     |
| Insulation pollution degree   | 3                                                                                                                                                                                                                                                                                                       |
| Dielectric strength           | • input - output 4 000 V AC 50/60 Hz, 1 min., type of insulation: reinforced<br>• input - output 6 000 V 1,2 / 50 μs, surge voltage<br>• mass - input, output 2 500 V AC 50/60 Hz, 1 min.<br>• contact clearance 1 000 V AC 50/60 Hz, 1 min., output R and R-01, type of clearance: micro-disconnection |
| Input - output distance       |                                                                                                                                                                                                                                                                                                         |
| • clearance \ creepage        | ≥ 6 mm \ ≥ 8 mm                                                                                                                                                                                                                                                                                         |
| Mass - input, output distance |                                                                                                                                                                                                                                                                                                         |
| • clearance \ creepage        | ≥ 3 mm \ ≥ 3,6 mm                                                                                                                                                                                                                                                                                       |

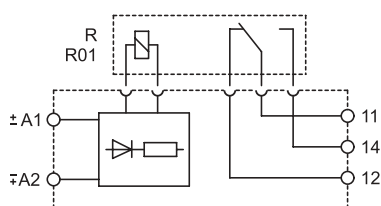
The data in bold type pertain to the standard versions of the relays. ❶ Characteristics of the contact capacity of relays **PIR6W-1PS-...** with **RM699BV** - see page 42; **PIR6W-1PS-...** with **RSR30** - see catalogue "Solid state relays" and [www.repol.com.pl](http://www.repol.com.pl) ❷ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for AgSnO<sub>2</sub> contacts (see beside). In consequence however, the life of the contact may be shorter than that of the normal power contact.

## General data

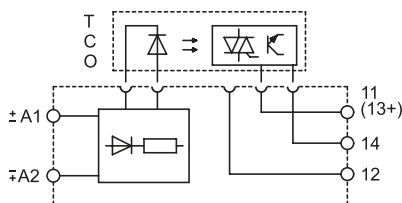
|                                           |                                                                                                                                                                                             |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating time (typical value)            | PIR6W-...-R, PIR6W-...-R01: DC: 8 ms AC/DC: 20 ms<br>PIR6W-...-T: DC: 100 µs AC/DC: 10 ms<br>PIR6W-...-C, PIR6W-...-O: DC: 50 µs AC/DC: 10 ms                                               |
| Release time (typical value)              | PIR6W-...-R, PIR6W-...-R01: DC: 10 ms AC/DC: 25 ms<br>PIR6W-...-T: DC: 1/2 cycle + 1 ms AC/DC: 30 ms<br>PIR6W-...-C, PIR6W-...-O: DC: 600 µs AC/DC: 20 ms                                   |
| Electrical life • resistive AC1           | > 0,5 x 10 <sup>5</sup> 6 A, 250 V AC                                                                                                                                                       |
| Mechanical life (cycles)                  | > 10 <sup>7</sup>                                                                                                                                                                           |
| Dimensions (L x W x H)                    | 98,5 x 6,2 x 85,5 mm                                                                                                                                                                        |
| Weight                                    | 45 g                                                                                                                                                                                        |
| Ambient temperature • storage / operating | PIR6W-...-R, PIR6W-...-R01: -40...+70 °C / -40...+55 °C<br>PIR6W-...-T: -40...+70 °C / -20...+55 °C<br>PIR6W-...-C: -25...+70 °C / -25...+55 °C<br>PIR6W-...-O: -25...+70 °C / -20...+55 °C |
| Protection category                       | IP 20 PN-EN 60529                                                                                                                                                                           |
| Environmental protection                  | RTI PN-EN 116000-3                                                                                                                                                                          |
| Shock resistance                          | 10 g                                                                                                                                                                                        |
| Vibration resistance                      | 5 g 10...500 Hz                                                                                                                                                                             |

## Connection diagrams

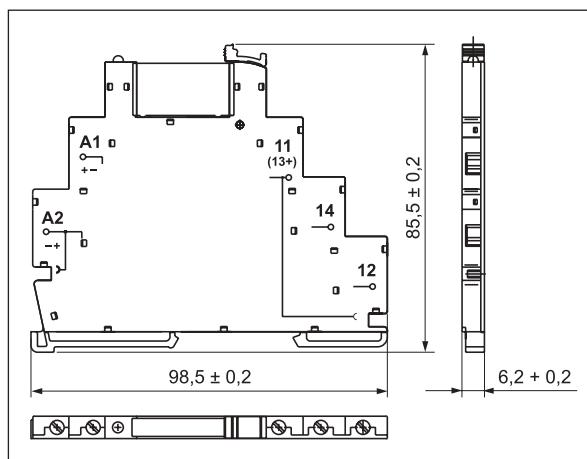
PIR6W-1PS-...-R, PIR6W-1PS-...-R01



PIR6W-1PS-...-T, PIR6W-1PS-...-C, PIR6W-1PS-...-O



## Dimensions



## Ordering codes

Ordering codes **PIR6W-1PS-...** are specified in Table 1, "Interface relay code" column.

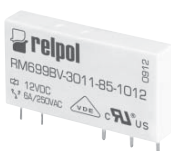
## Mounting

Relays **PIR6W-1PS-...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated contactability 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,3 Nm. Interface relay **PIR6W-1PS-...** consists of: universal socket with electronic **PI6W-1PS-...** and electromagnetic relay **RM699BV** or solid state relay **RSR30**.

**PIR6W-1PS-...** may be linked with interconnection strip type **ZG20** (see pages 193, 194). Description plates of **PI6W-1246** type are offered for **PIR6W-1PS-...** relays (see pages 193, 194).



PI6W-1PS-...



RM699BV



RSR30



ZG20



PI6W-1246

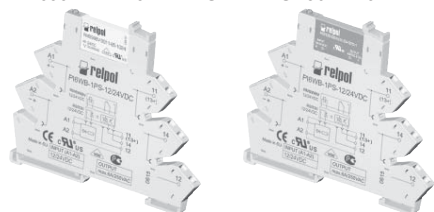
Table of codes

Table 1

| Interface relay code             | Rated input voltage $U_n$ ② | Power of input control circuit | Socket code               | Operational relay code       | Rated voltage of operational relay $U_s$ ③ |
|----------------------------------|-----------------------------|--------------------------------|---------------------------|------------------------------|--------------------------------------------|
| PIR6W-1PS-6VDC-R                 | 6 V DC                      | 0,3 W                          | PI6W-1PS-6VDC             | RM699BV-3011-85-1005         | 5 V DC                                     |
| PIR6W-1PS-12VDC-R                | 12 V DC                     | 0,2 W                          | PI6W-1PS-12/24VDC         | RM699BV-3011-85-1012         | 12 V DC                                    |
| <b>PIR6W-1PS-24VDC-R</b>         | <b>24 V DC</b>              | <b>0,3 W</b>                   | <b>PI6W-1PS-12/24VDC</b>  | <b>RM699BV-3011-85-1024</b>  | <b>24 V DC</b>                             |
| PIR6W-1PS-36VDC-R                | 36 V DC                     | 0,3 W                          | PI6W-1PS-36VDC            | RM699BV-3011-85-1024         | 24 V DC                                    |
| PIR6W-1PS-48VDC-R                | 48 V DC                     | 0,4 W                          | PI6W-1PS-48VDC            | RM699BV-3011-85-1024         | 24 V DC                                    |
| PIR6W-1PS-60VDC-R                | 60 V DC                     | 0,5 W                          | PI6W-1PS-60VDC            | RM699BV-3011-85-1024         | 24 V DC                                    |
| <b>PIR6W-1PS-24VAC/DC-R</b>      | <b>24 V AC/DC</b>           | <b>0,5 VA / 0,4 W</b>          | <b>PI6W-1PS-24VAC/DC</b>  | <b>RM699BV-3011-85-1012</b>  | <b>12 V DC</b>                             |
| PIR6W-1PS-42VAC/DC-R             | 42 V AC/DC                  | 0,5 VA / 0,4 W                 | PI6W-1PS-42VAC/DC         | RM699BV-3011-85-1024         | 24 V DC                                    |
| PIR6W-1PS-115VAC/DC-R            | 115 V AC/DC                 | 1,2 VA / 1,2 W                 | PI6W-1PS-115VAC/DC        | RM699BV-3011-85-1024         | 24 V DC                                    |
| <b>PIR6W-1PS-230VAC/DC-R</b>     | <b>230 V AC/DC</b>          | <b>1,2 VA / 1,2 W</b>          | <b>PI6W-1PS-230VAC/DC</b> | <b>RM699BV-3011-85-1048</b>  | <b>48 V DC</b>                             |
| PIR6W-1PS-6VDC-R01 ②             | 6 V DC                      | 0,3 W                          | PI6W-1PS-6VDC             | RM699BV-3211-85-1005         | 5 V DC                                     |
| PIR6W-1PS-12VDC-R01 ②            | 12 V DC                     | 0,2 W                          | PI6W-1PS-12/24VDC         | RM699BV-3211-85-1012         | 12 V DC                                    |
| <b>PIR6W-1PS-24VDC-R01 ②</b>     | <b>24 V DC</b>              | <b>0,3 W</b>                   | <b>PI6W-1PS-12/24VDC</b>  | <b>RM699BV-3211-85-1024</b>  | <b>24 V DC</b>                             |
| PIR6W-1PS-36VDC-R01 ②            | 36 V DC                     | 0,3 W                          | PI6W-1PS-36VDC            | RM699BV-3211-85-1024         | 24 V DC                                    |
| PIR6W-1PS-48VDC-R01 ②            | 48 V DC                     | 0,4 W                          | PI6W-1PS-48VDC            | RM699BV-3211-85-1024         | 24 V DC                                    |
| PIR6W-1PS-60VDC-R01 ②            | 60 V DC                     | 0,5 W                          | PI6W-1PS-60VDC            | RM699BV-3211-85-1024         | 24 V DC                                    |
| <b>PIR6W-1PS-24VAC/DC-R01 ②</b>  | <b>24 V AC/DC</b>           | <b>0,5 VA / 0,4 W</b>          | <b>PI6W-1PS-24VAC/DC</b>  | <b>RM699BV-3211-85-1012</b>  | <b>12 V DC</b>                             |
| PIR6W-1PS-42VAC/DC-R01 ②         | 42 V AC/DC                  | 0,5 VA / 0,4 W                 | PI6W-1PS-42VAC/DC         | RM699BV-3211-85-1024         | 24 V DC                                    |
| PIR6W-1PS-115VAC/DC-R01 ②        | 115 V AC/DC                 | 1,2 VA / 1,2 W                 | PI6W-1PS-115VAC/DC        | RM699BV-3211-85-1024         | 24 V DC                                    |
| <b>PIR6W-1PS-230VAC/DC-R01 ②</b> | <b>230 V AC/DC</b>          | <b>1,2 VA / 1,2 W</b>          | <b>PI6W-1PS-230VAC/DC</b> | <b>RM699BV-3211-85-1048</b>  | <b>48 V DC</b>                             |
| PIR6W-1PS-6VDC-T                 | 6 V DC                      | 0,1 W                          | PI6W-1PS-6VDC             | RSR30-D05-A1-24-020-1        | 5 V DC                                     |
| PIR6W-1PS-12VDC-T                | 12 V DC                     | 0,2 W                          | PI6W-1PS-12/24VDC         | RSR30-D12-A1-24-020-1        | 12 V DC                                    |
| <b>PIR6W-1PS-24VDC-T</b>         | <b>24 V DC</b>              | <b>0,3 W</b>                   | <b>PI6W-1PS-12/24VDC</b>  | <b>RSR30-D24-A1-24-020-1</b> | <b>24 V DC</b>                             |
| PIR6W-1PS-36VDC-T                | 36 V DC                     | 0,3 W                          | PI6W-1PS-36VDC            | RSR30-D24-A1-24-020-1        | 24 V DC                                    |
| PIR6W-1PS-48VDC-T                | 48 V DC                     | 0,4 W                          | PI6W-1PS-48VDC            | RSR30-D24-A1-24-020-1        | 24 V DC                                    |
| PIR6W-1PS-60VDC-T                | 60 V DC                     | 0,5 W                          | PI6W-1PS-60VDC            | RSR30-D24-A1-24-020-1        | 24 V DC                                    |
| <b>PIR6W-1PS-24VAC/DC-T</b>      | <b>24 V AC/DC</b>           | <b>0,5 VA / 0,4 W</b>          | <b>PI6W-1PS-24VAC/DC</b>  | <b>RSR30-D12-A1-24-020-1</b> | <b>12 V DC</b>                             |
| PIR6W-1PS-42VAC/DC-T             | 42 V AC/DC                  | 0,5 VA / 0,4 W                 | PI6W-1PS-42VAC/DC         | RSR30-D24-A1-24-020-1        | 24 V DC                                    |
| PIR6W-1PS-115VAC/DC-T            | 115 V AC/DC                 | 1,0 VA / 1,0 W                 | PI6W-1PS-115VAC/DC        | RSR30-D24-A1-24-020-1        | 24 V DC                                    |
| PIR6W-1PS-6VDC-C                 | 6 V DC                      | 0,1 W                          | PI6W-1PS-6VDC             | RSR30-D05-D1-04-025-1        | 5 V DC                                     |
| PIR6W-1PS-12VDC-C                | 12 V DC                     | 0,2 W                          | PI6W-1PS-12/24VDC         | RSR30-D12-D1-04-025-1        | 12 V DC                                    |
| <b>PIR6W-1PS-24VDC-C</b>         | <b>24 V DC</b>              | <b>0,3 W</b>                   | <b>PI6W-1PS-12/24VDC</b>  | <b>RSR30-D24-D1-04-025-1</b> | <b>24 V DC</b>                             |
| PIR6W-1PS-36VDC-C                | 36 V DC                     | 0,3 W                          | PI6W-1PS-36VDC            | RSR30-D24-D1-04-025-1        | 24 V DC                                    |
| PIR6W-1PS-48VDC-C                | 48 V DC                     | 0,4 W                          | PI6W-1PS-48VDC            | RSR30-D24-D1-04-025-1        | 24 V DC                                    |
| PIR6W-1PS-60VDC-C                | 60 V DC                     | 0,5 W                          | PI6W-1PS-60VDC            | RSR30-D24-D1-04-025-1        | 24 V DC                                    |
| <b>PIR6W-1PS-24VAC/DC-C</b>      | <b>24 V AC/DC</b>           | <b>0,5 VA / 0,4 W</b>          | <b>PI6W-1PS-24VAC/DC</b>  | <b>RSR30-D12-D1-04-025-1</b> | <b>12 V DC</b>                             |
| PIR6W-1PS-42VAC/DC-C             | 42 V AC/DC                  | 0,5 VA / 0,4 W                 | PI6W-1PS-42VAC/DC         | RSR30-D24-D1-04-025-1        | 24 V DC                                    |
| PIR6W-1PS-115VAC/DC-C            | 115 V AC/DC                 | 1,0 VA / 1,0 W                 | PI6W-1PS-115VAC/DC        | RSR30-D24-D1-04-025-1        | 24 V DC                                    |
| <b>PIR6W-1PS-230VAC/DC-C</b>     | <b>230 V AC/DC</b>          | <b>1,0 VA / 1,0 W</b>          | <b>PI6W-1PS-230VAC/DC</b> | <b>RSR30-D48-D1-04-025-1</b> | <b>48 V DC</b>                             |
| PIR6W-1PS-6VDC-O                 | 6 V DC                      | 0,1 W                          | PI6W-1PS-6VDC             | RSR30-D05-D1-02-040-1        | 5 V DC                                     |
| PIR6W-1PS-12VDC-O                | 12 V DC                     | 0,2 W                          | PI6W-1PS-12/24VDC         | RSR30-D12-D1-02-040-1        | 12 V DC                                    |
| <b>PIR6W-1PS-24VDC-O</b>         | <b>24 V DC</b>              | <b>0,3 W</b>                   | <b>PI6W-1PS-12/24VDC</b>  | <b>RSR30-D24-D1-02-040-1</b> | <b>24 V DC</b>                             |
| PIR6W-1PS-36VDC-O                | 36 V DC                     | 0,3 W                          | PI6W-1PS-36VDC            | RSR30-D24-D1-02-040-1        | 24 V DC                                    |
| PIR6W-1PS-48VDC-O                | 48 V DC                     | 0,4 W                          | PI6W-1PS-48VDC            | RSR30-D24-D1-02-040-1        | 24 V DC                                    |
| PIR6W-1PS-60VDC-O                | 60 V DC                     | 0,5 W                          | PI6W-1PS-60VDC            | RSR30-D24-D1-02-040-1        | 24 V DC                                    |
| <b>PIR6W-1PS-24VAC/DC-O</b>      | <b>24 V AC/DC</b>           | <b>0,5 VA / 0,4 W</b>          | <b>PI6W-1PS-24VAC/DC</b>  | <b>RSR30-D12-D1-02-040-1</b> | <b>12 V DC</b>                             |
| PIR6W-1PS-42VAC/DC-O             | 42 V AC/DC                  | 0,5 VA / 0,4 W                 | PI6W-1PS-42VAC/DC         | RSR30-D24-D1-02-040-1        | 24 V DC                                    |
| PIR6W-1PS-115VAC/DC-O            | 115 V AC/DC                 | 1,0 VA / 1,0 W                 | PI6W-1PS-115VAC/DC        | RSR30-D24-D1-02-040-1        | 24 V DC                                    |
| <b>PIR6W-1PS-230VAC/DC-O</b>     | <b>230 V AC/DC</b>          | <b>1,0 VA / 1,0 W</b>          | <b>PI6W-1PS-230VAC/DC</b> | <b>RSR30-D48-D1-02-040-1</b> | <b>48 V DC</b>                             |

The data in bold type pertain to the standard versions of the relays. ② Version with gold-plated contacts. ③ It shall be remarked that rated input voltage of the operational relay  $U_s$  not always complies with the rated input voltage  $U_n$  (which is important on ordering operational relays for sockets).

RM699BV + PI6WB-1PS-... RSR30 + PI6WB-1PS-...



- Interface relay **PIR6WB-1PS-...** consists of: - universal socket with electronic **PI6WB-1PS-...** with spring terminals ❶, - changeover relay **RM699BV**, rated load 6 A / 250 V (AC1) ❷ or solid state relay **RSR30** ❸
- 35 mm rail mount acc. to PN-EN 60715 • May be linked with interconnection strip type **ZG20** • Equipped in LED green • Version for long lines, with anti-interference filter (**PIR6WB-1P-230VAC/DC-10** ❹) • Accessories: description plates **PI6W-1246** • Recognitions, certifications, directives:



## Output circuit (RM699BV) - contact data ❷

|                                              |                                         |                                          |
|----------------------------------------------|-----------------------------------------|------------------------------------------|
| Number and type of contacts (code of output) | 1 C/O (R)                               | 1 C/O (R-01)                             |
| Contact material                             | AgSnO <sub>2</sub>                      | AgSnO <sub>2</sub> /Au 3 μm ❸            |
| Rated / max. switching voltage               | AC 250 V / 400 V                        | - / 30 V ❸                               |
| Max. switching voltage                       | DC 250 V                                | 36 V ❸                                   |
| Min. switching voltage                       | AC/DC 10 V                              | 5 V                                      |
| Rated load                                   | AC1 6 A / 250 V AC<br>DC1 6 A / 24 V DC | 0,05 A / 30 V AC ❸<br>0,05 A / 36 V DC ❸ |
| Min. switching current                       | 100 mA                                  | 10 mA                                    |
| Max. inrush current                          | 10 A 20 ms                              | 0,1 A 20 ms ❸                            |
| Rated current                                | 6 A                                     | 0,05 A ❸                                 |
| Max. breaking capacity                       | AC1 1 500 VA                            | 1,2 VA ❸                                 |
| Min. breaking capacity                       | 1 W                                     | 0,05 W                                   |
| Contact resistance                           | ≤ 100 mΩ 100 mA, 24 V                   | ≤ 30 mΩ 10 mA, 5 V                       |
| Max. operating frequency                     |                                         |                                          |
| • at rated load                              | AC1 360 cycles/hour                     |                                          |
| • no load                                    | 72 000 cycles/hour                      |                                          |

## Output circuit (RSR30) - output data ❸

| Type of output (code of output)                                | Triac (T)<br>max. 2 A | Transistor (C)<br>max. 1 A | Transistor (O)<br>max. 2 A |
|----------------------------------------------------------------|-----------------------|----------------------------|----------------------------|
| Number and type of outputs                                     | 1 NO                  | 1 NO                       | 1 NO                       |
| Rated voltage                                                  | 240 V AC              | 48 V DC                    | 24 V DC                    |
| Max. output voltage                                            | 280 V AC              | 60 V DC                    | 32 V DC                    |
| Min. output voltage                                            | 12 V AC               | 1,5 V DC                   | 1,5 V DC                   |
| Rated continuous output current                                | AC1 1 A<br>DC1        | 1 A                        | 2 A                        |
| Min. making capacity current                                   | 50 mA                 | 1 mA                       | 1 mA                       |
| Max. off-state leakage current (rest condition)                | 1,5 mA                | 1 mA                       | 1 mA                       |
| Max. on-state voltage drop on the connection (operating state) | 1,2 V                 | 0,4 V                      | 0,24 V                     |
| Operating switching frequency                                  |                       | 10 Hz                      | 10 Hz                      |

## Input control circuit

|                                   |                                                    |                                  |                                 |
|-----------------------------------|----------------------------------------------------|----------------------------------|---------------------------------|
| Rated voltage                     | DC 6 ... 60 V<br>AC: 50/60 Hz AC/DC 24 ... 230 V   |                                  |                                 |
| Must release voltage              | AC: ≥ 0,2 U <sub>n</sub>                           | AC: ≥ 0,35 U <sub>n</sub> ❹      | DC: ≥ 0,1 U <sub>n</sub>        |
| Operating range of supply voltage | 0,8...1,2 U <sub>n</sub>                           | 0,85...1,2 U <sub>n</sub> 6 V DC |                                 |
| Must operate voltage              | ≤ 0,8 U <sub>n</sub>                               | ≤ 0,85 U <sub>n</sub> 6 V DC     | AC: 0,6...0,85 U <sub>n</sub> ❹ |
| Rated power consumption           | DC 0,2...0,5 W<br>AC/DC 0,5...1,2 VA / 0,4...1,2 W |                                  |                                 |
| Max. length of supply line        | ≤ 300 m                                            | AC supply ❷                      |                                 |

## Insulation according to PN-EN 60664-1

|                             |                     |                 |                                                                                |
|-----------------------------|---------------------|-----------------|--------------------------------------------------------------------------------|
| Insulation rated voltage    |                     | 250 V AC        |                                                                                |
| Rated surge voltage         |                     | 4 000 V         | 1,2 / 50 μs                                                                    |
| Overvoltage category        |                     | III             |                                                                                |
| Insulation pollution degree |                     | 3               |                                                                                |
| Dielectric strength         | • input - output    | 4 000 V AC      | 50/60 Hz, 1 min., type of insulation: reinforced                               |
|                             | • input - output    | 6 000 V         | 1,2 / 50 μs, surge voltage                                                     |
|                             | • contact clearance | 1 000 V AC      | 50/60 Hz, 1 min., output R and R-01,<br>type of clearance: micro-disconnection |
| Input - output distance     |                     |                 |                                                                                |
| • clearance \ creepage      |                     | ≥ 6 mm \ ≥ 8 mm |                                                                                |

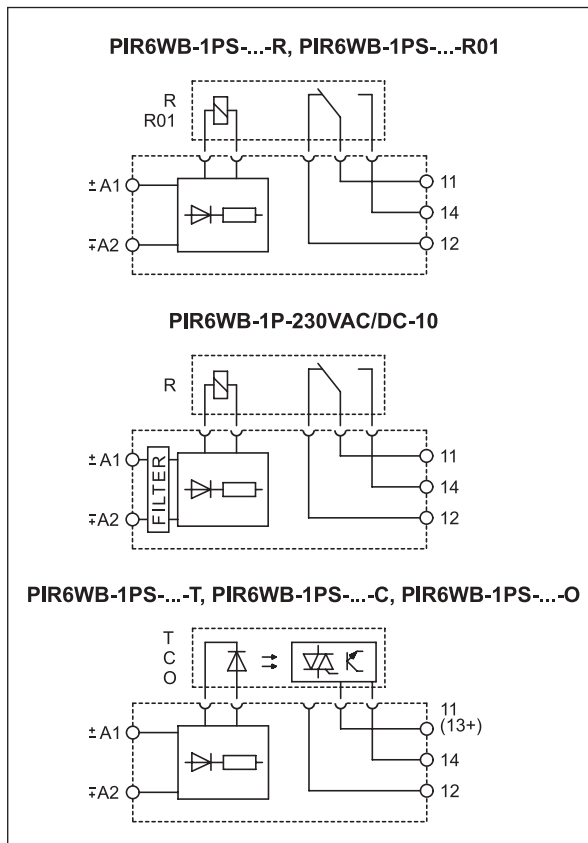
The data in bold type pertain to the standard versions of the relays. ❶ Spring fixing terminals for electric wires (cage springs CAGE CLAMP® - is the registered trademark of WAGO Kontakttechnik GmbH & Co. KG, Germany). ❷ Characteristics of the contact capacity of relays **PIR6WB-1PS-...** with **RM699BV** - see page 42; **PIR6WB-1PS-...** with **RSR30** - see catalogue "Solid state relays" and [www.relpol.com.pl](http://www.relpol.com.pl) ❸ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for AgSnO<sub>2</sub> contacts (see beside). In consequence however, the life of the contact may be shorter than that of the normal power contact. ❹ Refers version for long lines (max. 300 m) **PIR6WB-1P-230VAC/DC-10** - relay which includes the socket **PI6WB-1P-230VAC/DC-10** with integrated anti-interference filter (designed on the basis of appropriately selected elements R and C, and Zener diode), resistant to occurrence of induced voltages in long distances of control wires, designed exclusively for cooperation with operational relay **RM699BV-3011-85-1060**.

### General data

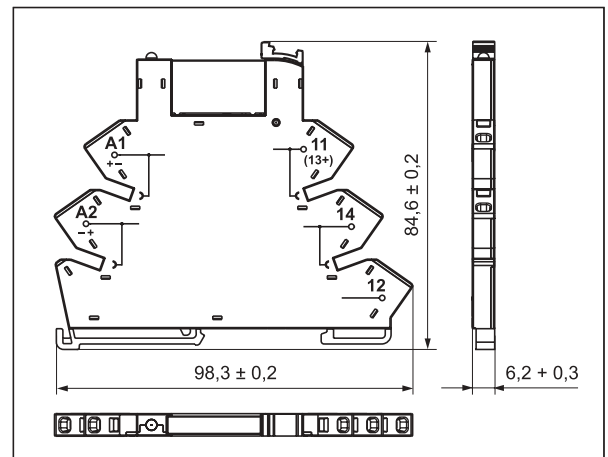
④ Version for long lines (max. 300 m), with anti-interference filter.

|                                           |                                                                                                                                                                                                                  |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating time (typical value)            | PIR6WB-...-R, PIR6WB-...-R01: DC: 8 ms AC/DC: 20 ms<br>PIR6WB-...-T: DC: 100 µs AC/DC: 10 ms<br>PIR6WB-...-C, PIR6WB-...-O: DC: 50 µs AC/DC: 10 ms                                                               |
| Release time (typical value)              | PIR6WB-...-R, PIR6WB-...-R01: DC: 10 ms AC/DC: 25 ms (18 ms ④)<br>PIR6WB-...-T: DC: 1/2 cycle + 1 ms AC/DC: 30 ms<br>PIR6WB-...-C, PIR6WB-...-O: DC: 600 µs AC/DC: 20 ms                                         |
| Electrical life • resistive AC1           | > 0,5 x 10 <sup>5</sup> 6 A, 250 V AC                                                                                                                                                                            |
| Mechanical life (cycles)                  | > 10 <sup>7</sup>                                                                                                                                                                                                |
| Dimensions (L x W x H) / Weight           | 98,3 x 6,2 x 84,6 mm / 55 g                                                                                                                                                                                      |
| Ambient temperature • storage / operating | PIR6WB-...-R, PIR6WB-...-R01: -40 (-25 ④)...+70 °C / -40 (-20 ④)...+55 °C<br>PIR6WB-...-T: -40...+70 °C / -20...+55 °C<br>PIR6WB-...-C: -25...+70 °C / -25...+55 °C<br>PIR6WB-...-O: -25...+70 °C / -20...+55 °C |
| Protection category                       | IP 20 PN-EN 60529                                                                                                                                                                                                |
| Environmental protection                  | RTI PN-EN 116000-3                                                                                                                                                                                               |
| Shock / vibration resistance              | 10 g / 5 g 10...500 Hz                                                                                                                                                                                           |

### Connection diagrams

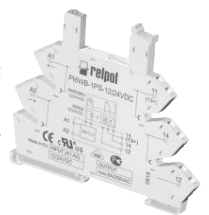


### Dimensions



### Mounting

Relays **PIR6WB-1PS-...** direct mounting on 35 mm rail mount acc. to PN-EN 60715. Range of wires 1 x 0,22...2,5 mm<sup>2</sup> (1 x 24...14 AWG). Rated contactability 1 x 1,5 mm<sup>2</sup> (1 x 16 AWG). Recommended length of the insulated cable 8...9 mm. Interface relay **PIR6WB-1PS-...** consists of: universal socket with electronic **PI6WB-1PS-...** and electromagnetic relay **RM699BV** or solid state relay **RSR30** (see page 196).



**PI6WB-1PS-...**

**PIR6WB-1PS-...** may be linked with interconnection strip type **ZG20** (see pages 193, 194). Description plates of **PI6W-1246** type are offered for **PIR6WB-1PS-...** relays (see pages 193, 194).

### Ordering codes

Ordering codes **PIR6WB-1PS-...** are specified in Table 1, "Interface relay code" column.

### Wire connection

The drawings present the sequence of operations in course of inserting wires to the spring terminal, and the recommended screwdriver to be used for opening of case springs, comply with the DIN 5264 FORM "A".

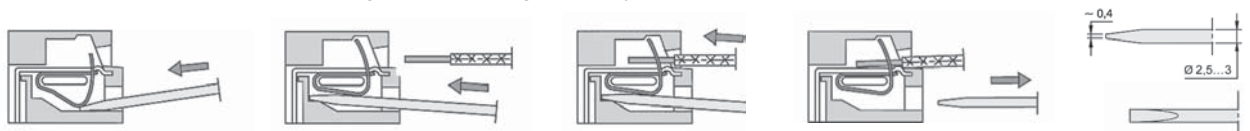


Table of codes

Table 1

| Interface relay code              | Rated input voltage<br>$U_n$ ⑤ | Power of input control circuit | Socket code                | Operational relay code       | Rated voltage of operational relay<br>$U_s$ ⑥ |
|-----------------------------------|--------------------------------|--------------------------------|----------------------------|------------------------------|-----------------------------------------------|
| PIR6WB-1PS-6VDC-R                 | 6 V DC                         | 0,3 W                          | PI6WB-1PS-6VDC             | RM699BV-3011-85-1005         | 5 V DC                                        |
| PIR6WB-1PS-12VDC-R                | 12 V DC                        | 0,2 W                          | PI6WB-1PS-12/24VDC         | RM699BV-3011-85-1012         | 12 V DC                                       |
| <b>PIR6WB-1PS-24VDC-R</b>         | <b>24 V DC</b>                 | <b>0,3 W</b>                   | <b>PI6WB-1PS-12/24VDC</b>  | <b>RM699BV-3011-85-1024</b>  | <b>24 V DC</b>                                |
| PIR6WB-1PS-36VDC-R                | 36 V DC                        | 0,3 W                          | PI6WB-1PS-36VDC            | RM699BV-3011-85-1024         | 24 V DC                                       |
| PIR6WB-1PS-48VDC-R                | 48 V DC                        | 0,4 W                          | PI6WB-1PS-48VDC            | RM699BV-3011-85-1024         | 24 V DC                                       |
| PIR6WB-1PS-60VDC-R                | 60 V DC                        | 0,5 W                          | PI6WB-1PS-60VDC            | RM699BV-3011-85-1024         | 24 V DC                                       |
| <b>PIR6WB-1PS-24VAC/DC-R</b>      | <b>24 V AC/DC</b>              | <b>0,5 VA / 0,4 W</b>          | <b>PI6WB-1PS-24VAC/DC</b>  | <b>RM699BV-3011-85-1012</b>  | <b>12 V DC</b>                                |
| PIR6WB-1PS-42VAC/DC-R             | 42 V AC/DC                     | 0,5 VA / 0,4 W                 | PI6WB-1PS-42VAC/DC         | RM699BV-3011-85-1024         | 24 V DC                                       |
| PIR6WB-1PS-115VAC/DC-R            | 115 V AC/DC                    | 1,2 VA / 1,2 W                 | PI6WB-1PS-115VAC/DC        | RM699BV-3011-85-1024         | 24 V DC                                       |
| <b>PIR6WB-1PS-230VAC/DC-R</b>     | <b>230 V AC/DC</b>             | <b>1,2 VA / 1,2 W</b>          | <b>PI6WB-1PS-230VAC/DC</b> | <b>RM699BV-3011-85-1048</b>  | <b>48 V DC</b>                                |
| PIR6WB-1P-230VAC/DC-10 ④          | 230 V AC/DC                    | 2,1 VA / 1,0 W                 | PI6WB-1P-230VAC/DC-10      | RM699BV-3011-85-1060         | 60 V DC                                       |
| PIR6WB-1PS-6VDC-R01 ⑤             | 6 V DC                         | 0,3 W                          | PI6WB-1PS-6VDC             | RM699BV-3211-85-1005         | 5 V DC                                        |
| PIR6WB-1PS-12VDC-R01 ⑤            | 12 V DC                        | 0,2 W                          | PI6WB-1PS-12/24VDC         | RM699BV-3211-85-1012         | 12 V DC                                       |
| <b>PIR6WB-1PS-24VDC-R01 ⑤</b>     | <b>24 V DC</b>                 | <b>0,3 W</b>                   | <b>PI6WB-1PS-12/24VDC</b>  | <b>RM699BV-3211-85-1024</b>  | <b>24 V DC</b>                                |
| PIR6WB-1PS-36VDC-R01 ⑤            | 36 V DC                        | 0,3 W                          | PI6WB-1PS-36VDC            | RM699BV-3211-85-1024         | 24 V DC                                       |
| PIR6WB-1PS-48VDC-R01 ⑤            | 48 V DC                        | 0,4 W                          | PI6WB-1PS-48VDC            | RM699BV-3211-85-1024         | 24 V DC                                       |
| PIR6WB-1PS-60VDC-R01 ⑤            | 60 V DC                        | 0,5 W                          | PI6WB-1PS-60VDC            | RM699BV-3211-85-1024         | 24 V DC                                       |
| <b>PIR6WB-1PS-24VAC/DC-R01 ⑤</b>  | <b>24 V AC/DC</b>              | <b>0,5 VA / 0,4 W</b>          | <b>PI6WB-1PS-24VAC/DC</b>  | <b>RM699BV-3211-85-1012</b>  | <b>12 V DC</b>                                |
| PIR6WB-1PS-42VAC/DC-R01 ⑤         | 42 V AC/DC                     | 0,5 VA / 0,4 W                 | PI6WB-1PS-42VAC/DC         | RM699BV-3211-85-1024         | 24 V DC                                       |
| PIR6WB-1PS-115VAC/DC-R01 ⑤        | 115 V AC/DC                    | 1,2 VA / 1,2 W                 | PI6WB-1PS-115VAC/DC        | RM699BV-3211-85-1024         | 24 V DC                                       |
| <b>PIR6WB-1PS-230VAC/DC-R01 ⑤</b> | <b>230 V AC/DC</b>             | <b>1,2 VA / 1,2 W</b>          | <b>PI6WB-1PS-230VAC/DC</b> | <b>RM699BV-3211-85-1048</b>  | <b>48 V DC</b>                                |
| PIR6WB-1PS-6VDC-T                 | 6 V DC                         | 0,1 W                          | PI6WB-1PS-6VDC             | RSR30-D05-A1-24-020-1        | 5 V DC                                        |
| PIR6WB-1PS-12VDC-T                | 12 V DC                        | 0,2 W                          | PI6WB-1PS-12/24VDC         | RSR30-D12-A1-24-020-1        | 12 V DC                                       |
| <b>PIR6WB-1PS-24VDC-T</b>         | <b>24 V DC</b>                 | <b>0,3 W</b>                   | <b>PI6WB-1PS-12/24VDC</b>  | <b>RSR30-D24-A1-24-020-1</b> | <b>24 V DC</b>                                |
| PIR6WB-1PS-36VDC-T                | 36 V DC                        | 0,3 W                          | PI6WB-1PS-36VDC            | RSR30-D24-A1-24-020-1        | 24 V DC                                       |
| PIR6WB-1PS-48VDC-T                | 48 V DC                        | 0,4 W                          | PI6WB-1PS-48VDC            | RSR30-D24-A1-24-020-1        | 24 V DC                                       |
| PIR6WB-1PS-60VDC-T                | 60 V DC                        | 0,5 W                          | PI6WB-1PS-60VDC            | RSR30-D24-A1-24-020-1        | 24 V DC                                       |
| <b>PIR6WB-1PS-24VAC/DC-T</b>      | <b>24 V AC/DC</b>              | <b>0,5 VA / 0,4 W</b>          | <b>PI6WB-1PS-24VAC/DC</b>  | <b>RSR30-D12-A1-24-020-1</b> | <b>12 V DC</b>                                |
| PIR6WB-1PS-42VAC/DC-T             | 42 V AC/DC                     | 0,5 VA / 0,4 W                 | PI6WB-1PS-42VAC/DC         | RSR30-D24-A1-24-020-1        | 24 V DC                                       |
| PIR6WB-1PS-115VAC/DC-T            | 115 V AC/DC                    | 1,0 VA / 1,0 W                 | PI6WB-1PS-115VAC/DC        | RSR30-D24-A1-24-020-1        | 24 V DC                                       |
| PIR6WB-1PS-6VDC-C                 | 6 V DC                         | 0,1 W                          | PI6WB-1PS-6VDC             | RSR30-D05-D1-04-025-1        | 5 V DC                                        |
| PIR6WB-1PS-12VDC-C                | 12 V DC                        | 0,2 W                          | PI6WB-1PS-12/24VDC         | RSR30-D12-D1-04-025-1        | 12 V DC                                       |
| <b>PIR6WB-1PS-24VDC-C</b>         | <b>24 V DC</b>                 | <b>0,3 W</b>                   | <b>PI6WB-1PS-12/24VDC</b>  | <b>RSR30-D24-D1-04-025-1</b> | <b>24 V DC</b>                                |
| PIR6WB-1PS-36VDC-C                | 36 V DC                        | 0,3 W                          | PI6WB-1PS-36VDC            | RSR30-D24-D1-04-025-1        | 24 V DC                                       |
| PIR6WB-1PS-48VDC-C                | 48 V DC                        | 0,4 W                          | PI6WB-1PS-48VDC            | RSR30-D24-D1-04-025-1        | 24 V DC                                       |
| PIR6WB-1PS-60VDC-C                | 60 V DC                        | 0,5 W                          | PI6WB-1PS-60VDC            | RSR30-D24-D1-04-025-1        | 24 V DC                                       |
| <b>PIR6WB-1PS-24VAC/DC-C</b>      | <b>24 V AC/DC</b>              | <b>0,5 VA / 0,4 W</b>          | <b>PI6WB-1PS-24VAC/DC</b>  | <b>RSR30-D12-D1-04-025-1</b> | <b>12 V DC</b>                                |
| PIR6WB-1PS-42VAC/DC-C             | 42 V AC/DC                     | 0,5 VA / 0,4 W                 | PI6WB-1PS-42VAC/DC         | RSR30-D24-D1-04-025-1        | 24 V DC                                       |
| PIR6WB-1PS-115VAC/DC-C            | 115 V AC/DC                    | 1,0 VA / 1,0 W                 | PI6WB-1PS-115VAC/DC        | RSR30-D24-D1-04-025-1        | 24 V DC                                       |
| <b>PIR6WB-1PS-230VAC/DC-C</b>     | <b>230 V AC/DC</b>             | <b>1,0 VA / 1,0 W</b>          | <b>PI6WB-1PS-230VAC/DC</b> | <b>RSR30-D48-D1-04-025-1</b> | <b>48 V DC</b>                                |
| PIR6WB-1PS-6VDC-O                 | 6 V DC                         | 0,1 W                          | PI6WB-1PS-6VDC             | RSR30-D05-D1-02-040-1        | 5 V DC                                        |
| PIR6WB-1PS-12VDC-O                | 12 V DC                        | 0,2 W                          | PI6WB-1PS-12/24VDC         | RSR30-D12-D1-02-040-1        | 12 V DC                                       |
| <b>PIR6WB-1PS-24VDC-O</b>         | <b>24 V DC</b>                 | <b>0,3 W</b>                   | <b>PI6WB-1PS-12/24VDC</b>  | <b>RSR30-D24-D1-02-040-1</b> | <b>24 V DC</b>                                |
| PIR6WB-1PS-36VDC-O                | 36 V DC                        | 0,3 W                          | PI6WB-1PS-36VDC            | RSR30-D24-D1-02-040-1        | 24 V DC                                       |
| PIR6WB-1PS-48VDC-O                | 48 V DC                        | 0,4 W                          | PI6WB-1PS-48VDC            | RSR30-D24-D1-02-040-1        | 24 V DC                                       |
| PIR6WB-1PS-60VDC-O                | 60 V DC                        | 0,5 W                          | PI6WB-1PS-60VDC            | RSR30-D24-D1-02-040-1        | 24 V DC                                       |
| <b>PIR6WB-1PS-24VAC/DC-O</b>      | <b>24 V AC/DC</b>              | <b>0,5 VA / 0,4 W</b>          | <b>PI6WB-1PS-24VAC/DC</b>  | <b>RSR30-D12-D1-02-040-1</b> | <b>12 V DC</b>                                |
| PIR6WB-1PS-42VAC/DC-O             | 42 V AC/DC                     | 0,5 VA / 0,4 W                 | PI6WB-1PS-42VAC/DC         | RSR30-D24-D1-02-040-1        | 24 V DC                                       |
| PIR6WB-1PS-115VAC/DC-O            | 115 V AC/DC                    | 1,0 VA / 1,0 W                 | PI6WB-1PS-115VAC/DC        | RSR30-D24-D1-02-040-1        | 24 V DC                                       |
| <b>PIR6WB-1PS-230VAC/DC-O</b>     | <b>230 V AC/DC</b>             | <b>1,0 VA / 1,0 W</b>          | <b>PI6WB-1PS-230VAC/DC</b> | <b>RSR30-D48-D1-02-040-1</b> | <b>48 V DC</b>                                |

The data in bold type pertain to the standard versions of the relays. ④ Version for long lines (max. 300 m), with anti-interference filter. ⑤ It shall be remarked that rated input voltage of the operational relay  $U_s$  not always complies with the rated input voltage  $U_n$  (which is important on ordering operational relays for sockets).



- Socket **PI6W-1P** without electronic
- Co-operate with relays: **RM699BV** - electromagnetic, **RSR30** - solid state **1**
- The input voltage complies with the voltage of the operational relay applied
- 35 mm rail mount acc. to PN-EN 60715
- May be linked with interconnection strip type **ZG20**
- Accessories: description plates **PI6W-1246**
- Recognitions, certifications, directives:    



## Output circuit

|                                       |                                            |
|---------------------------------------|--------------------------------------------|
| Number and type of contacts / outputs | 1 C/O, 1 NO depending on the relay applied |
| Max. voltage                          | AC/DC 250 V / –                            |
| Max. load                             | AC1 6 A / 250 V AC                         |
| Rated current                         | 6 A                                        |

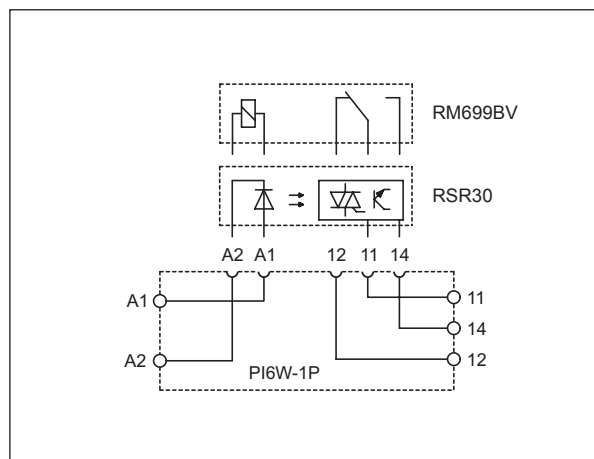
## Insulation according to PN-EN 60664-1

|                             |                                                                                                                                                                                                            |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Insulation rated voltage    | 250 V AC                                                                                                                                                                                                   |
| Rated surge voltage         | 4 000 V 1,2 / 50 $\mu$ s                                                                                                                                                                                   |
| Overvoltage category        | III                                                                                                                                                                                                        |
| Insulation pollution degree | 3                                                                                                                                                                                                          |
| Dielectric strength         | <ul style="list-style-type: none"> <li>• input - output 4 000 V AC 50/60 Hz, 1 min., type of insulation: reinforced</li> <li>• input - output 6 000 V 1,2 / 50 <math>\mu</math>s, surge voltage</li> </ul> |
| Input - output distance     |                                                                                                                                                                                                            |
| • clearance \ creepage      | $\geq 6$ mm \ $\geq 8$ mm                                                                                                                                                                                  |

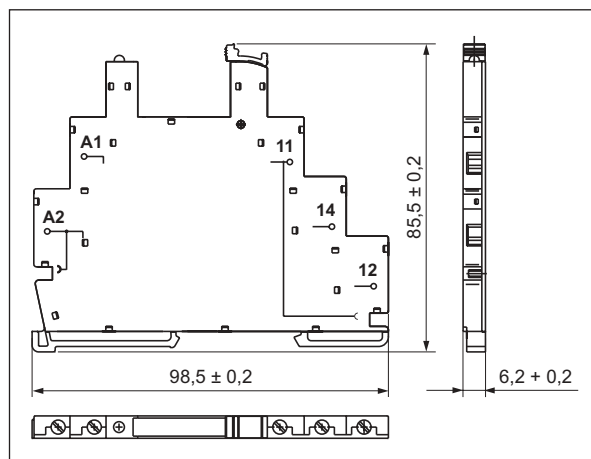
## General data

|                          |                                                                                                                                     |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions (L x W x H)   | 98,5 x 6,2 x 85,5 mm                                                                                                                |
| Weight                   | 40 g                                                                                                                                |
| Ambient temperature      | <ul style="list-style-type: none"> <li>• storage -40...+70 °C</li> <li>• operating -40...+55 °C -40...+60 °C 12, 24 V DC</li> </ul> |
| Protection category      | IP 20 PN-EN 60529                                                                                                                   |
| Environmental protection | RTI PN-EN 116000-3                                                                                                                  |

## Connection diagram



## Dimensions



## Ordering codes

Ordering codes: **PI6W-1P**.

## Mounting

Sockets **PI6W-1P** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated contactability 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,3 Nm.

**PI6W-1P** may be linked with interconnection strip type **ZG20** (see pages 193, 194). Description plates of **PI6W-1246** type are offered for **PI6W-1P** sockets (see pages 193, 194).

## Installation relays

MT-PI... ..... 203



NEW!!! Electromagnetic relays of MT-PI... series in installation module cover, designed for 35 mm rail mount acc. to PN-EN 60715.

The relays are recognized and certified by: .  
They meet the requirements of RoHS Directive.



• Installation relays - electromagnetic • Cadmium - free contacts • AC, DC and AC/DC coils • Cover - installation module, width 17,5 mm • Application areas: automatic systems in buildings - in cooperation with control timers, switches, control switches; electric systems; industrial automation and power engineering automation; switchgears of modular equipment • Possibility to control circuits and receivers of the load of AC1 up to 16 A / 250 V (1 C/O, 1 NO versions) • Possibility of doubling of the transmitted signals (2 C/O, 2 NO versions) • Green LED to inform about the status of the relays ( $U_n$  operation) • Recognitions, certifications, directives: **CE**

### Contact data

|                             |     |                     |                |
|-----------------------------|-----|---------------------|----------------|
| Number and type of contacts |     | 1 C/O, 1 NO         | 2 C/O, 2 NO    |
| Contact material            |     | <b>AgNi</b>         |                |
| Max. switching voltage      |     | 400 V AC / 300 V DC |                |
| Min. switching voltage      |     | 5 V                 |                |
| Rated load                  | AC1 | 16 A / 250 V AC     | 8 A / 250 V AC |
|                             | DC1 | 16 A / 24 V DC      | 8 A / 24 V DC  |
| Min. switching current      |     | 5 mA                |                |
| Max. inrush current         |     | 30 A <sup>①</sup>   | 15 A           |
| Rated current               |     | 16 A                | 8 A            |
| Max. breaking capacity      | AC1 | 4 000 VA            | 2 000 VA       |
| Min. breaking capacity      |     | 0,3 W               |                |
| Contact resistance          |     | ≤ 100 mΩ            |                |
| Max. operating frequency    |     |                     |                |
| • at rated load             | AC1 | 600 cycles/hour     |                |
| • no load                   |     | 72 000 cycles/hour  |                |

### Coil data

|                                   |                         |                               |                                                                   |
|-----------------------------------|-------------------------|-------------------------------|-------------------------------------------------------------------|
| Rated voltage                     | • versions 1 C/O, 2 C/O | 50/60 Hz AC                   | 115 ... 230 V                                                     |
|                                   |                         | DC                            | 12 ... 48 V                                                       |
|                                   | • versions 1 NO, 2 NO   | 50 Hz AC                      | 230 V                                                             |
|                                   |                         | AC: 50 Hz AC/DC               | 12 ... 115 V                                                      |
| Must release voltage              |                         | AC: ≥ 0,15 $U_n$              | DC: ≥ 0,05 $U_n$                                                  |
| Operating range of supply voltage |                         | 0,85...1,1 $U_n$ AC: 50/60 Hz | see Tables 1, 2, 3, 4                                             |
| Rated power                       | • versions 1 C/O, 2 C/O | AC                            | ≤ 1,0 VA 115 V AC, 230 V AC, AC: 50 Hz                            |
|                                   |                         | DC                            | ≤ 0,5 W 12 V DC                                                   |
| consumption                       |                         | DC                            | ≤ 0,65 W 24 V DC, 48 V DC                                         |
|                                   | • versions 1 NO, 2 NO   | AC                            | ≤ 0,5 VA 230 V AC, AC: 50 Hz                                      |
|                                   |                         | AC/DC                         | ≤ 0,75 VA / 0,75 W 12 V AC/DC, AC: 50 Hz                          |
|                                   |                         | AC/DC                         | ≤ 0,65 VA / 0,65 W 24 V AC/DC, 48 V AC/DC, 115 V AC/DC, AC: 50 Hz |

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

|                             |                             |                                                        |
|-----------------------------|-----------------------------|--------------------------------------------------------|
| Insulation rated voltage    |                             | 250 V AC                                               |
| Rated surge voltage         |                             | 4 000 V 1,2 / 50 μs                                    |
| Overvoltage category        |                             | II                                                     |
| Insulation pollution degree |                             | 1                                                      |
| Flammability degree         |                             | contact plate: V-0 cover: V-1 UL94                     |
| Dielectric strength         | • between coil and contacts | 3 000 V AC                                             |
|                             |                             | 4 000 V AC                                             |
|                             | • contact clearance         | 1 000 V AC                                             |
|                             | • pole - pole               | 2 000 V AC                                             |
|                             |                             | 2 500 V AC                                             |
|                             |                             | contacts 1 C/O and 2 C/O, type of insulation: basic    |
|                             |                             | contacts 1 NO and 2 NO, type of insulation: reinforced |
|                             |                             | type of clearance: micro-disconnection                 |
|                             |                             | contacts 2 C/O, type of insulation: basic              |
|                             |                             | contacts 2 NO, type of insulation: basic               |

### General data

|                                           |             |                                  |
|-------------------------------------------|-------------|----------------------------------|
| Operating / release time (typical values) |             | 15 ms / 20 ms                    |
| Mechanical life (cycles)                  |             | ≥ 10 <sup>7</sup>                |
| Dimensions (L x W x H)                    |             | 90 <sup>②</sup> x 17,5 x 63,5 mm |
| Weight                                    |             | 60 g                             |
|                                           |             | 65 g                             |
| Ambient temperature                       | • storage   | -40...+70 °C                     |
|                                           | • operating | -20...+45 °C                     |
| Cover protection category                 |             | IP 20 PN-EN 60529                |
| Relative humidity                         |             | up to 90%                        |
| Shock resistance                          |             | 15 g                             |
| Vibration resistance                      | (NO/NC)     | 9 g / 5 g 10...150 Hz            |

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

<sup>①</sup> UL only for 15 A.

<sup>②</sup> Length with 35 mm rail taps: 98,8 mm.

**Coil data - DC voltage version (contacts 1 C/O, 2 C/O)**

Table 1

| Coil code | Rated voltage<br>V DC | Coil operating range<br>V DC |                | Power consumption<br>mW |
|-----------|-----------------------|------------------------------|----------------|-------------------------|
|           |                       | min. (at 20°C)               | max. (at 55°C) |                         |
| 1012      | 12                    | 10,2                         | 13,2           | 500                     |
| 1024      | 24                    | 20,4                         | 26,4           | 650                     |
| 1048      | 48                    | 40,8                         | 52,8           | 650                     |

**Coil data - AC 50/60 Hz voltage version (contacts 1 C/O, 2 C/O)**

Table 2

| Coil code | Rated voltage<br>V AC | Coil operating range<br>V AC |                | Power consumption<br>mVA<br>(AC: 50 Hz) |
|-----------|-----------------------|------------------------------|----------------|-----------------------------------------|
|           |                       | min. (at 20°C)               | max. (at 55°C) |                                         |
| 3115      | 115                   | 97,8                         | 126,5          | 1 000                                   |
| 3230      | 230                   | 195,5                        | 253,0          | 1 000                                   |

**Coil data - AC 50 Hz voltage version (contacts 1 NO, 2 NO)**

Table 3

| Coil code | Rated voltage<br>V AC | Coil operating range<br>V AC |                | Power consumption<br>mVA<br>(AC: 50 Hz) |
|-----------|-----------------------|------------------------------|----------------|-----------------------------------------|
|           |                       | min. (at 20°C)               | max. (at 55°C) |                                         |
| 9024 ③    | 230 ③                 | 195,5                        | 253,0          | 500                                     |

③ Selection of supply voltage via wires connection: 24 V AC/DC - to the terminals A1-A2; 230 V AC - to the terminals A1-A3.

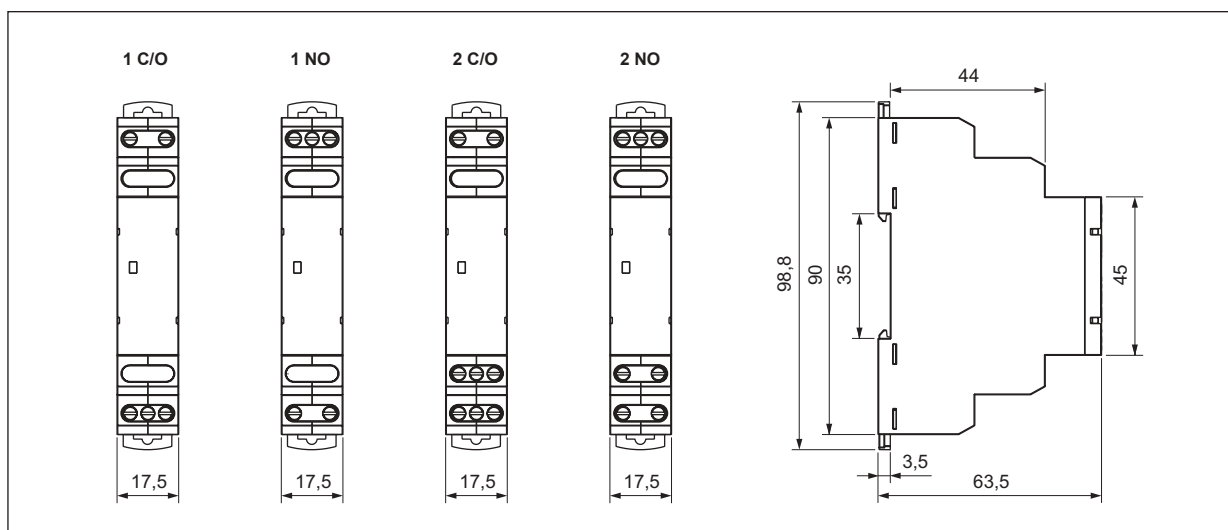
**Coil data - AC/DC 50 Hz voltage version (contacts 1 NO, 2 NO)**

Table 4

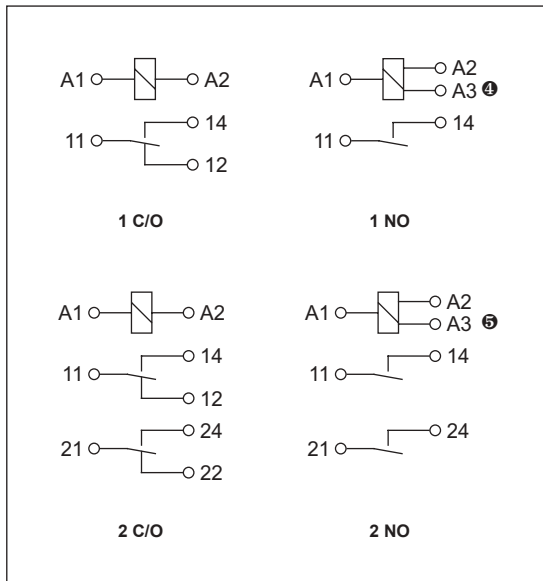
| Coil code | Rated voltage<br>V AC/DC | Coil operating range<br>V AC/DC |                | Power consumption<br>mVA / mW<br>(AC: 50 Hz) |
|-----------|--------------------------|---------------------------------|----------------|----------------------------------------------|
|           |                          | min. (at 20°C)                  | max. (at 55°C) |                                              |
| 8012      | 12                       | 10,2                            | 13,2           | 750 / 750                                    |
| 9024 ③    | 24 ③                     | 20,4                            | 26,4           | 650 / 650                                    |
| 8048      | 48                       | 40,8                            | 52,8           | 650 / 650                                    |
| 8115      | 115                      | 97,8                            | 126,5          | 650 / 650                                    |

③ Selection of supply voltage via wires connection: 24 V AC/DC - to the terminals A1-A2; 230 V AC - to the terminals A1-A3.

## Dimensions



## Connection diagrams



## Table of codes

Table 5

| Installation relay code |                     | Rated coil voltage           |
|-------------------------|---------------------|------------------------------|
| MT-PI-17S-11-1012       | MT-PI-17S-12-1012   | 12 V DC                      |
| MT-PI-17S-11-1024       | MT-PI-17S-12-1024   | 24 V DC                      |
| MT-PI-17S-11-1048       | MT-PI-17S-12-1048   | 48 V DC                      |
| MT-PI-17S-11-3115       | MT-PI-17S-12-3115   | 115 V AC 50 Hz               |
| MT-PI-17S-11-3230       | MT-PI-17S-12-3230   | 230 V AC 50 Hz               |
| MT-PI-17S-21-8012       | MT-PI-17S-22-8012   | 12 V AC/DC                   |
| MT-PI-17S-21-8048       | MT-PI-17S-22-8048   | 48 V AC/DC                   |
| MT-PI-17S-21-8115       | MT-PI-17S-22-8115   | 115 V AC/DC                  |
| MT-PI-17S-21-9024 ③     | MT-PI-17S-22-9024 ③ | 24 V AC/DC<br>230 V AC 50 Hz |

③ Selection of supply voltage via wires connection:  
24 V AC/DC - to the terminals A1-A2; 230 V AC - to the terminals A1-A3.

④ Only version MT-PI-17S-21-9024.

⑤ Only version MT-PI-17S-22-9024.

## Mounting

Relays **MT-PI-...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. Maximum size of wires  $1 \times 2,5 \text{ mm}^2$  (1 x 14 AWG). Rated cross-sectional area of conductors  $2 \times 1,5 \text{ mm}^2$  (2 x 16 AWG). Maximum screw torque: 0,6 Nm.

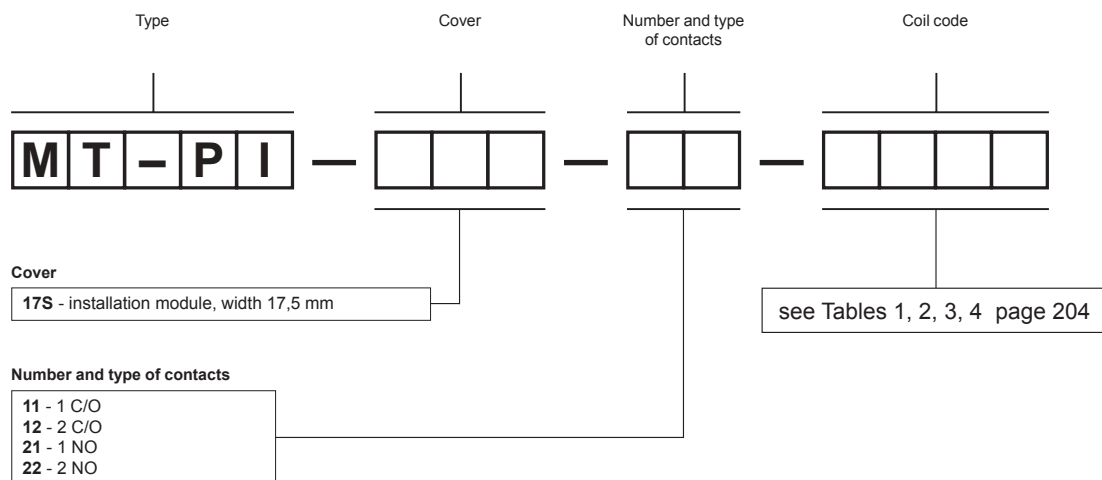


**Two taps:**  
easy assembly on 35 mm rail,  
firm tapping (top and bottom).



**Green LED:**  
signalling the operation  
status of the relay.

## Ordering codes ⑥



Example of ordering code ⑥:

**MT-PI-17S-22-9024** relay **MT-PI-...**, cover - installation module, width 17,5 mm, with two normally open contacts, voltage version 230 V AC 50 Hz or 24 V AC/DC 50 Hz ③, contact material AgNi

⑥ Ordering codes **MT-PI-...** are specified in Table 5, "Installation relay code" column.

| Time relays                      |     |
|----------------------------------|-----|
| MT-TUA-.....                     | 207 |
| MT-TUB-.....                     | 210 |
| MT-T.-.....                      | 213 |
| MT-TSD-.....                     | 216 |
| TR4N 4 C/O .....                 | 219 |
| TR4N 1 C/O, 2 C/O .....          | 222 |
| T-R4 .....                       | 225 |
| PIR15...T with module T(COM3) .. | 229 |
| Time functions                   |     |
| TR4N, T-R4, PIR15...T .....      | 233 |



Multifunction and single-function universal time relays for power-generation and industrial automation.

TR4N, T-R4, PIR15...T time relays are universal and highly reliable components of electrical systems in power-generation and industrial automation. They are also used in other electrical applications. They perform various time functions with high precision in systems. They are distinguished by their high switching capacity, long mechanical and electrical life. They are highly resistant to atmospheric conditions. They meet the requirements of electromagnetic compatibility.

TR4N relays are available with 1, 2 or 4 changeover contacts. They have compact cover. They are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715.

T-R4 relays have 4 changeover contacts. They shall be mounted in plug-in sockets of GZM4 or GZT4 types which should be designed for 35 mm rail mount or on panel mounting.

PIR15...T relays are available with 2 or 3 changeover contacts. They are composed of R15 relay with GZP. plug-in socket, time module T(COM3), GZP-0054 clip to fix the R15 relay and GZP-0035 description plate.

NEW!!! Time relays of MT-T.-... series in installation module cover, designed for 35 mm rail mount acc. to PN-EN 60715.

The relays are recognized and certified by:   ; certification pending:     
 They meet the requirements of RoHS Directive.



- **Multifunction time relay (10 time functions; 8 time ranges)**
- Cadmium - free contacts • AC/DC input voltages
- Cover - installation module, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to PN-EN 60715
- Application: in low-voltage systems
- Compliance with standard PN-EN 61812-1
- Recognitions, certifications, directives:

## Output circuit - contact data

|                             |                     |
|-----------------------------|---------------------|
| Number and type of contacts | 1 C/O               |
| Contact material            | AgNi                |
| Max. switching voltage      | 400 V AC / 300 V DC |
| Rated load                  | AC1 10 A / 250 V AC |
|                             | DC1 10 A / 24 V DC  |
| Max. load                   | AC1 16 A / 250 V AC |
| Rated current               | 10 A / 250 V AC     |
| Min. breaking capacity      | 0,3 W 5 V, 5 mA     |
| Contact resistance          | ≤ 100 mΩ            |
| Max. operating frequency    |                     |
| • at rated load             | 600 cycles/hour     |

## Input control circuit

|                                   |                    |                                                                  |                         |
|-----------------------------------|--------------------|------------------------------------------------------------------|-------------------------|
| Rated voltage                     | AC: 50/60 Hz AC/DC | 12...240 V                                                       | terminals (+)A1 – (-)A2 |
| Operating range of supply voltage |                    | 0,9...1,1 U <sub>n</sub>                                         |                         |
| Rated power consumption           | AC                 | ≤ 4,5 VA AC: 50 Hz                                               |                         |
|                                   | DC                 | ≤ 1,5 W                                                          |                         |
| Range of supply frequency         | AC                 | 48...63 Hz                                                       |                         |
| <b>Control contact S ①</b>        |                    |                                                                  |                         |
| • control voltage                 |                    | rated supply voltage U <sub>n</sub> (between terminals S and A2) |                         |
| • min. voltage ②                  |                    | 0,7 U <sub>n</sub>                                               |                         |
| • min. time of pulse duration ②   |                    | AC: ≥ 50 ms                                                      | DC: ≥ 20 ms             |

## 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        | II                                     |
| Insulation pollution degree | 1                                      |
| Flammability degree         | V-0 UL94                               |
| Dielectric strength         | input - output 2 500 V AC              |
|                             | contact clearance 1 000 V AC           |
|                             | type of insulation: basic              |
|                             | type of clearance: micro-disconnection |

## General data

|                                 |                 |                              |                |
|---------------------------------|-----------------|------------------------------|----------------|
| Electrical life                 | • resistive AC1 | ≥ 0,5 x 10 <sup>5</sup>      | 10 A, 250 V AC |
| Mechanical life (cycles)        |                 | ≥ 3 x 10 <sup>7</sup>        |                |
| Dimensions (L x W x H) / Weight |                 | 90 ③ x 17,5 x 63,5 mm / 64 g |                |
| Ambient temperature             | • storage       | -40...+70 °C                 |                |
|                                 | • operating     | -20...+45 °C                 |                |
| Cover protection category       |                 | IP 20                        | PN-EN 60529    |
| Relative humidity               |                 | up to 85%                    |                |
| Shock / vibration resistance    |                 | 15 g / 0,35 mm               | 10...55 Hz     |

## Time module data

|                                        |                                                    |
|----------------------------------------|----------------------------------------------------|
| Functions                              | E, Wu, Bp, Bi, T, R, Ws, Wa, Esa, B                |
|                                        | permanent switching ON and OFF                     |
| Time ranges                            | 1 s ④; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d |
| Timing adjustment                      | smooth - (0,1...1) x time range                    |
| Setting accuracy                       | ± 5% ⑤ ④                                           |
| Repeatability                          | ± 0,5% ④                                           |
| Values affecting the timing adjustment | • temperature ± 0,05% / °C                         |
|                                        | • humidity ± 0,05% / %HR                           |
| Recovery time                          | ≤ 50 ms                                            |
| LED indicator                          | green LED U ON - indication of supply voltage U    |
|                                        | green LED U flashing - measurement of T time       |
|                                        | yellow LED R ON/OFF - output relay status          |

① Control contact S is activated by connecting it to A1 terminal. ② Where the control signal is recognizable. ③ Length with 35 mm rail taps: 98,8 mm. ④ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ⑤ Calculated from the final range values, for the setting direction from minimum to maximum.

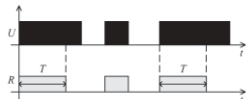
## Time functions

### E - ON Delay



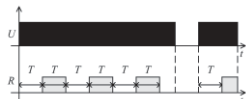
After the supply voltage U has been switched on, the set time T is being measured. After the T time has lapsed, the R operating relay shall start operating and remains in operating position until the supply voltage U is switched off.

### Wu - Single shot leading edge voltage controlled



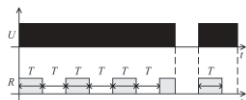
After the supply voltage U has been switched on, the operating relay R starts immediately and the set time T is being measured. After the set time T has lapsed, the operating relay R returns to the initial position.

### Bp - Flasher pause first



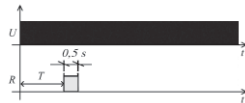
After the supply voltage U has been switched on, the set time T is being measured. After the time has lapsed, the operating relay R starts operating and the T time is being measured again. After the time has lapsed, the operating relay R returns to the initial state, and another cycle of the relay operation commences. The relay operates until the supply voltage is switched off.

### Bi - Flasher pulse first



After the supply voltage U has been switched on, the set time T is being measured and the operation relay R is switched on. After the time has lapsed, the operating relay R starts operating and the T time is being measured again. After the time has lapsed, the operating relay R returns to the initial state, and another cycle of the relay operation commences. The relay operates until the supply voltage is switched off.

### T - generating the 0,5 s pulse after the T time

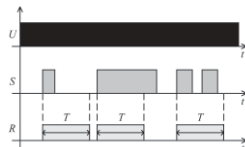


### R - OFF Delay



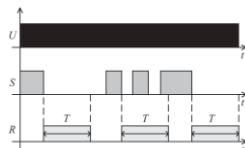
The supply voltage U must be constantly applied to the time relay. After the control contact S has been closed, the operating relay R starts operation immediately. After the control contact S has been opened, the set time T is being measured. After the T time has lapsed, the operating relay R returns to the initial position. When the control contact S is closed again, even before the T time has lapsed, the time measured thus far is reset, and when S is opened, the set time T is being measured again.

### Ws - Single shot leading edge with control contact S



The supply voltage U must be constantly applied to the time relay. After the control contact S has been closed, the operating relay R starts immediately and the set time T is being measured. After the set time T has lapsed, the operating relay R returns to the initial position. In course of measuring the T time, the control contact S may be closed and opened repeatedly with no impact upon the operating relay R. Only after the T time has lapsed, closing S will make the operating relay R operate and the T time will be measured.

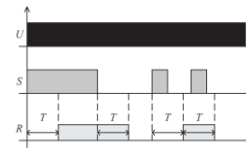
### Wa - Single shot trailing edge with control contact S



The supply voltage U must be constantly applied to the time relay. Closing of the control contact S does

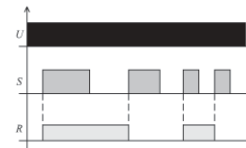
not trigger the measurement of the time delay or operation of the operating relay R. Only opening of the control contact S causes the immediate operation of the operating relay R, and the set time T is being measured. After the T time has lapsed, the operating relay R returns to the initial position. In course of measuring the T time, the control contact S may be closed and opened repeatedly with no impact upon the output relay. Only after the T time has lapsed, closing and opening of S will make the operating relay R operate and the T time will be measured.

### Esa - ON and OFF delay with control contact S



The supply voltage U must be constantly applied to the time relay. After the control contact S has been closed, the set time T is being measured and when it lapses, the operating relay R is switched on. On opening of the control contact S the set time T is measured again, and after the time has lapsed, the operating relay R is switched off. In case the time of closing of the control contact S is shorter than the set time delay T, the operating relay R shall start operation after the set delay has lapsed, and it will continue to operate for the T time. In course of the operation of the R relay, closing of the control contact S does not affect the function.

### B - Bistable relay leading edge with control contact S



Each closing of the control contact S changes the operating relay status to the opposite one (a feature of a bi-stable relay).

### Permanent switching ON and OFF

The functions ON and OFF are selected with TIME potentiometer. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the FUNC potentiometer is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

U - supply voltage; R - output state of the relay; S - control contact state; T - measured time; t - time axis

## Additional functions

**Supply diode:** it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 80% of the time, and off for 20% of the time.

### Adjustment of the set values:

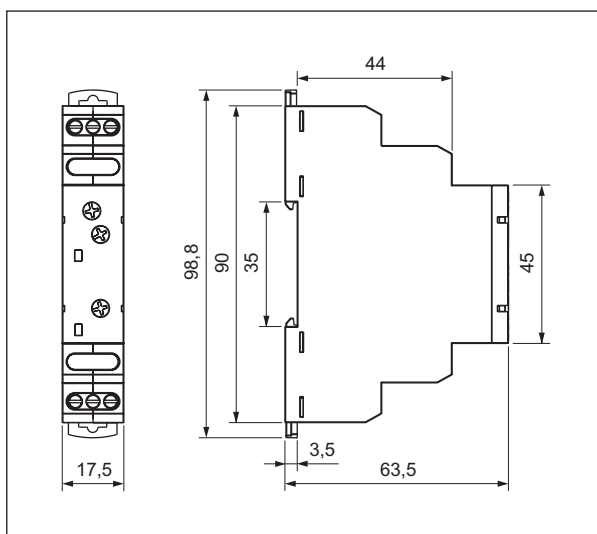
- the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment,

- no change of the function is possible in the course of the relay's operation. Any change of the settings of the relay shall be read only after the supply voltage has been switched off and on again.

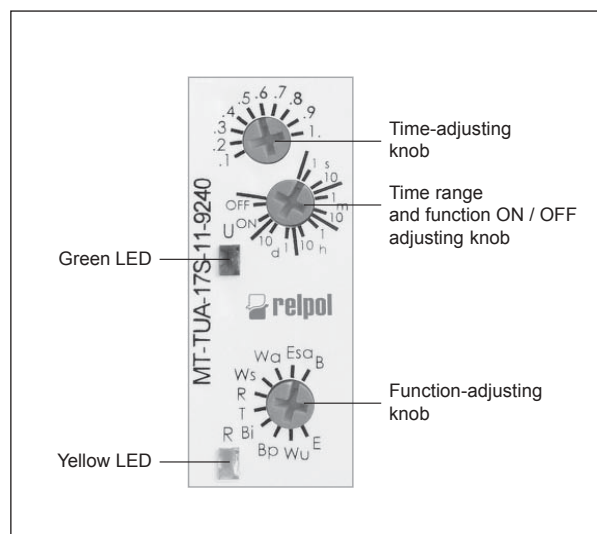
**Release:** depending on the function to be performed, the relay is released with the supply voltage or by connection of the S contact to the A1 line. For DC supply, the positive pole must be connected to the A1 line. The level of the S contact activation is adjusted automatically depending on the supply voltage.

**Supply:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...250 V. A programmed control of the supply voltage has been applied so the processor shall not start operation if the voltage is lower than approximately 10 V. The supply voltage is permanently monitored in course of the operation of the relay. When the voltage drops below 9 V for more than 50 ms, the relay shall be reset. Owing to this, the regeneration time is programmed to 50 ms, and it does not depend on the tolerance of the elements.

## Dimensions



## Front panel description



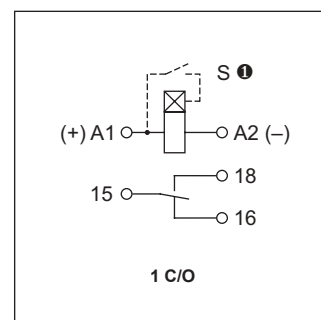
## Mounting

Relays **MT-TUA-...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. Maximum size of wires  $1 \times 2,5 \text{ mm}^2$  (1 x 14 AWG). Rated cross-sectional area of conductors  $2 \times 1,5 \text{ mm}^2$  (2 x 16 AWG). Maximum screw torque: 0,6 Nm.



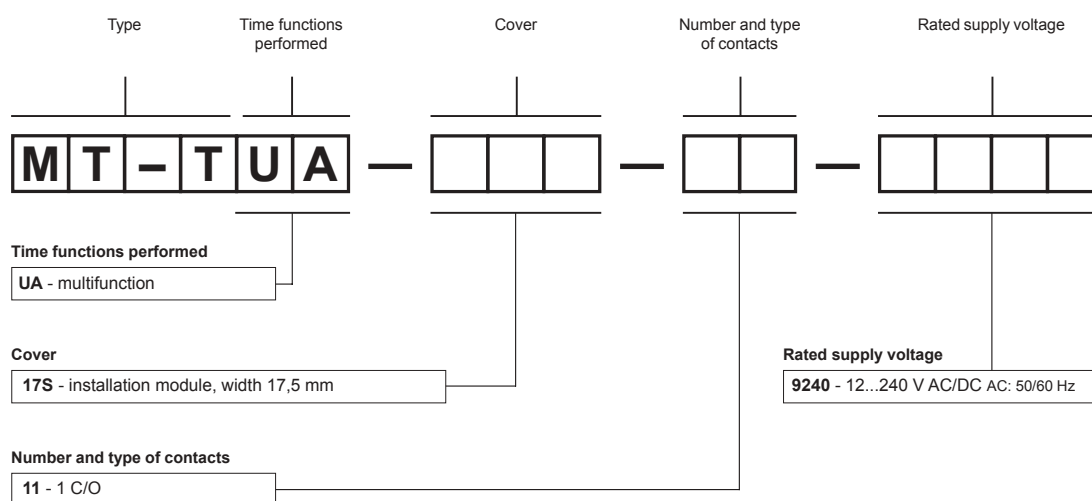
**Two taps:**  
easy assembly on 35 mm rail,  
firm tapping (top and bottom).

## Connection diagram



❶ Control contact S is activated by connecting it to A1 terminal.

## Ordering codes



Example of ordering code:

**MT-TUA-17S-11-9240** time relay **MT-TUA-...**, multifunction (relay perform 10 functions), cover - installation module, width 17,5 mm, with one changeover contact, rated input voltage 12...240 V AC/DC 50/60 Hz, contact material AgNi



- **Multifunction time relay (10 time functions; 8 time ranges)**
- Cadmium - free contacts • AC/DC input voltages
- Cover - installation module, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to PN-EN 60715
- Application: in low-voltage systems
- Compliance with standard PN-EN 61812-1
- Recognitions, certifications, directives:

## Output circuit - contact data

|                                             |                                           |
|---------------------------------------------|-------------------------------------------|
| Number and type of contacts                 | 1 C/O                                     |
| Contact material                            | AgNi                                      |
| Max. switching voltage                      | 400 V AC / 300 V DC                       |
| Rated load                                  | AC1 10 A / 250 V AC<br>DC1 10 A / 24 V DC |
| Max. load                                   | AC1 16 A / 250 V AC                       |
| Rated current                               | 10 A / 250 V AC                           |
| Min. breaking capacity                      | 0,3 W 5 V, 5 mA                           |
| Contact resistance                          | ≤ 100 mΩ                                  |
| Max. operating frequency<br>• at rated load | 600 cycles/hour                           |

## Input control circuit

|                                   |                    |                                                                  |                         |
|-----------------------------------|--------------------|------------------------------------------------------------------|-------------------------|
| Rated voltage                     | AC: 50/60 Hz AC/DC | 12...240 V                                                       | terminals (+)A1 – (-)A2 |
| Operating range of supply voltage |                    | 0,9...1,1 U <sub>n</sub>                                         |                         |
| Rated power consumption           | AC                 | ≤ 4,5 VA AC: 50 Hz                                               |                         |
|                                   | DC                 | ≤ 1,5 W                                                          |                         |
| Range of supply frequency         | AC                 | 48...63 Hz                                                       |                         |
| <b>Control contact S ①</b>        |                    |                                                                  |                         |
| • control voltage                 |                    | rated supply voltage U <sub>n</sub> (between terminals S and A2) |                         |
| • min. voltage ②                  |                    | 0,7 U <sub>n</sub>                                               |                         |
| • min. time of pulse duration ②   |                    | AC: ≥ 50 ms                                                      | DC: ≥ 20 ms             |

## 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        | II                                                                  |
| Insulation pollution degree | 1                                                                   |
| Flammability degree         | V-0 UL94                                                            |
| Dielectric strength         | • input - output 2 500 V AC<br>• contact clearance 1 000 V AC       |
|                             | type of insulation: basic<br>type of clearance: micro-disconnection |

## General data

|                                 |                          |                              |                |
|---------------------------------|--------------------------|------------------------------|----------------|
| Electrical life                 | • resistive AC1          | ≥ 0,5 x 10 <sup>5</sup>      | 10 A, 250 V AC |
| Mechanical life (cycles)        |                          | ≥ 3 x 10 <sup>7</sup>        |                |
| Dimensions (L x W x H) / Weight |                          | 90 ③ x 17,5 x 63,5 mm / 64 g |                |
| Ambient temperature             | • storage<br>• operating | -40...+70 °C<br>-20...+45 °C |                |
| Cover protection category       |                          | IP 20                        | PN-EN 60529    |
| Relative humidity               |                          | up to 85%                    |                |
| Shock / vibration resistance    |                          | 15 g / 0,35 mm               | 10...55 Hz     |

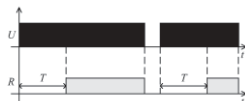
## Time module data

|                                        |                                                                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Functions                              | E, Wu, Bp, Bi, Ra, Esf, Wi, Wst, Est, Esp<br>permanent switching ON and OFF                                                                  |
| Time ranges                            | 1 s ④; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d                                                                                           |
| Timing adjustment                      | smooth - (0,1...1) x time range                                                                                                              |
| Setting accuracy                       | ± 5% ⑤ ④                                                                                                                                     |
| Repeatability                          | ± 0,5% ④                                                                                                                                     |
| Values affecting the timing adjustment | • temperature ± 0,05% / °C<br>• humidity ± 0,05% / %HR                                                                                       |
| Recovery time                          | ≤ 50 ms                                                                                                                                      |
| LED indicator                          | green LED U ON - indication of supply voltage U<br>green LED U flashing - measurement of T time<br>yellow LED R ON/OFF - output relay status |

① Control contact S is activated by connecting it to A1 terminal. ② Where the control signal is recognizable. ③ Length with 35 mm rail taps: 98,8 mm. ④ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ⑤ Calculated from the final range values, for the setting direction from minimum to maximum.

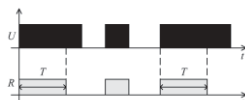
## Time functions

### E - ON Delay



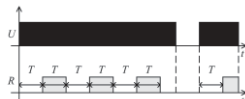
After the supply voltage U has been switched on, the set time T is being measured. After the T time has lapsed, the R operating relay shall start operating and remains in operating position until the supply voltage U is switched off.

### Wu - Single shot leading edge voltage controlled



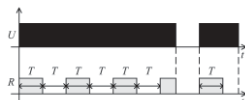
After the supply voltage U has been switched on, the operating relay R starts immediately and the set time T is being measured. After the set time T has lapsed, the operating relay R returns to the initial position.

### Bp - Flasher pause first



After the supply voltage U has been switched on, the set time T is being measured. After the time has lapsed, the operating relay R starts operating and the T time is being measured again. After the time has lapsed, the operating relay R returns to the initial state, and another cycle of the relay operation commences. The relay operates until the supply voltage is switched off.

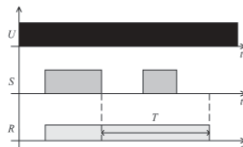
### Bi - Flasher pulse first



After the supply voltage U has been switched on, the set time T is being measured and the operation relay R is switched on. After the time has lapsed, the operating relay R starts operating and the T time is being measured again. After the time has lapsed, the operating relay R returns to the initial state, and another cycle of the relay operation commences. The relay operates until the supply voltage is switched off.

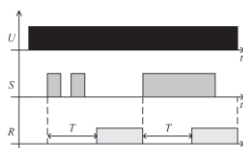
U - supply voltage;  
R - output state of the relay;  
S - control contact state;  
T - measured time; t - time axis

### Ra - Off delay without restart



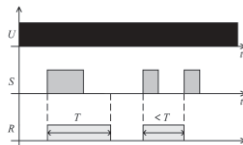
The supply voltage U must be constantly applied to the device. When the control contact S is closed, the output relay R switches into on-position. If the contact S is opened, the set interval T begins. After the interval T has expired the output relay switches into off-position. During the interval, the control contact S can be operated any number of times. A further cycle can only be started when a cycle run has been completed.

### Esf - ON delay with control contact S without restart



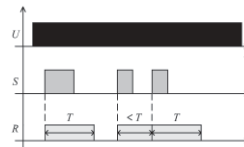
The supply voltage U must be constantly applied to the device. When the control contact S is closed, the set interval T begins and the output relay R switches into off-position. After the interval T has expired the output relay R switches into on-position. During the interval, the control contact can be operated any number of times. A further cycle can only be started when the cycle run has been completed.

### Wi - Impulse switch mode with off delay



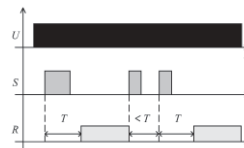
In this mode, every keypress toggles the output relay R. After the pushbutton at S has been pressed, the output relay R closes and the interval T begins. After the interval T has expired the output relay R switches into off position. If the pushbutton is pressed again before the interval T has expired, the interval T will be canceled and the output relay R switches into off-position.

### Wst - Single shot leading edge with restart



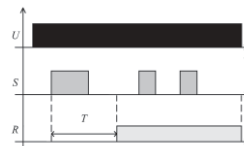
The supply voltage U must be constantly applied to the device. When the control contact S is closed, the output relay R switches into on-position and the set interval T begins. After the interval T has expired the output relay switches into off-position. If the control contact S is closed again before the interval T has expired, the interval is erased and restarted with the next cycle.

### Est - ON delay with control contact S and restart



After the voltage has been applied, prior to the start of the first operation cycle, the relay R remains in the off-position. When the control contact S is closed, the set interval T begins and the output relay R switches into off-position. After the interval T has expired the output relay R switches into on-position and remains in this state till the next instance of closing of the S contact or till the supply fades away. During the interval, each leading edge restarts the cycle.

### Esp - ON delay single cycle with control contact S



The supply voltage U must be constantly applied to the device. When the control contact S is closed, the set interval T begins. After the interval T has expired the output relay R switches into on-position and following instances of closing the control contact S are ignored. To restart the function, the supply voltage must be interrupted and reapplied.

### Permanent switching ON and OFF

The functions ON and OFF are selected with TIME potentiometer. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the FUNC potentiometer is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

## Additional functions

**Supply diode:** it is lit permanently when the time is not being measured. In course of the T time measurement, it flashes at 500 ms period where it is lit for 80% of the time, and off for 20% of the time.

### Adjustment of the set values:

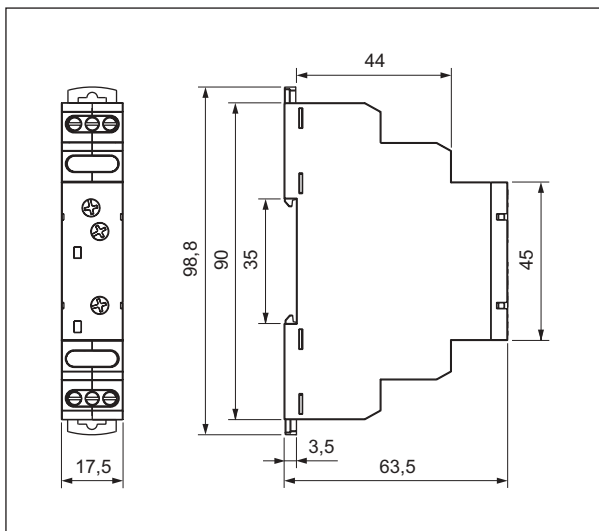
- the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment,

- no change of the function is possible in the course of the relay's operation. Any change of the settings of the relay shall be read only after the supply voltage has been switched off and on again.

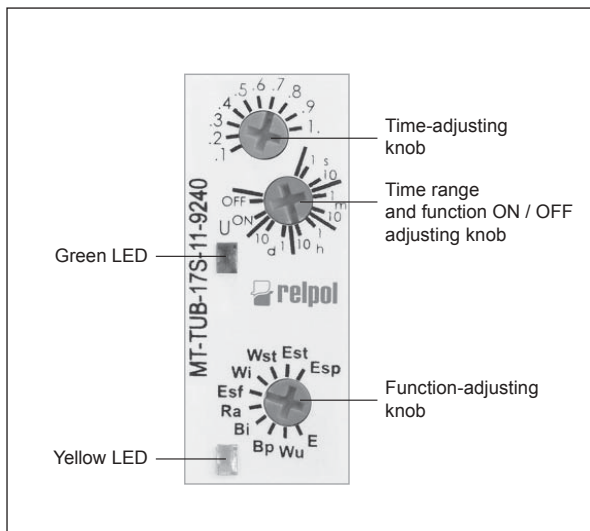
**Release:** depending on the function to be performed, the relay is released with the supply voltage or by connection of the S contact to the A1 line. For DC supply, the positive pole must be connected to the A1 line. The level of the S contact activation is adjusted automatically depending on the supply voltage.

**Supply:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10.8...250 V. A programmed control of the supply voltage has been applied so the processor shall not start operation if the voltage is lower than approximately 10 V. The supply voltage is permanently monitored in course of the operation of the relay. When the voltage drops below 9 V for more than 50 ms, the relay shall be reset. Owing to this, the regeneration time is programmed to 50 ms, and it does not depend on the tolerance of the elements.

## Dimensions



## Front panel description



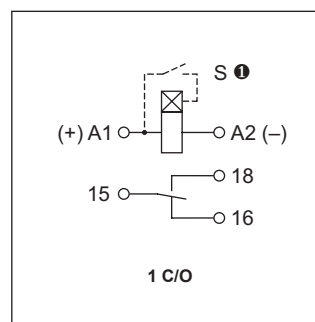
## Mounting

Relays **MT-TUB-...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. Maximum size of wires  $1 \times 2,5 \text{ mm}^2$  (1 x 14 AWG). Rated cross-sectional area of conductors  $2 \times 1,5 \text{ mm}^2$  (2 x 16 AWG). Maximum screw torque: 0,6 Nm.



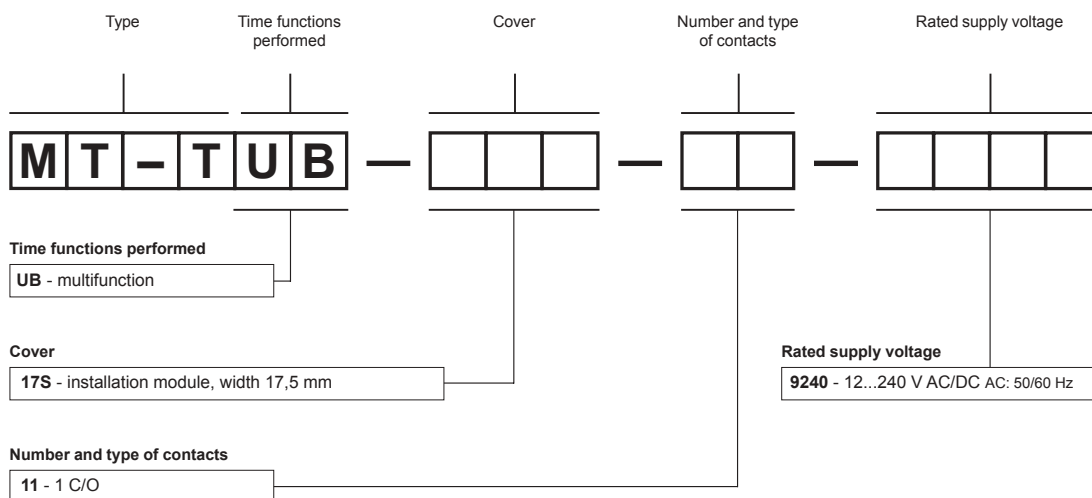
**Two taps:**  
easy assembly on 35 mm rail,  
firm tapping (top and bottom).

## Connection diagram



❶ Control contact S is activated by connecting it to A1 terminal.

## Ordering codes



Example of ordering code:

**MT-TUB-17S-11-9240**

time relay **MT-TUB-...**, multifunction (relay perform 10 functions), cover - installation module, width 17,5 mm, with one changeover contact, rated input voltage 12...240 V AC/DC 50/60 Hz, contact material AgNi



- Time relays with independently controlled times T1 and T2 (7 versions of relays with 1 time function ①; 7 time ranges)
- Cadmium - free contacts • AC/DC input voltages
- Cover - installation module, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to PN-EN 60715
- Application: in low-voltage systems
- Compliance with standard PN-EN 61812-1
- Recognitions, certifications, directives:

## Output circuit - contact data

|                             |                     |
|-----------------------------|---------------------|
| Number and type of contacts | 1 C/O               |
| Contact material            | AgNi                |
| Max. switching voltage      | 400 V AC / 300 V DC |
| Rated load                  | AC1 10 A / 250 V AC |
|                             | DC1 10 A / 24 V DC  |
| Max. load                   | AC1 16 A / 250 V AC |
| Rated current               | 10 A / 250 V AC     |
| Min. breaking capacity      | 0,3 W 5 V, 5 mA     |
| Contact resistance          | ≤ 100 mΩ            |
| Max. operating frequency    |                     |
| • at rated load             | 600 cycles/hour     |

## Input control circuit

|                                   |                    |                                                                  |                         |
|-----------------------------------|--------------------|------------------------------------------------------------------|-------------------------|
| Rated voltage                     | AC: 50/60 Hz AC/DC | 12...240 V                                                       | terminals (+)A1 – (-)A2 |
| Operating range of supply voltage |                    | 0,9...1,1 U <sub>n</sub>                                         |                         |
| Rated power consumption           | AC                 | ≤ 4,5 VA AC: 50 Hz                                               |                         |
|                                   | DC                 | ≤ 1,5 W                                                          |                         |
| Range of supply frequency         | AC                 | 48...63 Hz                                                       |                         |
| <b>Control contact S ②</b>        |                    |                                                                  |                         |
| • control voltage                 |                    | rated supply voltage U <sub>n</sub> (between terminals S and A2) |                         |
| • min. voltage ③                  |                    | 0,7 U <sub>n</sub>                                               |                         |
| • min. time of pulse duration ④   |                    | AC: ≥ 50 ms                                                      | DC: ≥ 20 ms             |

## Insulation according to PN-EN 60664-1

|                                   |                     |            |                                        |
|-----------------------------------|---------------------|------------|----------------------------------------|
| Insulation according to IEC 60509 |                     |            |                                        |
| Insulation rated voltage          |                     | 250 V AC   |                                        |
| Rated surge voltage               |                     | 2 500 V    | 1,2 / 50 μs                            |
| Overvoltage category              |                     | II         |                                        |
| Insulation pollution degree       |                     | 1          |                                        |
| Flammability degree               |                     | V-0        | UL94                                   |
| Dielectric strength               | • input - output    | 2 500 V AC | type of insulation: basic              |
|                                   | • contact clearance | 1 000 V AC | type of clearance: micro-disconnection |

## General data

|                                 |                 |                              |                |
|---------------------------------|-----------------|------------------------------|----------------|
| Electrical life                 | • resistive AC1 | ≥ 0,5 x 10 <sup>5</sup>      | 10 A, 250 V AC |
| Mechanical life (cycles)        |                 | ≥ 3 x 10 <sup>7</sup>        |                |
| Dimensions (L x W x H) / Weight |                 | 90 ① x 17,5 x 63,5 mm / 64 g |                |
| Ambient temperature             | • storage       | -40...+70 °C                 |                |
|                                 | • operating     | -20...+45 °C                 |                |
| Cover protection category       |                 | IP 20                        | PN-EN 60529    |
| Relative humidity               |                 | up to 85%                    |                |
| Shock / vibration resistance    |                 | 15 g / 0,35 mm               | 10...55 Hz     |

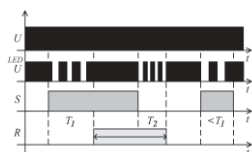
## Time module data

|                                        |               |                                                                                                                                                                                                          |
|----------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functions ❶                            |               | ER, EWa, EWs, EWu + NWu, li + lp, WsWa, Wt                                                                                                                                                               |
| Time ranges                            |               | 1 s ❸; 10 s; 1 min.; 10 min.; 1 h; 10 h; 100 h                                                                                                                                                           |
| Timing adjustment                      |               | smooth - (0,1...1) x time range                                                                                                                                                                          |
| Setting accuracy                       |               | ± 5% ❸ ❸                                                                                                                                                                                                 |
| Repeatability                          |               | ± 0,5% ❸                                                                                                                                                                                                 |
| Values affecting the timing adjustment | • temperature | ± 0,05% / °C                                                                                                                                                                                             |
|                                        | • humidity    | ± 0,05% / %HR                                                                                                                                                                                            |
| Recovery time                          |               | ≤ 50 ms                                                                                                                                                                                                  |
| LED indicator                          |               | green LED U ON - indication of supply voltage U<br>green LED U slow flashing - measurement of T1 time<br>green LED U fast flashing - measurement of T2 time<br>yellow LED R ON/OFF - output relay status |

① Codes of versions - see "Ordering codes", page 215 and descriptions of time functions, page 214. ② Control contact S is activated by connecting it to A1 terminal. ③ Where the control signal is recognizable. ④ Length with 35 mm rail taps: 98,8 mm. ⑤ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time, processor start-time, and the moment of supply switching as referred to the AC supply course). ⑥ Calculated from the final range values, for the setting direction from minimum to maximum.

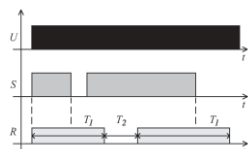
## Time functions ①

**ER** - ON and OFF delay with control contact S  
Relay code: **MT-TER-17S-11-9240**



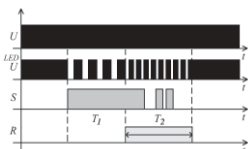
The T1 time lapses from the moment of S activation, and the relay is switched on. After the S signal has been removed, the relay switches off after the T2 time. Should the S contact be activated within the T2 time, the T2 time is reset, and the relay contacts remain on. If S is activated for a time shorter than T1, the unit shall not switch on the relay.

**EWa** - OFF delay and pause trailing edge with control contact S  
Relay code: **MT-TEA-17S-11-9240**



Once the S signal has been activated, the relay is switched on. When the trailing edge occurs, the T1 time starts to be measured. After the T1 time has lapsed, the relay is switched off for the T2 time. The relay may be switched on again after the T2 has lapsed when high state appears on the control input S. In course of measuring the T1 and T2 times, the S contact status is irrelevant.

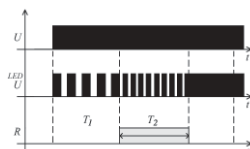
**EWs** - ON delay and single shot leading edge with control contact S  
Relay code: **MT-TES-17S-11-9240**



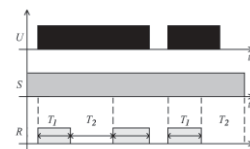
When the S contact has been activated (rising edge), the T1 time is being measured. In course of measuring the T1 and T2 times, the S contact status is irrelevant. After the T1 time, the operating relay switches to the T2 time. After the T2 has

lapsed, the operating relay switches off and the unit returns to the initial position awaiting another rising edge on S.

**EWu + NWu** - ON delay and single shot leading edge voltage controlled or single shot and pause leading edge voltage controlled  
Relay code: **MT-TEU-17S-11-9240**



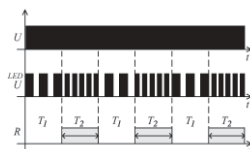
The time relay providing independent regulation of the T1 and T2 times. With supply switched on, the status of the S contact is checked. If the contact is not active, the EWu function is commenced where the operating relay is switched on for the time T2 after the set T1 time has lapsed.



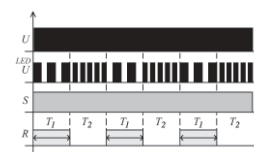
If the S contact is active with the supply on, the operation starts in the NWu function. The operating relay is switched on for the T1 time and then the relay is switched off for the T2 time. After the T2 time, the operating relay is switched on permanently.

A change of the S contact status from 0 to 1 at any time resets the relay and starts the NWu function. A change from 1 to 0 starts a new EWu cycle.

**li + Ip** - Asymmetric flasher pulse or pause first  
Relay code: **MT-TIP-17S-11-9240**



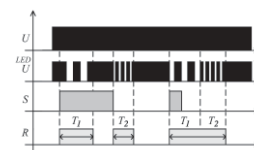
The li + Ip time relay operates cyclically (on-off) with independent regulation of the T1 and T2 times. If the S contact is not active with the supply on, the operation shall start from a pause T1 and then the contact shall make T2 - Ip function.



In case the S contact is active with the supply on, the operation shall start with closed R contact on time T1, then R contact opens on time T2 - li function.

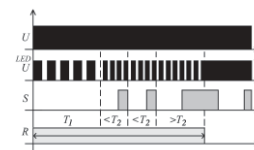
A change of the S contact status from 0 to 1 at any time resets the unit and starts the li function. A change from 1 to 0 starts a new Ip cycle.

**WsWa** - Single shot leading edge and single shot trailing edge with control contact S  
Relay code: **MT-TSA-17S-11-9240**



A rising edge on the S contact triggers measurement of the T1 time, and the operating relay is switched on. After T1 the relay switches off. The relay shall be switched on again for the T2 period after trailing edge on S. If after the T1 time the S status is on a low level, the relay shall be switched on for the T2 time. If after the T2 time the S status is on a high level, the relay shall be switched on for the T1 time.

**Wt** - Pulse detection  
Relay code: **MT-TWT-17S-11-9240**



With the supply on, the operating relay is switched on, and the T1 time is being measured. When the T1 time has been measured, the T2 time measurement starts. For the operating relay to remain on, a rising and trailing edge must occur on the S contact within the T2 time, i.e. a single pulse which starts the T2 time measurement again. At the absence of the pulse, the relay will switch off after the T2 time has lapsed, and the relay may be switched on after the supply has been switched off and on again.

U - supply voltage; R - output state of the relay; S - control contact state; T1, T2 - measured times

① Codes of versions - see "Ordering codes", page 215 and descriptions of time functions, page 214.

## Additional functions

**Supply diode:** it is lit permanently when the time is not being measured. In course of the T1 time measurement, it flashes at 500 ms period where it is lit for 80% of the time, and off for 20% of the time. For the T2 time, the period is 250 ms.

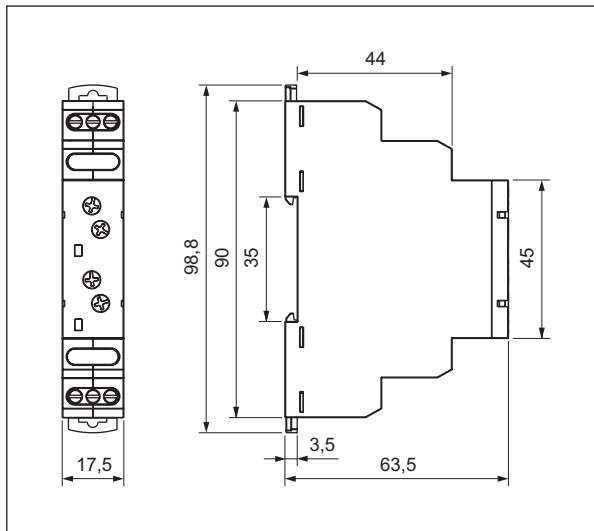
**Adjustment of the set values:** the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment.

### Release:

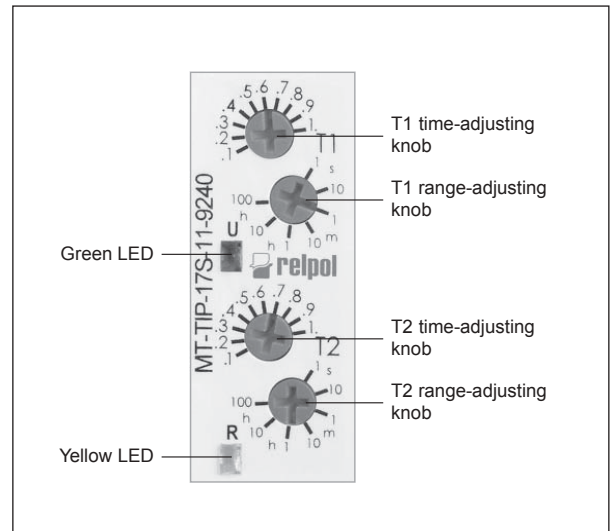
- for the versions MT-TEU-..., MT-TIP-...: the relay is released with the supply voltage,  
- for other versions: the relay is released by connection of the S contact to the A1 line. For DC supply, the positive pole must be connected to the A1 line. The level of the S contact activation is adjusted automatically depending on the supply voltage.

**Supply:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10,8...250 V. A programmed control of the supply voltage has been applied so the processor shall not start operation if the voltage is lower than approximately 10 V. The supply voltage is permanently monitored in course of the operation of the relay. When the voltage drops below 9 V for more than 50 ms, the relay shall be reset. Owing to this, the regeneration time is programmed to 50 ms, and it does not depend on the tolerance of the elements.

## Dimensions

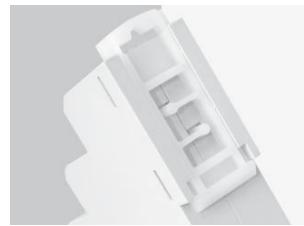


## Front panel description



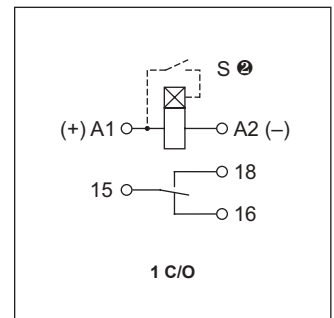
## Mounting

Relays **MT-T.... ①** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated cross-sectional area of conductors 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,6 Nm.



① Codes of versions - see "Ordering codes", page 215 and descriptions of time functions, page 214.

## Connection diagram

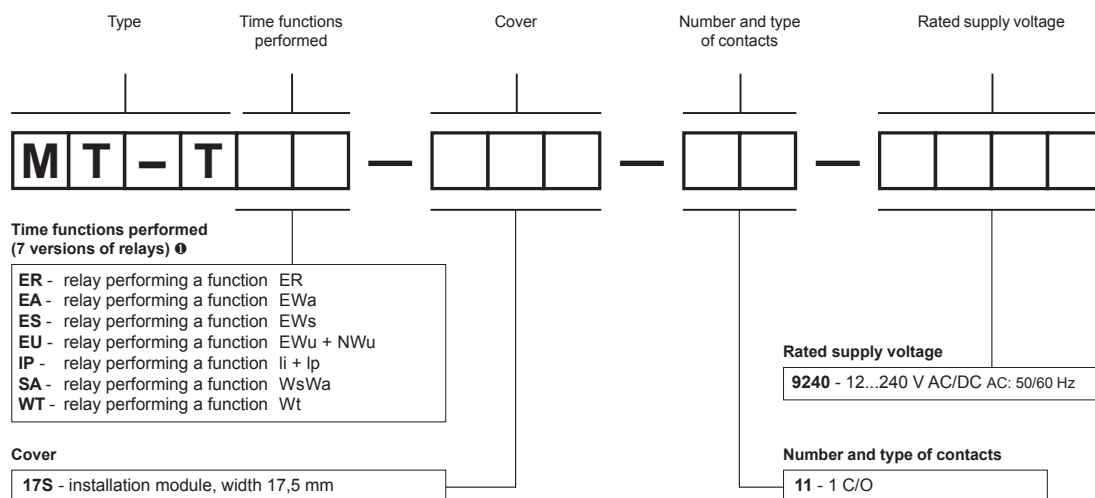


### Two taps:

easy assembly on 35 mm rail,  
firm tapping (top and bottom).

② Control contact S is activated by connecting it to A1 terminal.

## Ordering codes



Example of ordering code:

**MT-TIP-17S-11-9240**

time relay **MT-TIP-....**, single-function (relay perform function li + lp), cover - installation module, width 17,5 mm, with one changeover contact, rated input voltage 12...240 V AC/DC 50/60 Hz, contact material AgNi



- **Star-Delta start-up with independently controlled times T1 and T2 (1 time function; 7 time ranges)**
- Cadmium - free contacts • AC/DC input voltages
- Cover - installation module, width 17,5 mm
- Direct mounting on 35 mm rail mount acc. to PN-EN 60715
- Application: in low-voltage systems
- Compliance with standard PN-EN 61812-1
- Recognitions, certifications, directives:

## Output circuits - contact data

|                                             |                                           |
|---------------------------------------------|-------------------------------------------|
| Number and type of contacts                 | 2 x 1 C/O                                 |
| Contact material                            | AgNi                                      |
| Max. switching voltage                      | 400 V AC / 300 V DC                       |
| Rated load                                  | AC1 10 A / 250 V AC<br>DC1 10 A / 24 V DC |
| Rated current                               | 10 A / 250 V AC                           |
| Min. breaking capacity                      | 0,3 W 5 V, 5 mA                           |
| Contact resistance                          | ≤ 100 mΩ                                  |
| Max. operating frequency<br>• at rated load | 600 cycles/hour                           |

## Input control circuit

|                                   |                    |                          |                         |
|-----------------------------------|--------------------|--------------------------|-------------------------|
| Rated voltage                     | AC: 50/60 Hz AC/DC | 12...240 V               | terminals (+)A1 – (-)A2 |
| Operating range of supply voltage |                    | 0,9...1,1 U <sub>n</sub> |                         |
| Rated power consumption           | AC                 | ≤ 4,5 VA AC: 50 Hz       |                         |
|                                   | DC                 | ≤ 1,5 W                  |                         |
| Range of supply frequency         | AC                 | 48...63 Hz               |                         |

## Insulation according to PN-EN 60664-1

|                                     |                     |            |                                        |
|-------------------------------------|---------------------|------------|----------------------------------------|
| Insulation according to IEC 60334-1 |                     |            |                                        |
| Insulation rated voltage            |                     | 250 V AC   |                                        |
| Rated surge voltage                 |                     | 2 500 V    | 1,2 / 50 µs                            |
| Overvoltage category                |                     | II         |                                        |
| Insulation pollution degree         |                     | 1          |                                        |
| Flammability degree                 |                     | V-0        | UL94                                   |
| Dielectric strength                 | • input - outputs   | 2 500 V AC | type of insulation: basic              |
|                                     | • contact clearance | 1 000 V AC | type of clearance: micro-disconnection |

## General data

|                           |                          |                              |                |
|---------------------------|--------------------------|------------------------------|----------------|
| Electrical life           | • resistive AC1          | ≥ 0,5 x 10 <sup>5</sup>      | 10 A, 250 V AC |
| Mechanical life (cycles)  |                          | ≥ 3 x 10 <sup>7</sup>        |                |
| Dimensions (L x W x H)    |                          | 90 ① x 17,5 x 63,5 mm        |                |
| Weight                    |                          | 84 g                         |                |
| Ambient temperature       | • storage<br>• operating | -40...+70 °C<br>-20...+45 °C |                |
| Cover protection category |                          | IP 20                        | PN-EN 60529    |
| Relative humidity         |                          | up to 85%                    |                |
| Shock resistance          |                          | 15 g                         |                |
| Vibration resistance      |                          | 0,35 mm 10...55 Hz           |                |

## Time module data

|                                           |               |                                                                                                                                                     |
|-------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Functions                                 |               | SD                                                                                                                                                  |
| Time ranges (start-up for the star) T1    |               | 10 s; 30 s; 1 min.; 3 min.; 10 min.; 30 min.; 1 h                                                                                                   |
| Timing adjustment T1                      |               | smooth - (0,05...1) x time range                                                                                                                    |
| Transit time (adjustable) ② T2            |               | smoothly within the range 0,05...1 s (linear adjustment of time)                                                                                    |
| Setting accuracy                          |               | ± 5% ③                                                                                                                                              |
| Repeatability                             |               | ± 3%                                                                                                                                                |
| Values affecting<br>the timing adjustment | • temperature | ± 0,05% / °C                                                                                                                                        |
|                                           | • humidity    | ± 0,05% / %HR                                                                                                                                       |
| Recovery time                             |               | ≤ 50 ms                                                                                                                                             |
| LED indicator                             |               | green LED U ON - indication of supply voltage U<br>green LED U flashing - measurement of T time<br>yellow LEDs ON/OFF - contactors switching signal |

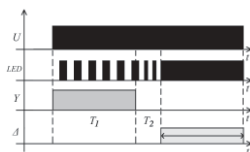
① Length with 35 mm rail taps: 98,8 mm.

② Pause time between switching off the star contactor and switching on the delta contactor.

③ Calculated from the final range values, for the setting direction from minimum to maximum.

## Time functions

### SD - Star-Delta start-up



When the supply voltage  $U$  is applied, the operating star-contact becomes closed, which is signaled with illumination of the yellow LED. Measurement of the set time  $T_1$  starts, and the green LED flashes at 500 ms. After the  $T_1$  time has lapsed, the star contact is disconnected and the relay begins measuring the  $T_2$  time, which is signaled with the green LED flashing at 250 ms. After the  $T_2$  time has lapsed, the delta contact is switched on together with the yellow LED, and the green LED remains illuminated.

$U$  - supply voltage;  $T_1$ ,  $T_2$  - measured times

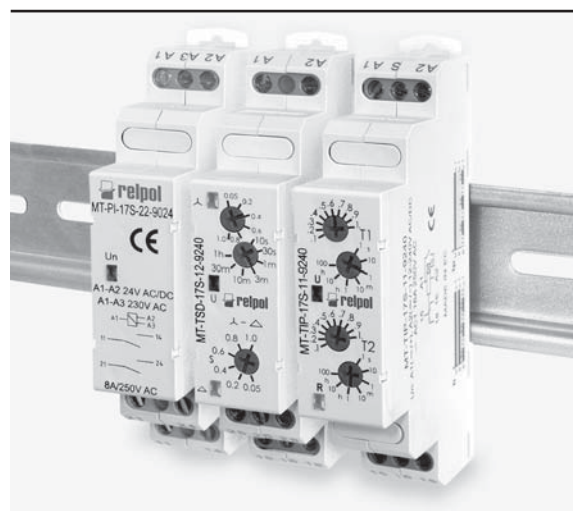
## Additional functions

**Supply diode:** it is lit permanently when the time is not being measured. In course of the  $T_1$  time measurement, it flashes at 500 ms period where it is lit for 80% of the time, and off for 20% of the time. For the  $T_2$  time, the period is 250 ms.

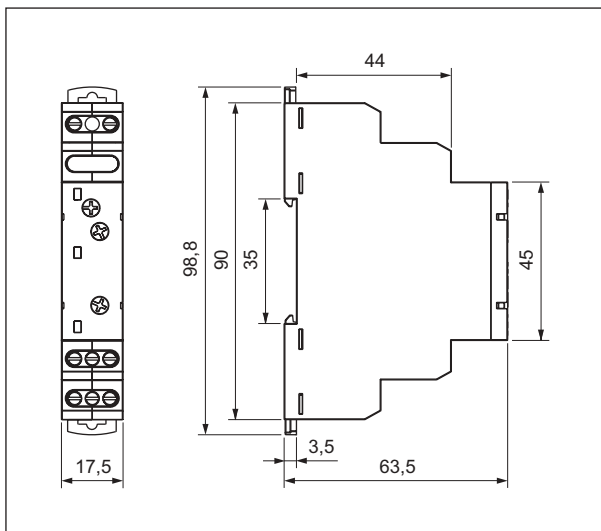
**Adjustment of the set values:** the values of time and range are read in the course of the relay's operation. The set values may be modified at any moment.

**Release:** the relay is released with the supply voltage.

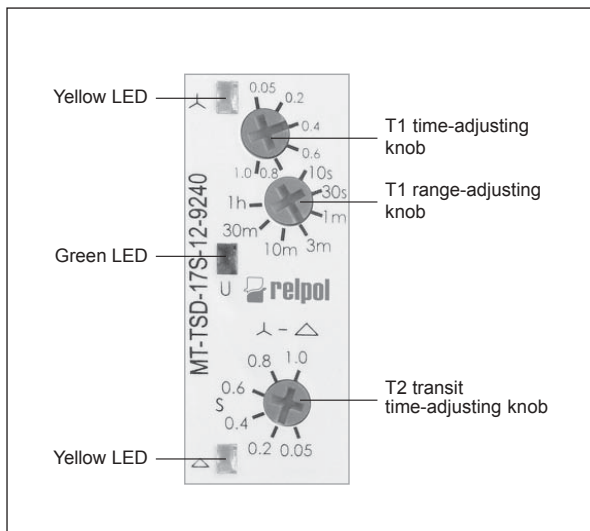
**Supply:** the relay may be supplied with DC voltage or AC voltage 48...63 Hz of 10.8...250 V. A programmed control of the supply voltage has been applied so the processor shall not start operation if the voltage is lower than approximately 10 V. The supply voltage is permanently monitored in course of the operation of the relay. When the voltage drops below 9 V for more than 50 ms, the relay shall be reset. Owing to this, the regeneration time is programmed to 50 ms, and it does not depend on the tolerance of the elements.



## Dimensions



## Front panel description



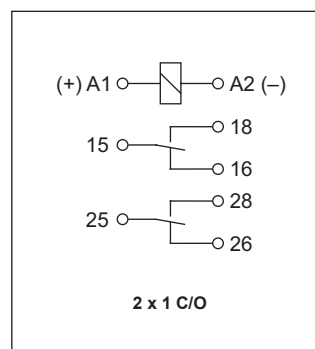
## Mounting

Relays **MT-TSD-...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated cross-sectional area of conductors 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,6 Nm.

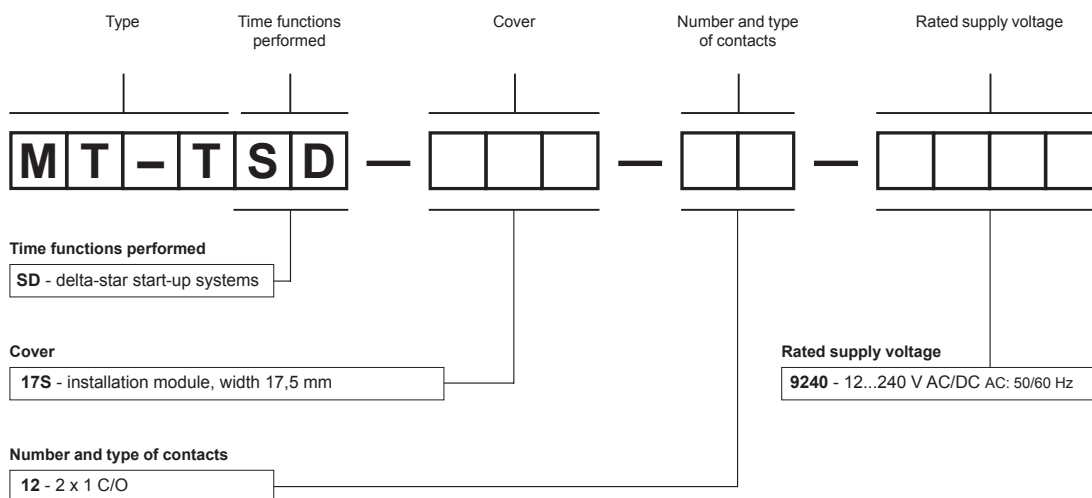


**Two taps:**  
easy assembly on 35 mm rail,  
firm tapping (top and bottom).

## Connection diagram



## Ordering codes



Example of ordering code:

**MT-TSD-17S-12-9240**

time relay **MT-TSD-...**, single-function (relay perform function SD), cover - installation module, width 17,5 mm, with two changeover contacts, rated input voltage 12...240 V AC/DC 50/60 Hz, contact material AgNi



- 10-function electronic time relays in compact cover • Cadmium - free contacts • AC and AC/DC input voltages • Direct mounting on 35 mm rail mount acc. to PN-EN 60715 (wiring: 1 x 2,5 mm<sup>2</sup>, 2 x 1,5 mm<sup>2</sup>) • The main advantages of application: simple selection of the performed function, possibility to control a few circuits (4 changeover contacts), esthetic design in the control cabinet • The switching capacity of contacts as in R4 electromagnetic relay • Compliance with standard PN-EN 61812-1
- Recognitions, certifications, directives:  

## Output circuits - contact data

|                             |     |                                   |
|-----------------------------|-----|-----------------------------------|
| Number and type of contacts |     | 4 C/O                             |
| Contact material            |     | <b>AgNi</b>                       |
| Max. switching voltage      |     | 250 V AC / 250 V DC               |
| Min. switching voltage      |     | 5 V                               |
| Rated load                  | AC1 | 6 A / 250 V AC                    |
|                             | DC1 | 6 A / 24 V DC                     |
| Min. switching current      |     | 5 mA                              |
| Rated current               |     | 6 A                               |
| Max. breaking capacity      |     | AC1 1 500 VA                      |
| Min. breaking capacity      |     | 0,3 W                             |
| Contact resistance          |     | ≤ 100 mΩ                          |
| Max. operating frequency    | AC1 | • at rated load 1 200 cycles/hour |
|                             |     | • no load 18 000 cycles/hour      |
|                             |     |                                   |

## Input control circuit

|                                     |                    |                                                          |
|-------------------------------------|--------------------|----------------------------------------------------------|
| Rated voltage                       | 50/60 Hz AC        | 115 ... 230 V                                            |
|                                     | AC: 50/60 Hz AC/DC | 12 ... 24 V                                              |
| Operating range of supply voltage   |                    | 0,9...1,1 U <sub>n</sub> 12 V AC/DC                      |
|                                     |                    | 0,85...1,1 U <sub>n</sub> 24 V AC/DC, 115 V AC, 230 V AC |
| Rated power consumption             | AC                 | 2,2 VA 115 V AC, 230 V AC                                |
|                                     | AC/DC              | 1,0 VA / 1,0 W 12 V AC/DC, 24 V AC/DC                    |
| Range of supply frequency           | AC                 | 48...63 Hz                                               |
|                                     | AC/DC              | 48...100 Hz                                              |
| Min. pulse of the control contact S |                    | AC: 25 ms DC: 15 ms                                      |

## Insulation according to PN-EN 60664-1

|                             |  |                                      |
|-----------------------------|--|--------------------------------------|
| Insulation category         |  | B250                                 |
| Overvoltage category        |  | II                                   |
| Insulation pollution degree |  | 2                                    |
| Flammability degree         |  | V-1 UL94                             |
| Dielectric strength         |  |                                      |
| • input - outputs           |  | 2 500 V AC type of insulation: basic |
| Input - outputs distance    |  |                                      |
| • clearance                 |  | ≥ 1,6 mm                             |
| • creepage                  |  | ≥ 3,2 mm                             |

## General data

|                           |             |                                 |
|---------------------------|-------------|---------------------------------|
| Electrical life           |             |                                 |
| • resistive AC1           |             | ≥ 10 <sup>5</sup> 6 A, 250 V AC |
| Mechanical life (cycles)  |             | ≥ 2 x 10 <sup>7</sup>           |
| Dimensions (L x W x H)    |             | 90 x 36 x 55 mm                 |
| Weight                    |             | 115 g                           |
| Ambient temperature       | • storage   | -40...+70 °C                    |
|                           | • operating | -20...+55 °C                    |
| Cover protection category |             | IP 20 PN-EN 60529               |
| Environmental protection  |             | RTI PN-EN 116000-3              |
| Shock resistance (NO/NC)  |             | 10 g / 5 g                      |
| Vibration resistance      |             | 0,35 mm DA 10...55 Hz           |

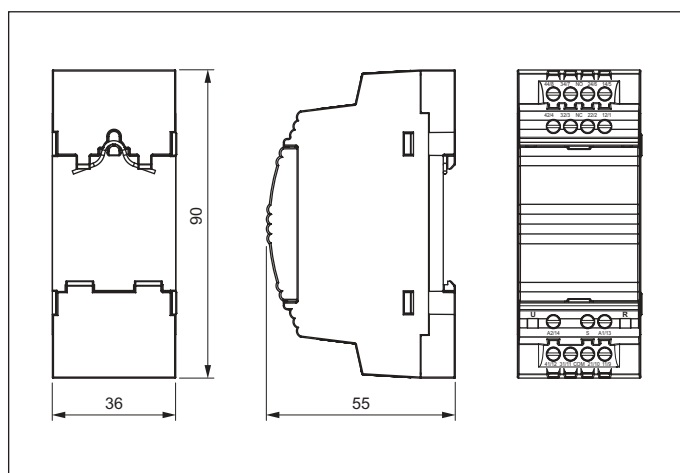
The data in bold type pertain to the standard versions of the relays.

## Time module data

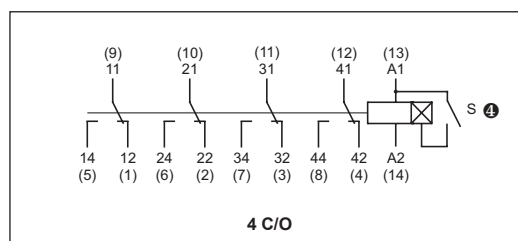
|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functions ❶           | E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B<br>permanent switching ON and OFF                                                                                  |
| Time ranges           | 1 s ❷; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d                                                                                                       |
| Timing adjustment     | smooth - (0,1...1) x time range                                                                                                                          |
| Setting accuracy      | ± 5% (calculated from the final range values) ❷                                                                                                          |
| Repeatability         | ± 0,5% ❷                                                                                                                                                 |
| Temperature influence | ± 0,01% / °C                                                                                                                                             |
| Recovery time         | 90 ms                                                                                                                                                    |
| LED indicator         | green LED - indication of supply voltage U<br>yellow LED - indication of time period T<br>and the status of outputs after the time T has been measured ❸ |

❶ Descriptions of time functions - see pages 233, 234. ❷ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time). Recommend to set measuring time by experimental method. ❸ The yellow LED - T time measurement (pulsating); excited operational relay; time not measured (steady light); de-excited operational relay, time not measured (no light).

## Dimensions



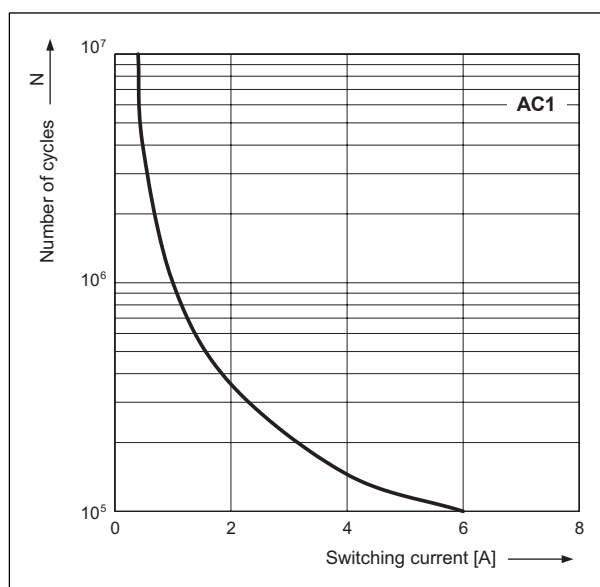
## Connections diagram



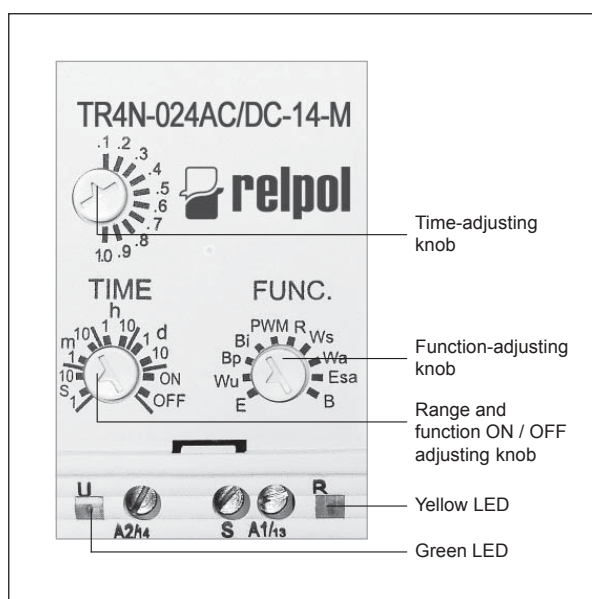
❹ Control contact S is activated by connecting it to A1 terminal.

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

Fig. 1



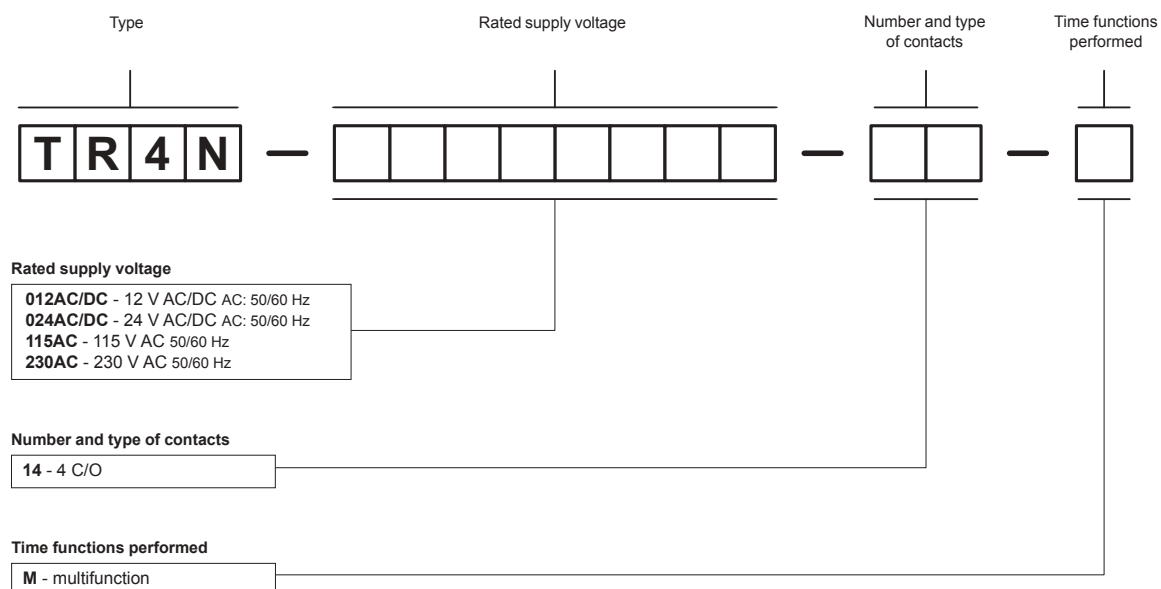
## Front panel description



## Mounting

Relays **TR4N 4 C/O** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated cross-sectional area of conductors 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,6 Nm.

## Ordering codes



Examples of ordering codes:

**TR4N-230AC-14-M** time relay **TR4N 4 C/O**, rated input voltage 230 V AC 50/60 Hz, with four changeover contacts, multifunction (relay perform 10 functions), contact material AgNi

**TR4N-024AC/DC-14-M** time relay **TR4N 4 C/O**, rated input voltage 24 V AC/DC AC: 50/60 Hz, with four change-over contacts, multifunction (relay perform 10 functions), contact material AgNi





• 10-function electronic time relays in compact cover • Cadmium - free contacts • AC and AC/DC input voltages • Direct mounting on 35 mm rail mount acc. to PN-EN 60715 (wiring: 1 x 2,5 mm<sup>2</sup>, 2 x 1,5 mm<sup>2</sup>) • The main advantages of application: simple selection of the performed function, possibility to control one or two circuits (1 or 2 changeover contacts), esthetic design in the control cabinet • The switching capacity of contacts as in RM85 (1 C/O) or RM84 (2 C/O) electromagnetic relay • Compliance with standard PN-EN 61812-1 • Recognitions, certifications, directives: **CE** **PC**

### Output circuits - contact data

| Number and type of contacts |     | 1 C/O                                 | 2 C/O               |
|-----------------------------|-----|---------------------------------------|---------------------|
| Contact material            |     | <b>AgNi</b>                           | <b>AgNi</b>         |
| Max. switching voltage      |     | 440 V AC / 300 V DC                   | 440 V AC / 300 V DC |
| Min. switching voltage      |     | 5 V                                   | 5 V                 |
| Rated load                  | AC1 | 16 A / 250 V AC                       | 8 A / 250 V AC      |
|                             | DC1 | 16 A / 24 V DC                        | 8 A / 24 V DC       |
| Min. switching current      |     | 5 mA                                  | 5 mA                |
| Rated current               |     | 16 A                                  | 8 A                 |
| Max. breaking capacity      |     | AC1 4 000 VA                          | 2 000 VA            |
| Min. breaking capacity      |     | 0,3 W                                 |                     |
| Contact resistance          |     | ≤ 100 mΩ                              |                     |
| Max. operating frequency    | AC1 | 600 cycles/hour<br>18 000 cycles/hour |                     |
|                             |     |                                       |                     |
|                             |     |                                       |                     |

### Input control circuit

|                                     |                    |                           |                                      |
|-------------------------------------|--------------------|---------------------------|--------------------------------------|
| Rated voltage                       | 50/60 Hz AC        | 115 ... 230 V             |                                      |
|                                     | AC: 50/60 Hz AC/DC | 12 ... 24 V               |                                      |
| Operating range of supply voltage   |                    | 0,9...1,2 U <sub>n</sub>  | 12 V AC/DC                           |
|                                     |                    | 0,85...1,2 U <sub>n</sub> | 24 V AC/DC, 115 V AC, 230 V AC       |
| Rated power consumption             | AC                 | 1,3 VA                    | 115 V AC 1,7 VA 230 V AC             |
|                                     | AC/DC              | 0,5 VA / 0,5 W            | 12 V AC/DC 0,7 VA / 0,7 W 24 V AC/DC |
| Range of supply frequency           | AC                 | 48...63 Hz                |                                      |
|                                     | AC/DC              | 48...100 Hz               |                                      |
| Min. pulse of the control contact S |                    | AC: 25 ms                 | DC: 15 ms                            |

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

|                             |                                      |
|-----------------------------|--------------------------------------|
| Insulation category         | B250                                 |
| Overvoltage category        | III                                  |
| Insulation pollution degree | 2                                    |
| Flammability degree         | V-1 UL94                             |
| Dielectric strength         |                                      |
| • input - outputs           | 2 500 V AC type of insulation: basic |
| Input - outputs distance    |                                      |
| • clearance                 | ≥ 10 mm                              |
| • creepage                  | ≥ 10 mm                              |

### General data

|                           |                                        |                                 |
|---------------------------|----------------------------------------|---------------------------------|
| Electrical life           |                                        |                                 |
| • resistive AC1           | ≥ 0,7 x 10 <sup>5</sup> 16 A, 250 V AC | ≥ 10 <sup>5</sup> 8 A, 250 V AC |
| Mechanical life (cycles)  | ≥ 3 x 10 <sup>7</sup>                  |                                 |
| Dimensions (L x W x H)    | 90 x 17,6 x 55 mm                      |                                 |
| Weight                    | 67 g                                   |                                 |
| Ambient temperature       | • storage                              | -40...+70 °C                    |
|                           | • operating                            | -20...+55 °C                    |
| Cover protection category | IP 20                                  | PN-EN 60529                     |
| Environmental protection  | RTI                                    | PN-EN 116000-3                  |
| Shock resistance          | 15 g                                   |                                 |
| Vibration resistance      | 0,35 mm DA                             | 10...55 Hz                      |

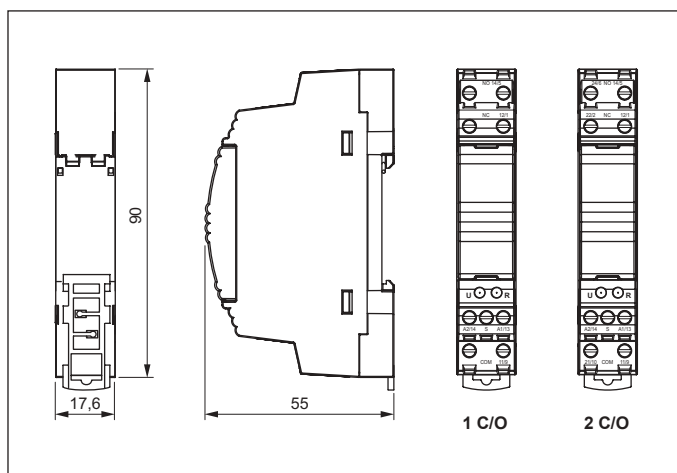
The data in bold type pertain to the standard versions of the relays.

### Time module data

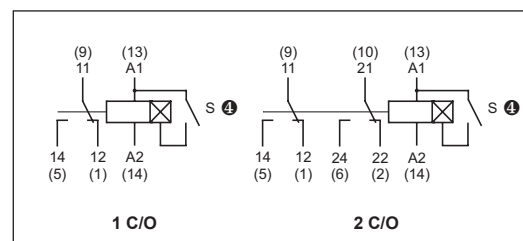
|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functions ❶           | E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B<br>permanent switching ON and OFF                                                                                  |
| Time ranges           | 1 s ❷; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d                                                                                                       |
| Timing adjustment     | smooth - (0,1...1) x time range                                                                                                                          |
| Setting accuracy      | ± 5% (calculated from the final range values) ❷                                                                                                          |
| Repeatability         | ± 0,5% ❷                                                                                                                                                 |
| Temperature influence | ± 0,01% / °C                                                                                                                                             |
| Recovery time         | 80 ms                                                                                                                                                    |
| LED indicator         | green LED - indication of supply voltage U<br>yellow LED - indication of time period T<br>and the status of outputs after the time T has been measured ❸ |

❶ Descriptions of time functions - see pages 233, 234. ❷ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time). Recommend to set measuring time by experimental method. ❸ The yellow LED - T time measurement (pulsating); excited operational relay; time not measured (steady light); de-excited operational relay, time not measured (no light).

### Dimensions



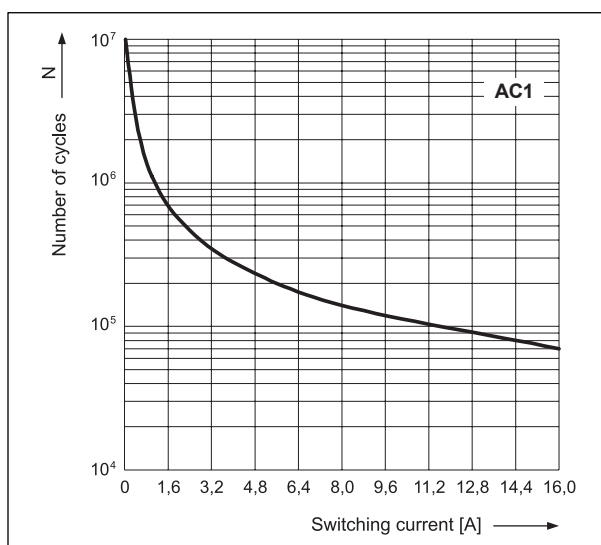
### Connections diagrams



❹ Control contact S is activated by connecting it to A1 terminal.

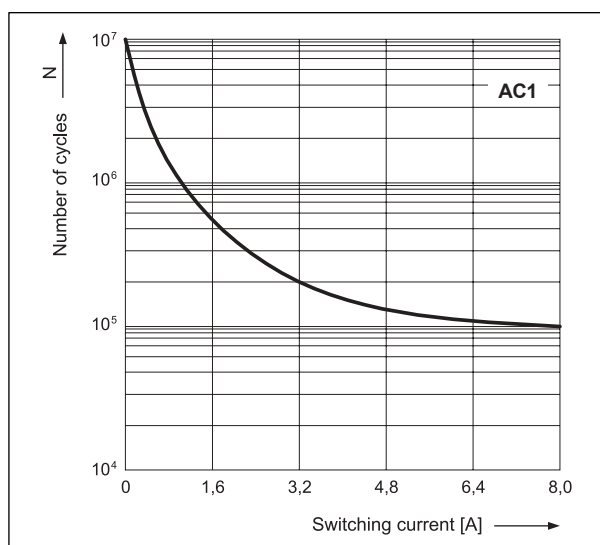
Electrical life at AC resistive current.  
Switching frequency: 600 cycles/hour  
- TR4N 1 C/O

Fig. 1

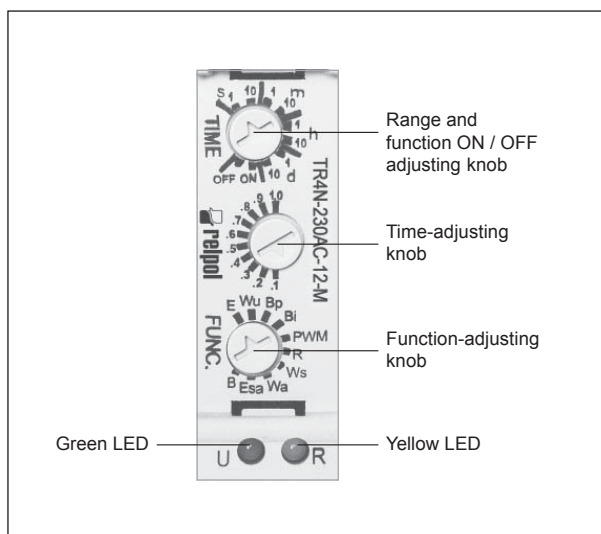


Electrical life at AC resistive current.  
Switching frequency: 600 cycles/hour  
- TR4N 2 C/O

Fig. 2



### Front panel description



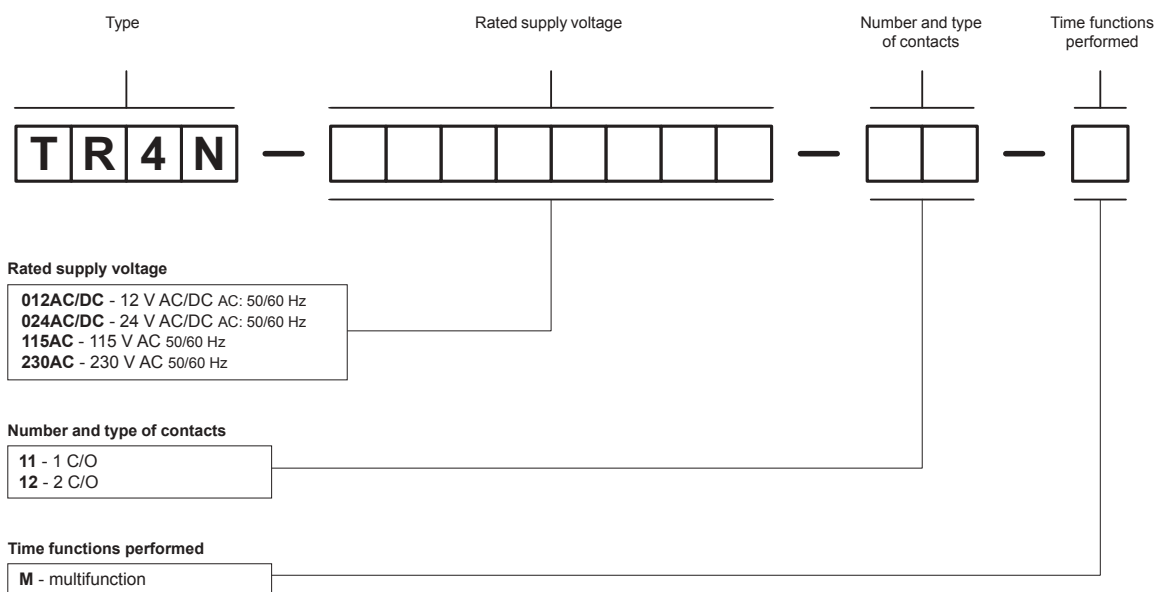
## Mounting

Relays **TR4N 1 C/O, 2 C/O** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. Maximum size of wires 1 x 2,5 mm<sup>2</sup> (1 x 14 AWG). Rated cross-sectional area of conductors 2 x 1,5 mm<sup>2</sup> (2 x 16 AWG). Maximum screw torque: 0,6 Nm.



**One tap:**  
easy assembly on 35 mm rail, firm tapping (bottom).

## Ordering codes



Examples of ordering codes:

TR4N-230AC-11-M

time relay **TR4N 1 C/O**, rated input voltage 230 V AC 50/60 Hz, with one changeover contact, multifunction (relay perform 10 functions), contact material AgNi

TR4N-024AC/DC-12-M

time relay **TR4N 2 C/O**, rated input voltage 24 V AC/DC AC: 50/60 Hz, with two change-over contacts, multifunction (relay perform 10 functions), contact material AgNi



- Single-function, single-voltage time relays offered in the following versions: **T-R4E** - relay with time function E, **T-R4Wu** - relay with time function Wu, **T-R4Bp** - relay with time function Bp, **T-R4Bi** - relay with time function Bi • Cadmium - free contacts • AC and DC input voltages
- For plug-in sockets, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting • Applications: as time systems in electric circuits of machines, technological lines, in automation systems, etc.
- Recognitions, certifications, directives: recognitions R4, 

## Output circuits - contact data

|                             |     |                     |
|-----------------------------|-----|---------------------|
| Number and type of contacts |     | 4 C/O               |
| Contact material            |     | <b>AgNi</b>         |
| Max. switching voltage      |     | 250 V AC / 250 V DC |
| Min. switching voltage      |     | 5 V                 |
| Rated load                  | AC1 | 6 A / 230 V AC      |
| Min. switching current      |     | 5 mA                |
| Max. inrush current         |     | 12 A                |
| Rated current               |     | 6 A                 |
| Max. breaking capacity      | AC1 | 1 500 VA            |
| Min. breaking capacity      |     | 0,3 W               |
| Contact resistance          |     | ≤ 100 mΩ            |
| Max. operating frequency    |     |                     |
| • at rated load             | AC1 | 1 200 cycles/hour   |
| • no load                   |     | 18 000 cycles/hour  |

## Input control circuit

|                                   |             |                          |                          |
|-----------------------------------|-------------|--------------------------|--------------------------|
| Rated voltage                     | 50/60 Hz AC | 24 ... 230 V             |                          |
|                                   | DC          | 12 ... 24 V              |                          |
| Must release voltage              |             | AC: ≥ 0,2 U <sub>n</sub> | DC: ≥ 0,1 U <sub>n</sub> |
| Operating range of supply voltage |             | 0,8...1,1 U <sub>n</sub> | see Tables 1, 2          |
| Rated power consumption           | AC          | 2,2 VA                   |                          |
|                                   | DC          | 1,2 W                    |                          |
| Range of supply frequency         |             | 48...63 Hz               |                          |

## Insulation according to PN-EN 60664-1

|                          |  |            |                                        |
|--------------------------|--|------------|----------------------------------------|
| Insulation rated voltage |  | 250 V AC   |                                        |
| Overvoltage category     |  | III        |                                        |
| Dielectric strength      |  |            |                                        |
| • input - outputs        |  | 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              |
| Input - outputs distance |  |            |                                        |
| • clearance              |  | ≥ 1,6 mm   |                                        |
| • creepage               |  | ≥ 3,2 mm   |                                        |

## General data

|                                           |             |                                |                                  |
|-------------------------------------------|-------------|--------------------------------|----------------------------------|
| Operating / release time (typical values) |             | 10 ms / 8 ms                   |                                  |
| Electrical life                           |             |                                |                                  |
| • resistive AC1                           |             | ≥ 10 <sup>5</sup>              | 6 A, 250 V AC                    |
| • cos φ                                   |             | see Fig. 2                     |                                  |
| Mechanical life (cycles)                  |             | ≥ 2 x 10 <sup>7</sup>          |                                  |
| Dimensions (L x W x H)                    |             |                                |                                  |
|                                           |             | T-R4 + GZM4: 75 x 27 x 91,5 mm |                                  |
|                                           |             | T-R4 + GZT4: 76,3 x 27 x 90 mm |                                  |
|                                           |             | T-R4: 27,5 x 21,2 x 62,5 mm    |                                  |
| Weight                                    |             | T-R4 + GZM4: 123 g             | T-R4 + GZT4: 113 g    T-R4: 49 g |
| Ambient temperature                       | • storage   | -20...+85 °C                   |                                  |
|                                           | • operating | -20...+55 °C                   |                                  |
| Cover protection category                 |             | IP 20 (with socket)            | PN-EN 60529                      |
| Environmental protection                  |             | T-R4: RTI    GZM4: RT0         | PN-EN 116000-3                   |
| Shock resistance                          | (NO/NC)     | 10 g / 5 g                     |                                  |
| Vibration resistance                      |             | 5 g    10...150 Hz             |                                  |

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

## Time module data

|                       |                                                                                                                                                          |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Functions ❶           | E, Wu, Bp, Bi                                                                                                                                            |
| Time ranges           | 0,1 s ❷; 10 s; 1 min.; 10 min.; 1 h; 10 h; 100 h                                                                                                         |
| Timing adjustment     | range - with the range-adjusting knob / switch;<br>within the range - with the time-adjusting knob / potentiometer                                       |
| Setting accuracy      | ± 5% (calculated from the final range values) ❷                                                                                                          |
| Repeatability         | ± 1% ❷                                                                                                                                                   |
| Temperature influence | ± 0,01% / °C                                                                                                                                             |
| Recovery time         | 100 ms                                                                                                                                                   |
| LED indicator         | green LED - indication of supply voltage U<br>yellow LED - indication of time period T<br>and the status of outputs after the time T has been measured ❸ |

❶ Descriptions of time functions - see pages 233, 234. ❷ For first range setpoint (1 s) setting accuracy and repeatability are smaller than the given ones in technical parameters (significant influence of the operational relay operating time). Recommend to set measuring time by experimental method.

❸ The yellow LED - T time measurement (pulsating); excited operational relay; time not measured (steady light); de-excited operational relay, time not measured (no light).

## Input data - DC voltage version

Table 1

| Input voltage code | Rated input voltage $U_n$<br>V DC | Input resistance<br>± 10% at 20°C<br>$\Omega$ | Input - voltage range<br>V DC |                |
|--------------------|-----------------------------------|-----------------------------------------------|-------------------------------|----------------|
|                    |                                   |                                               | min. (at 20°C)                | max. (at 55°C) |
| <b>1012</b>        | <b>12</b>                         | <b>160</b>                                    | <b>9,6</b>                    | <b>13,2</b>    |
| <b>1024</b>        | <b>24</b>                         | <b>640</b>                                    | <b>19,2</b>                   | <b>26,4</b>    |

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

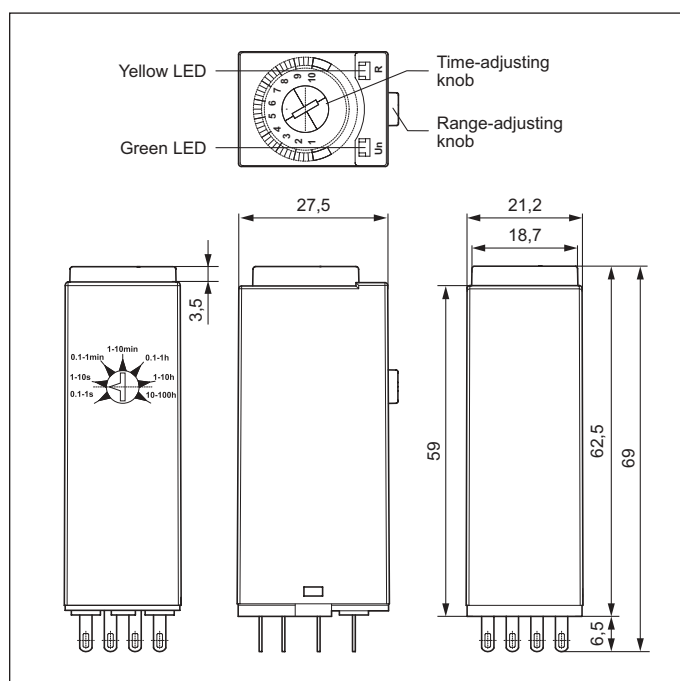
## Input data - AC 50/60 Hz voltage version

Table 2

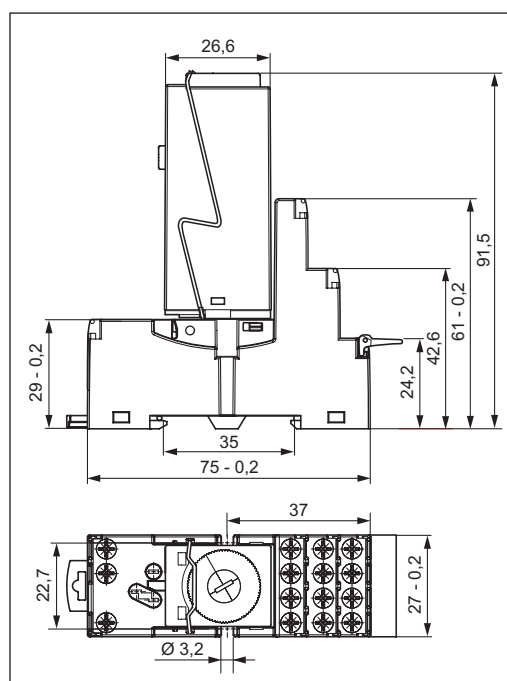
| Input voltage code | Rated input voltage $U_n$<br>V AC | Input resistance<br>± 10% at 20°C<br>$\Omega$ | Input - voltage range<br>V AC |                |
|--------------------|-----------------------------------|-----------------------------------------------|-------------------------------|----------------|
|                    |                                   |                                               | min. (at 20°C)                | max. (at 55°C) |
| <b>5024</b>        | <b>24</b>                         | <b>158</b>                                    | <b>19,2</b>                   | <b>26,4</b>    |
| 5115               | 115                               | 3 610                                         | 92,0                          | 127,0          |
| <b>5230</b>        | <b>230</b>                        | <b>16 100</b>                                 | <b>184,0</b>                  | <b>253,0</b>   |

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

## Dimensions

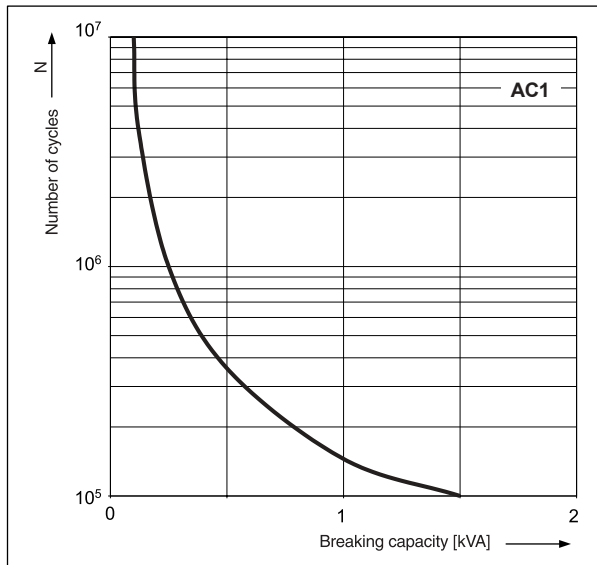


## Dimensions - T-R4 with socket GZM4



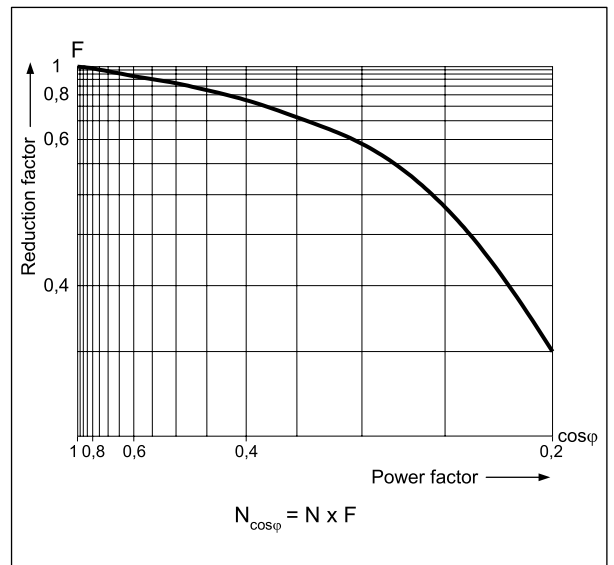
**Electrical life at AC resistive load.**  
Switching frequency: 1 200 cycles/hour

Fig. 1



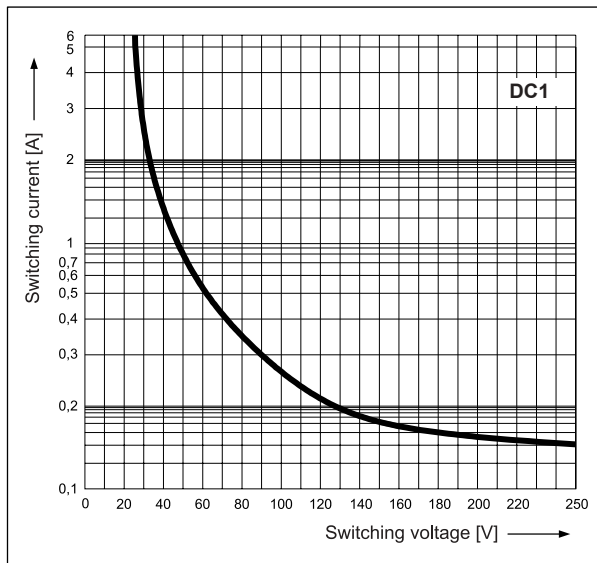
**Electrical life reduction factor at AC inductive load**

Fig. 2

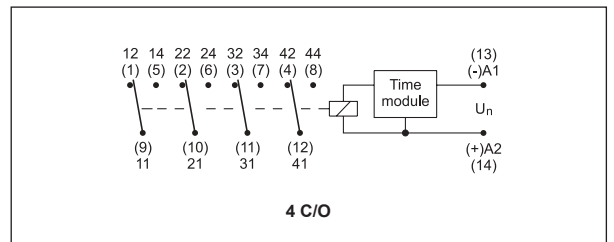


**Max. DC resistive load breaking capacity**

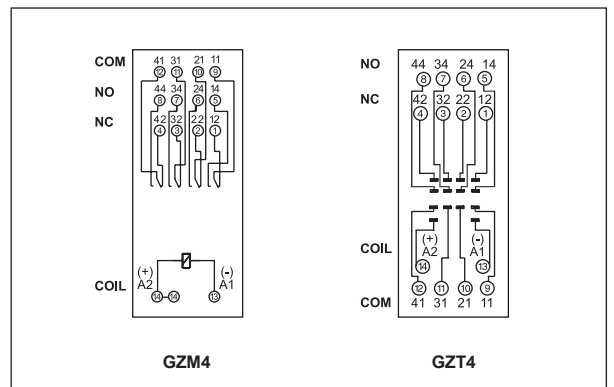
Fig. 3



**Connection diagram**



**Connection diagrams - sockets for T-R4**



## Mounting

Relays **T-R4E**, **T-R4Wu**, **T-R4Bp**, **T-R4Bi** are designed for screw terminals plug-in sockets **GZM4** and **GZT4** ①, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. For sockets are offered description plates **GZT4-0035** and clips **TR4-2000**.

① Plug-in sockets **GZT4** and **GZM4** may be linked with interconnection strip type **ZGGZ4** (see page 262).

|                                                                            |                                    |
|----------------------------------------------------------------------------|------------------------------------|
| Separate T-R4 control circuits from load circuits (T-R4 contacts)          | GZM4: yes<br>GZT4: no              |
| Increased dielectric strength spacing between coil and contacts clamps     | GZM4: min. 5 kV<br>GZT4: min. 4 kV |
| Double A2(14) terminal is introduced for easy wiring in electrical devices | GZM4: yes<br>GZT4: no              |



GZM4



GZM4



GZT4



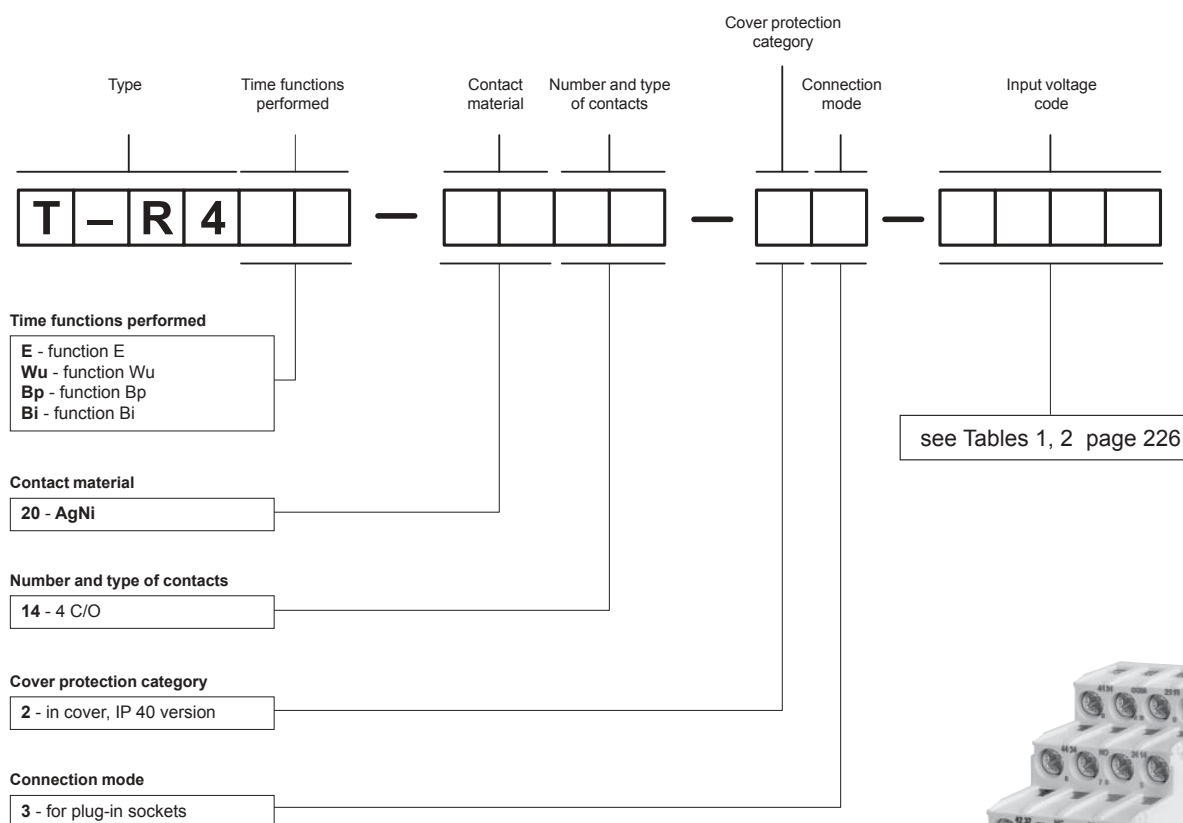
TR4-2000



GZT4-0035

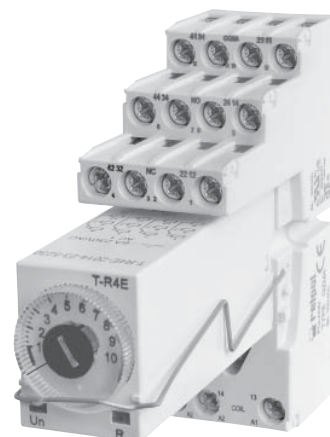
**Note:** sockets **GZM4** are available in black and gray colours.

## Ordering codes



Example of ordering code:

**T-R4E-2014-23-1012** time relay **T-R4**, single-function (relay perform function **E** - ON Delay Voltage Controlled), contact material AgNi, with four changeover contacts, in cover IP 40, for plug-in sockets, rated input voltage 12 V DC




**R15 3 C/O + GZP11**


- Time relay **PIR15 3 C/O (standard)** consists of: electromagnetic relay **R15 3 C/O**, plug-in socket **GZP11** black, time module **T(COM3)**, spring wire clip **GZP-0054**, description plate **GZP-0035**
- Time relay **PIR15 2 C/O** consists of: electromagnetic relay **R15 2 C/O**, plug-in socket **GZP8** black, time module **T(COM3)**, spring wire clip **GZP-0054**, description plate **GZP-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws
- Recognitions, certifications, directives: recognitions R15, RoHS,

### Output circuits - contact data

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

### Input control circuit

|                                       |                                           |              |
|---------------------------------------|-------------------------------------------|--------------|
| Rated voltage of output relay R15     | 50/60 Hz AC                               | 24 ... 240 V |
|                                       | DC                                        | 24 ... 220 V |
| Supply voltage of time module T(COM3) | 24...240 V AC/DC (uniwersal module)       |              |
| Operating range of supply voltage     | 0,85...1,1 U <sub>n</sub> see Tables 1, 2 |              |
| Rated power consumption               | AC                                        | 3,0 VA       |
|                                       | DC                                        | 2,0 W        |
| Range of supply frequency             | 48...63 Hz                                |              |
| Min. pulse of the control contact S   | 100 ms                                    |              |

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

|                          |            |                                        |
|--------------------------|------------|----------------------------------------|
| Insulation rated voltage | 250 V AC   |                                        |
| Overvoltage category     | III        |                                        |
| Dielectric strength      |            |                                        |
| • input - outputs        | 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              |
| Input - outputs 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 |
| • cos φ                                   | see Fig. 2                              |                |
| Mechanical life (cycles)                  | > 2 x 10 <sup>7</sup>                   |                |
| Dimensions (L x W x H)                    | 73 x 38,2 x 85,4 mm                     |                |
| Weight                                    | 3 C/O: 175 g                            | 2 C/O: 168 g   |
| Ambient temperature                       | • storage                               | -40...+70 °C   |
|                                           | • operating                             | -40...+55 °C   |
| Cover protection category                 | IP 20                                   | PN-EN 60529    |
| Environmental protection                  | R15: RTI    GZP11, GZP8: RT0            | PN-EN 116000-3 |
| Shock resistance                          | 10 g                                    |                |
| Vibration resistance                      | 5 g 10...500 Hz                         |                |

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

### Time module data

|                                  |                                                                                                           |
|----------------------------------|-----------------------------------------------------------------------------------------------------------|
| Functions ❶                      | E, E(S), Wu, Wu(S), Bi, Bi(S), Bp, Bp(S), R, Ws, Wa, Es                                                   |
| Function adjustment ❷            | selection with microswitches                                                                              |
| Time ranges                      | 1 s; 10 s; 1 min.; 10 min.; 1 h; 10 h; 1 d; 10 d                                                          |
| Timing adjustment ❷              | range - with microswitches;<br>within the range - with a potentiometer                                    |
| Setting accuracy / Repeatability | ± 1% / 0,2%                                                                                               |
| Temperature influence            | ± 0,01% / °C                                                                                              |
| Recovery time                    | 150 ms                                                                                                    |
| LED indicator                    | green LED - indication of time period T<br>and the status of outputs after the time T has been measured ❸ |

❶ Descriptions of time functions - see pages 233, 234. ❷ Settings of switches - see page 232. ❸ The green LED - T time measurement (pulsating); excited operational relay; time not measured (steady light); de-excited operational relay, time not measured (no light).

### Input data - DC voltage version

Table 1

| Input voltage code | Rated input voltage $U_n$<br>V DC | Input resistance<br>± 10% at 20 °C<br>$\Omega$ | Input - voltage range<br>V DC |                 |
|--------------------|-----------------------------------|------------------------------------------------|-------------------------------|-----------------|
|                    |                                   |                                                | min. (at 20 °C)               | max. (at 55 °C) |
| <b>024DC</b>       | <b>24</b>                         | <b>430</b>                                     | <b>19,2</b>                   | <b>26,4</b>     |
| 048DC              | 48                                | 1 750                                          | 38,4                          | 52,8            |
| 060DC              | 60                                | 2 700                                          | 48,0                          | 66,0            |
| 110DC              | 110                               | 9 200                                          | 88,0                          | 121,0           |
| 120DC              | 120                               | 11 000                                         | 96,0                          | 132,0           |
| <b>220DC</b>       | <b>220</b>                        | <b>37 000</b>                                  | <b>176,0</b>                  | <b>242,0</b>    |

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

### Input data - AC 50/60 Hz voltage version

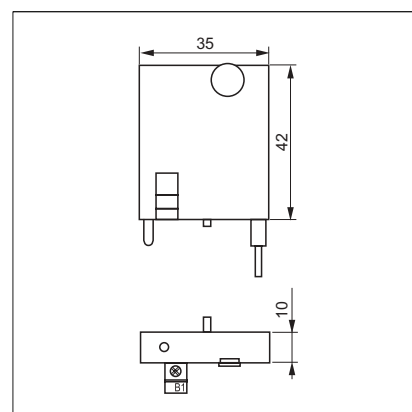
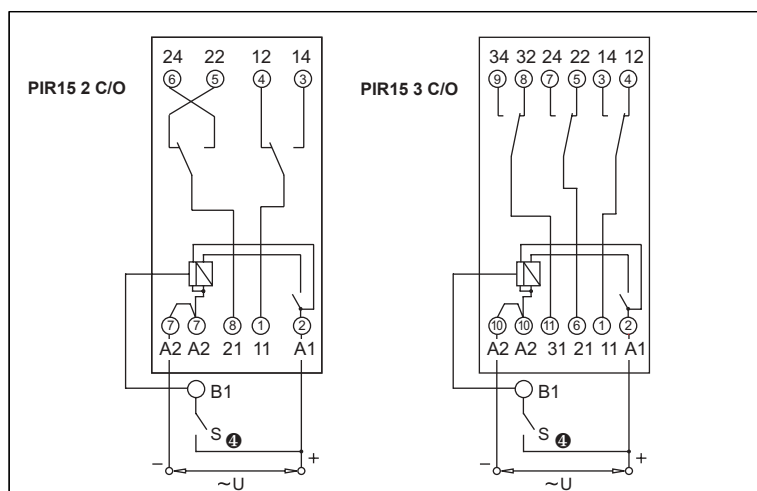
Table 2

| Input voltage code | Rated input voltage $U_n$<br>V AC | Input resistance<br>± 15% at 20 °C<br>$\Omega$ | Input - voltage range<br>V AC |                 |
|--------------------|-----------------------------------|------------------------------------------------|-------------------------------|-----------------|
|                    |                                   |                                                | min. (at 20 °C)               | max. (at 55 °C) |
| <b>024AC</b>       | <b>24</b>                         | <b>75</b>                                      | <b>19,2</b>                   | <b>26,4</b>     |
| 048AC              | 48                                | 305                                            | 38,4                          | 52,8            |
| 060AC              | 60                                | 475                                            | 48,0                          | 66,0            |
| 110AC              | 110                               | 1 700                                          | 88,0                          | 121,0           |
| 120AC              | 120                               | 1 910                                          | 96,0                          | 132,0           |
| <b>230AC</b>       | <b>230</b>                        | <b>7 080</b>                                   | <b>184,0</b>                  | <b>253,0</b>    |
| 240AC              | 240                               | 7 760                                          | 192,0                         | 264,0           |

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

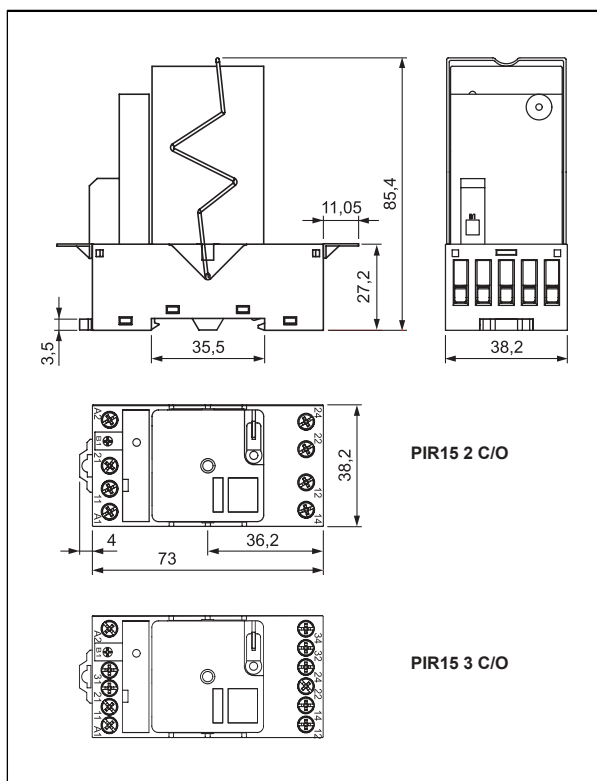
### Connection diagrams (screw terminals side view)

### Dimensions - time module T(COM3)



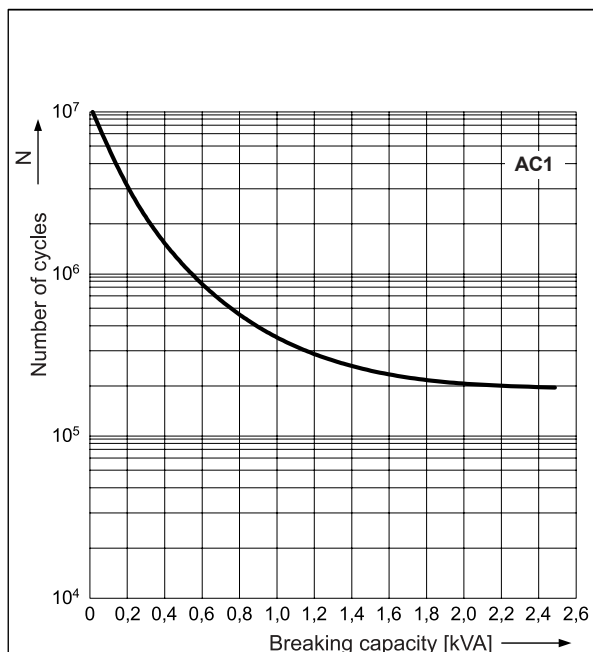
❶ Control contact (B1) S is activated by connecting it to A1 terminal.

## Dimensions



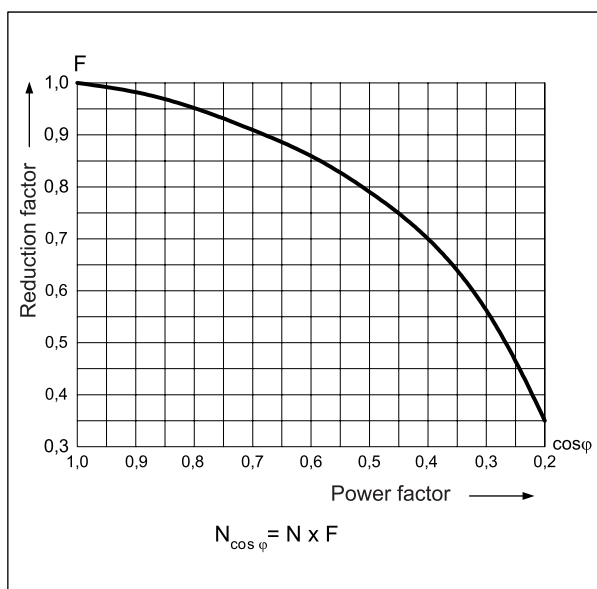
## Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour

Fig. 1



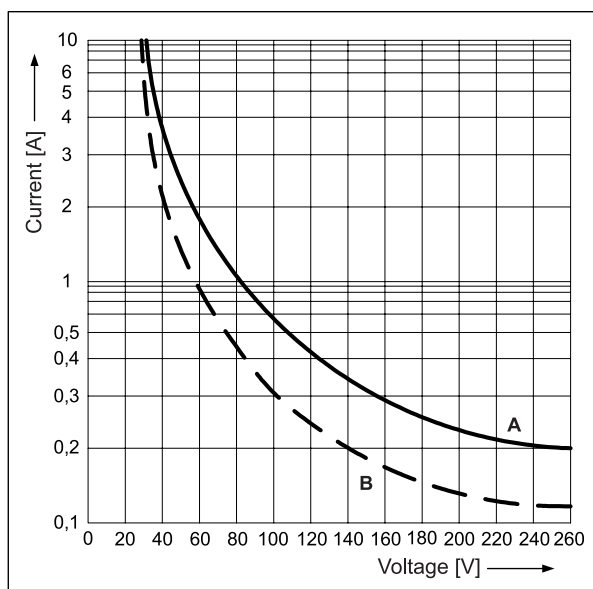
## Electrical life reduction factor at AC inductive load

Fig. 2



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

Fig. 3



### Settings of switches

| Function adjustment      | E / E(S) | Wu / Wu(S) | Bi / Bi(S) | Bp / Bp(S) | R   | Ws   | Wa  | Es   |
|--------------------------|----------|------------|------------|------------|-----|------|-----|------|
| switches 1, 2, 3         |          |            |            |            |     |      |     |      |
| Timing adjustment (max.) | 1 s      | 10 s       | 1 min.     | 10 min.    | 1 h | 10 h | 1 d | 10 d |
| switches 4, 5, 6         |          |            |            |            |     |      |     |      |

### Mounting

Relays **PIR15...T** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. Time relay **PIR15 3 C/O (standard)** consists of: electromagnetic relay **R15 3 C/O**, plug-in socket **GZP11** black, time module **T(COM3)**, spring wire clip **GZP-0054** and description plate **GZP-0035**. Time relay **PIR15 2 C/O** consists of: electromagnetic relay **R15 2 C/O**, plug-in socket **GZP8** black, time module **T(COM3)**, spring wire clip **GZP-0054** and description plate **GZP-0035**.



R15 3 C/O



GZP11



R15 2 C/O



GZP8



T(COM3)

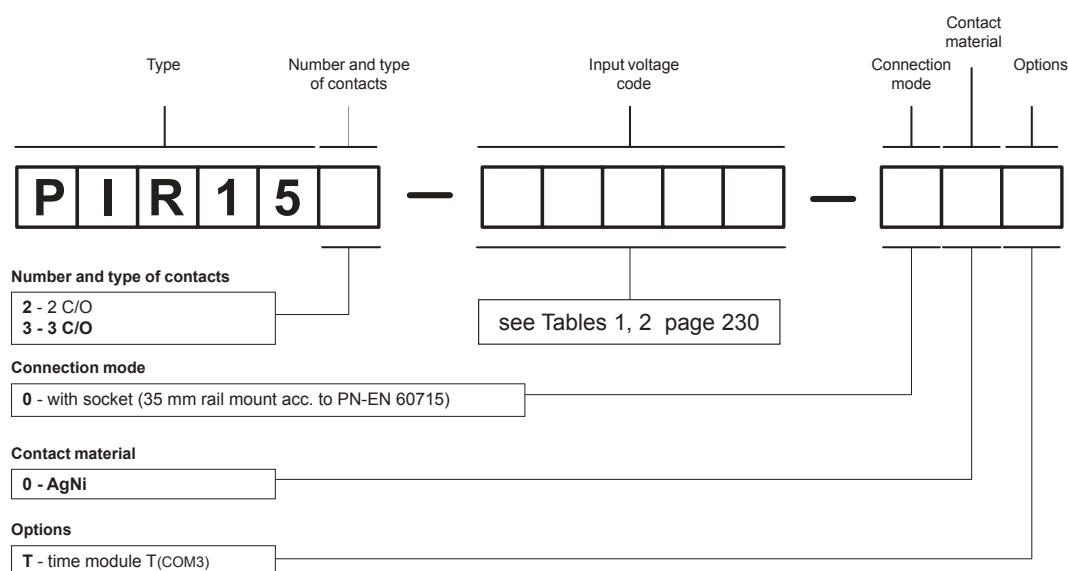


GZP-0054



GZP-0035

### Ordering codes



Examples of ordering codes:

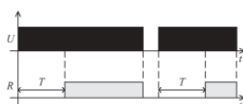
**PIR153-230AC-00T**

time relay **PIR15 3 C/O**, which consists of: relay **R15 3 C/O**, contact material AgNi, rated input voltage 230 V AC 50/60 Hz, plug-in socket **GZP11** black (screw terminals), time module **T(COM3)**, spring wire clip **GZP-0054**, description plate **GZP-0035**

**PIR152-024DC-00T**

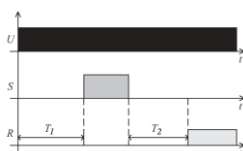
time relay **PIR15 2 C/O**, which consists of: relay **R15 2 C/O**, contact material AgNi, rated input voltage 24 V DC, plug-in socket **GZP8** black (screw terminals), time module **T(COM3)**, spring wire clip **GZP-0054**, description plate **GZP-0035**

## E - ON Delay Voltage Controlled



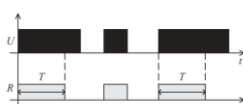
After the supply voltage [U] has been applied, the preset time [T] measurement starts. After the time [T] has been measured, the output relay [R] switches to ON position and remains in such until the supply voltage [U] is removed.

## E(S) - ON Delay Voltage Controlled with control contact S



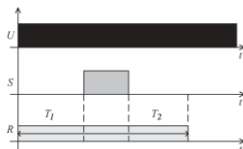
After the supply voltage [U] has been applied, the time [T] measurement starts. If the control contact [S] is switched on, the measurement of time [T] is interrupted for the time of switching the control contact [S]. After the control contact [S] has been switched off, the time [T] ( $T=T_1+T_2$ ) is continued to be measured. After the time [T] has been measured, the output relay [R] will switch, and it will be in operating position until the supply voltage [U] is removed.

## Wu - Single Shot Leading Edge Voltage Controlled



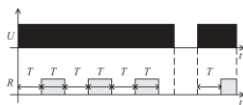
After the supply voltage [U] has been applied, the output relay [R] switches immediately, and the preset time [T] is measured. After the preset time [T] has been measured, the output relay [R] returns to the initial state.

## Wu(S) - Single Shot Leading Edge Voltage Controlled with control contact S



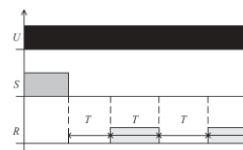
After the supply voltage [U] has been applied, the output relay [R] switches immediately and the preset time [T] measurement starts. If the control contact [S] is switched on, the time [T] measurement will be interrupted for the time for which the control contact [S] is switched. After the control contact [S] has been released, the time [T] ( $T=T_1+T_2$ ) is continued to be measured. After the preset time [T] has been measured, the output relay [R] returns to the initial position.

## Bp - Flasher Pause First



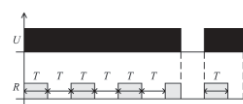
After the supply voltage [U] has been applied, the preset time [T] measurement starts. After the time [T] has been measured, the output relay [R] switches to ON position and the preset time [T] is being measured once more. After the preset time [T] has been measured, the output relay [R] returns to the initial state, and the next operating cycle of the relay starts. The relay operates until the supply voltage is removed.

## Bp(S) - Flasher Pause First with control contact S



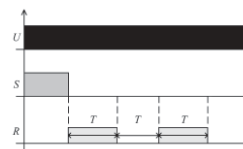
After the control contact [S] has been switched on and then off at the supply voltage [U] being applied, the measurement of the preset time [T] starts. After the time has been measured, the output relay [R] switches, and the time [T] is measured again. After the time has been measured, the output relay returns to the initial position, and the next cycle of the relay operation starts. The relay operates until the supply voltage is removed.

## Bi - Flasher Impulse First



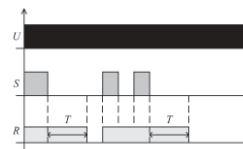
After the supply voltage [U] has been applied, the preset time [T] measurement starts simultaneously with switching of the output relay [R]. After the preset time [T] has been measured, the output relay [R] returns to the initial state, and the next operating cycle of the relay starts. The relay operates until the supply voltage is removed.

## Bi(S) - Flasher Impulse First with control contact S



After the control contact [S] has been switched on and then off at the supply voltage [U] being applied, the measurement of the preset time [T] starts with the simultaneous switching of the output relay [R]. After the time [T] has been measured, the output relay [R] returns to the initial position and the time [T] measurement starts again. After the time [T] has been measured, the next cycle of the relay operation starts. The relay operates until the supply voltage is removed.

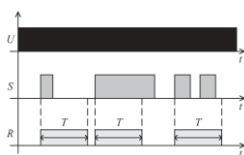
## R - OFF Delay with control contact S



The supply voltage [U] must be applied to the time relay continuously. After the control contact [S] has been closed, the output relay [R] switches immediately. After opening of the control contact [S] measurement of the preset time [T] starts. After the preset time [T] has lapsed, the output relay [R] returns to the initial position. If the control contact [S] is closed again, even before the preset time [T] has lapsed, the previously measured time is cancelled, and after the control contact [S] has been opened, the preset time [T] is measured again.

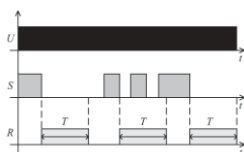
U - supply voltage; R - output state of the relay; S - control contact state; T, T<sub>1</sub>, T<sub>2</sub> - measured times; T<sub>z</sub> - value of the set interval; t - time axis

## Ws - Single Shot Leading Edge with control contact S



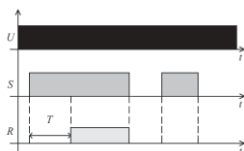
The supply voltage [U] must be applied to the time relay continuously. After the control contact [S] has been closed, the output relay [R] switches immediately. After opening of the control contact [S] measurement of the preset time [T] starts. After the preset time [T] has lapsed, the output relay [R] returns to the initial position. In course of the time [T] measurement the control contact [S] may be repeatedly closed and opened with no influence upon the output relay [R]. It is only after the time [T] has lapsed that closing of the control contact [S] causes switching the output relay [R] on again and measurement of the time [T].

## Wa - Single Shot Trailing Edge with control contact S



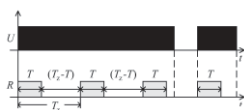
The supply voltage [U] must be applied to the time relay continuously. Closing of the control contact [S] does not result in measurement of the time delay or switching of the output relay [R]. It is only when the control contact [S] is opened that the output relay [R] switches immediately and the preset time [T] measurement starts. After the preset time [T] has lapsed, the output relay [R] returns to the initial position. In course of the time [T] measurement the control contact [S] may be repeatedly closed and opened with no influence upon the output relay [R]. It is only after the time [T] has lapsed that closing and opening of the control contact [S] causes switching the output relay [R] on again and measurement of the time [T].

## Es - ON Delay with control contact S



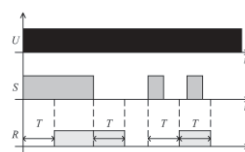
The supply voltage [U] shall be applied to the time relay continuously. After the control contact [S] has been closed, the preset time [T] is measured after which the output relay [R] is switched on and remains in this position until the control contact [S] is opened. If the closing time of [S] is shorter than the preset time [T], the relay [R] will not operate.

## PWM - Pulse with Modulation



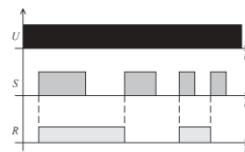
After the supply voltage has been applied, the output relay switches on for the preset time [T], and then switches off for the remaining time interval to complete the full value of the preset time range [Tz]. After the time [Tz] next cycle is started. [Tz] - time range (range-adjusting knob). [T] - (0,1...1) x time range (time-adjusting knob).

## Esa - Delayed Switching ON and OFF Controlled with control contact S



The supply voltage [U] must be applied to the time relay continuously. After the control contact [S] has been closed, the preset time [T] measurement starts, and after it has lapsed, the output relay [R] is switched on. If closing time of control contact [S] is shorter than setting time delay [T] output relay [R] will switch on after time delay [T] and will be on during time [T]. Closing of control contact [S] during time of switch on output relay [R] will not influence for realize function.

## B - Flasher with control contact S



Each closing of the control contact [S] results in the change of the output relay position to the opposite one (a feature of bistable relay).

## Permanent switching ON and OFF

**The functions available in TR4N relays.** The functions ON and OFF are selected with TIME potentiometer. In the ON function, the normally open contacts are closed all the time whereas in the OFF function they are open. The position of the FUNC potentiometer is of no significance in these functions as is the preset measurement time. The ON or OFF functions are used for the time relay operation control in electric systems.

## Plug-in sockets and accessories

|                                  |     |                                                                                    |     |
|----------------------------------|-----|------------------------------------------------------------------------------------|-----|
| GZT80, GZM80, GZS80 .....        | 236 | Mounting and sub-assemblies<br>of the relay and accessories<br>in the socket ..... | 249 |
| EC50, PW80, GD50, GZT92 .....    | 237 | Accessories - retainer / retractor<br>clips and description plates .....           | 249 |
| GZM92, GZS92, EC35, GD35 .....   | 238 | Signalling / protecting modules<br>type M.... ..                                   | 250 |
| ES 32, EC32, GZT2, GZM2 .....    | 239 | Additional features<br>for industrial relays .....                                 | 250 |
| SU4/2D, SU4/2L, G4/2, GZT3 ..... | 240 | Test buttons (no latching) and plugs ..                                            | 251 |
| GZM3, GZT4, GZM4, GZ4 .....      | 241 | Plug-in sockets and accessories<br>availability index .....                        | 252 |
| GS4, SU4D, SU4L, G4 .....        | 242 | Relays mounting options .....                                                      | 254 |
| GZY2, GZ2, S2M, G2M .....        | 243 | Plug-in sockets technical data .....                                               | 256 |
| PZ8, GZU8, GZ8, GZS8 .....       | 244 | Interconnection strips<br>ZGGZ80, ZGGZ4 .....                                      | 261 |
| GZP8, GOP8, PS11, PZ11 .....     | 245 |                                                                                    |     |
| GZU11, GZ11, GZS11, GZP11 .....  | 246 |                                                                                    |     |
| GOP11, GZ14U, GZ14, GOP14 .....  | 247 |                                                                                    |     |
| GZ14Z, GUC11, PI6W-1P .....      | 248 |                                                                                    |     |

Plug-in sockets are designed for miniature and industrial relays.

They provide for mounting of the relays in printed circuits, on 35 mm rail mount acc. to PN-EN 60715, and on panel mounting.

GZT..., GZM..., GZS..., GZ..., GZU... series are the sockets with screw terminals for mounting on 35 mm rail mount acc. to PN-EN 60715, and on panel mounting.

The sockets have the following features:

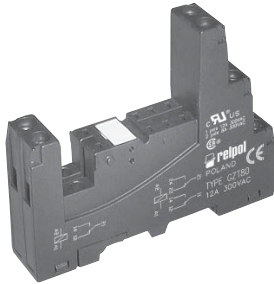
- current circuits load: up to 12 A,
- available plug-in sockets with separation of input (coil) from output (contacts), i.e. coil terminals on one side of the socket, and contact terminals on another side,
- adapted for mounting signalling / protecting modules type M... - sockets of GZT..., GZM..., GZS..., ES 32 series.

The screw terminals plug-in sockets are recognized and certified by: 

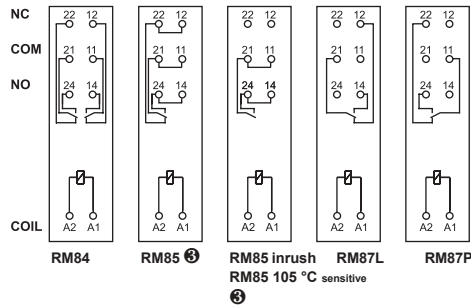
## GZT80

For RM84, RM85, RM85 inrush, RM85 105 °C sensitive, RM87L, RM87L sensitive, RM87P, RM87P sensitive

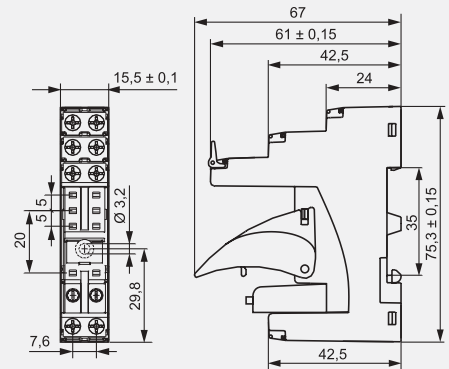
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
75,3 x 15,5 x 61(67) mm ②  
Two poles, 5 mm pinout  
12 A, 300 V AC



### Connection diagrams



### Dimensions



### Accessories ①

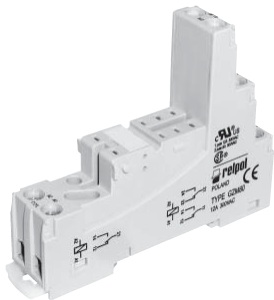
ZGGZ80

GZM80-0041

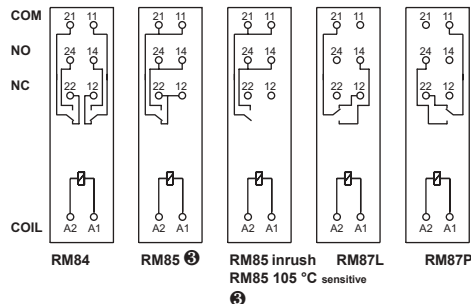
## GZM80

For RM84, RM85, RM85 inrush, RM85 105 °C sensitive, RM87L, RM87L sensitive, RM87P, RM87P sensitive

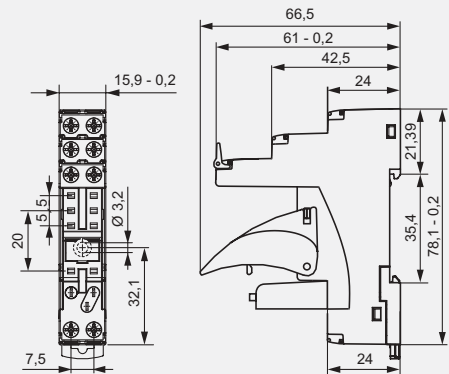
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
78,1 x 15,9 x 61(66,5) mm ②  
Two poles, 5 mm pinout  
12 A, 300 V AC



### Connection diagrams



### Dimensions



### Accessories ①

ZGGZ80

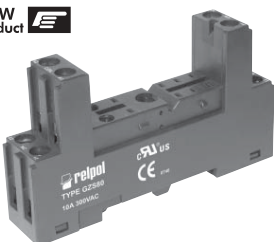
GZM80-0041

## GZS80

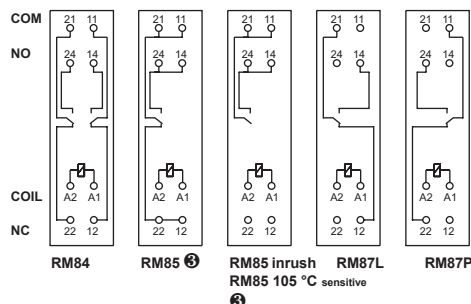
For RM84, RM85, RM85 inrush, RM85 105 °C sensitive, RM87L, RM87L sensitive, RM87P, RM87P sensitive

Screw terminals  
Maximum screw torque: 0,5 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
76,8 x 15,8 x 42,5(57,1) mm ②  
Two poles, 5 mm pinout  
10 A / 300 V AC

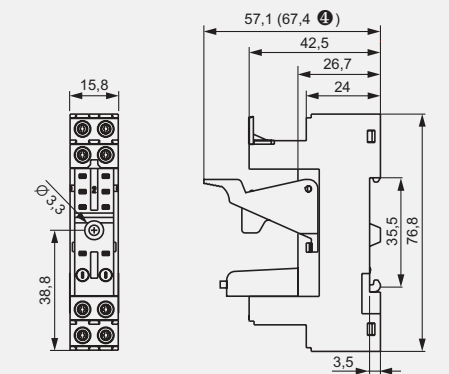
NEW product



### Connection diagrams



### Dimensions



### Accessories ①

GZS-0025 ④

GZS-0040

GZM80-0041

① Mounting and sub-assemblies of accessories in the socket - see page 249. Signalling / protecting modules type M... - see page 250.

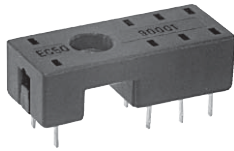
② For RM85, RM85 inrush, RM85 105 °C sensitive: loads above 12 A require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24.

③ In the bracket the height of socket with retainer / retractor clip is shown. ④ Clip designed for relays of the height 25...26 mm.

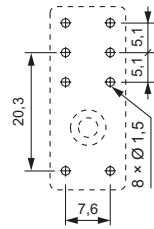
## EC50

For RM84, RM85, RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive,  
RM83, RM94

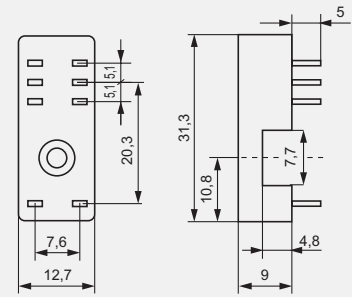
For PCB  
31,3 x 12,7 x 9 mm  
Two poles, 5 mm pinout  
8 A, 300 V AC



### Pinout



### Dimensions



### Accessories

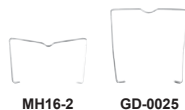
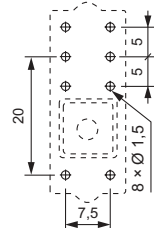
## PW80

For RM84, RM85, RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive,  
RM83, RM94

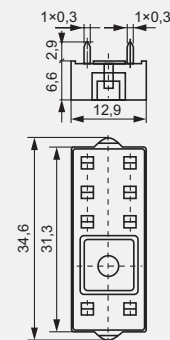
For PCB  
34,6 x 12,9 x 6,6 mm  
Two poles, 5 mm pinout  
8 A, 250 V AC



### Pinout



### Dimensions



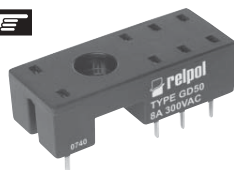
### Accessories

## GD50

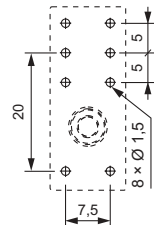
For RM84, RM85, RM85 inrush,  
RM85 105 °C sensitive,  
RM87L, RM87L sensitive,  
RM87P, RM87P sensitive,  
RM83, RM94

For PCB  
31,5 x 13 x 9 mm  
Two poles, 5 mm pinout  
8 A, 300 V AC

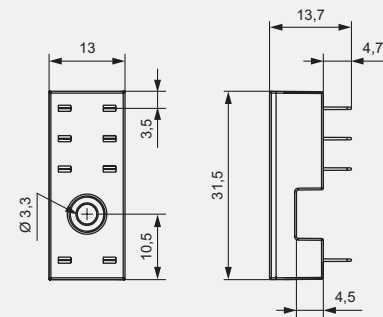
NEW product



### Pinout



### Dimensions

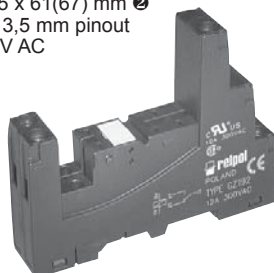


### Accessories

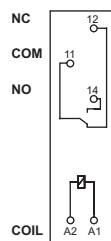
## GZT92

For RM87N, RM87N sensitive

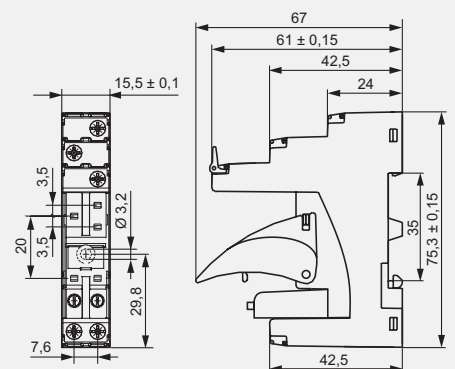
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
75,3 x 15,5 x 61(67) mm ②  
One pole, 3,5 mm pinout  
12 A, 300 V AC



### Connection diagram



### Dimensions



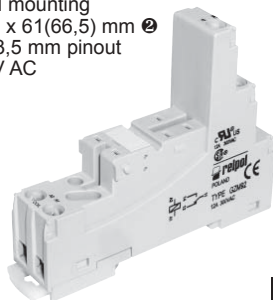
### Accessories ①

① Mounting and sub-assemblies of accessories in the socket - see page 249. Signalling / protecting modules type M... - see page 250.  
② In the bracket the height of socket with retainer / retractor clip is shown.

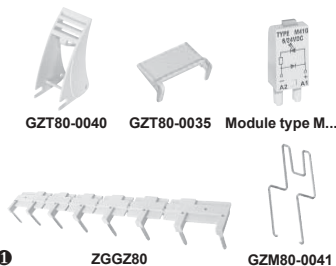
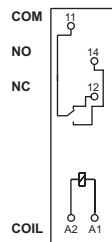
## GZM92

For RM87N, RM87N sensitive

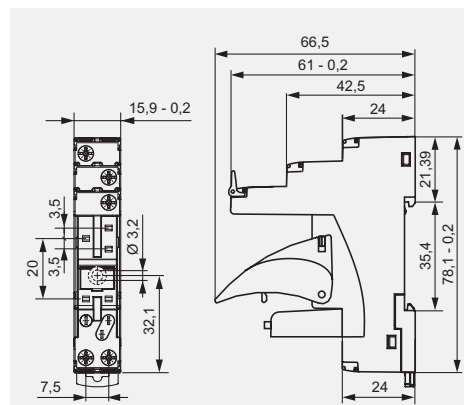
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
78,1 x 15,9 x 61 (66,5) mm ②  
One pole, 3,5 mm pinout  
12 A, 300 V AC



### Connection diagram



### Dimensions

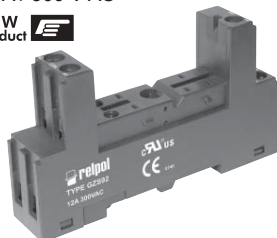


## GZS92

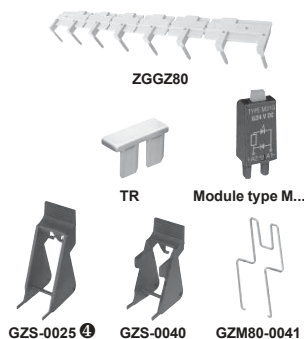
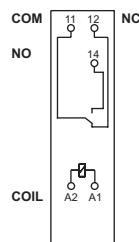
For RM87N, RM87N sensitive

Screw terminals  
Maximum screw torque: 0,5 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
76,8 x 15,8 x 42,5 (57,1) mm ②  
One pole, 3,5 mm pinout  
12 A / 300 V AC

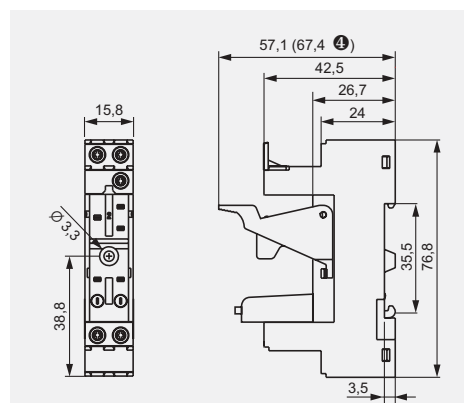
NEW product



### Connection diagram



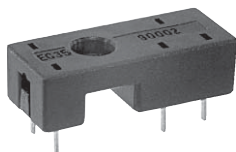
### Dimensions



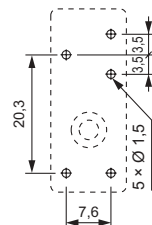
## EC35

For RM87N, RM87N sensitive, RM92

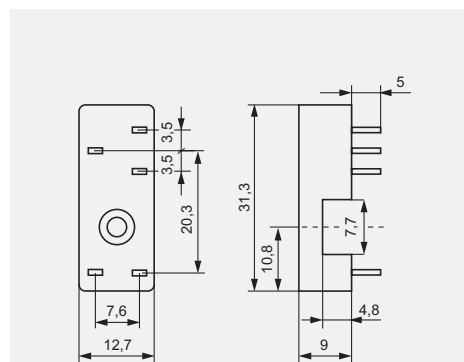
For PCB  
31,3 x 12,7 x 9 mm  
One pole, 3,5 mm pinout  
12 A, 300 V AC



### Pinout



### Dimensions



### Accessories



## GD35

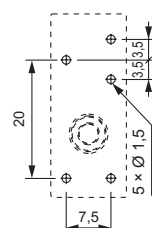
For RM87N, RM87N sensitive, RM92

For PCB  
31,5 x 13 x 9 mm  
One pole, 3,5 mm pinout  
12 A, 300 V AC

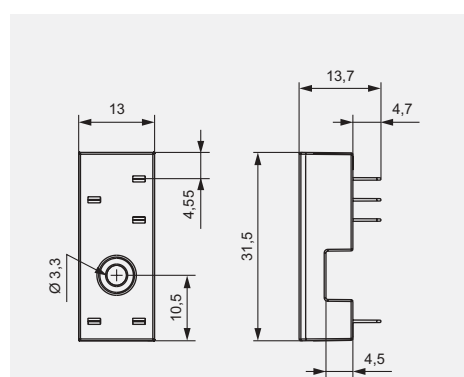
NEW product



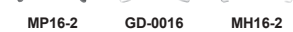
### Pinout



### Dimensions



### Accessories

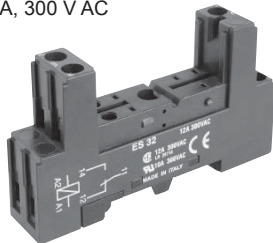


① Mounting and sub-assemblies of accessories in the socket - see page 249. Signalling / protecting modules type M... - see page 250.  
② In the bracket the height of socket with retainer / retractor clip is shown. ④ Clip designed for relays of the height 25...26 mm.

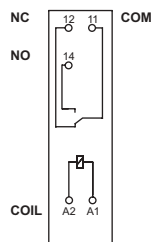
## ES 32

For RM96 1 C/O

Screw terminals  
Maximum screw torque: 0,5 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
75 x 15,5 x 42,5(59) mm ②  
One pole, 3,2 mm pinout  
12 A, 300 V AC

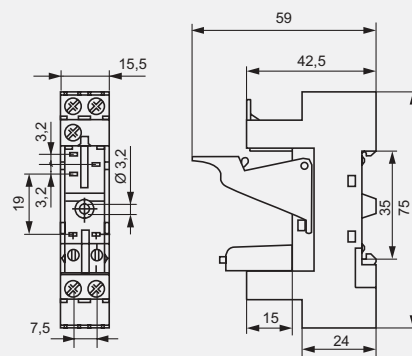


### Connection diagram



Module type M...

### Dimensions



### Accessories ①

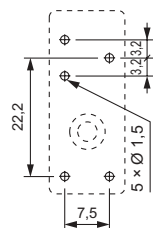
## EC32

For PCB

31,3 x 12,7 x 9 mm  
One pole, 3,2 mm pinout  
12 A, 300 V AC

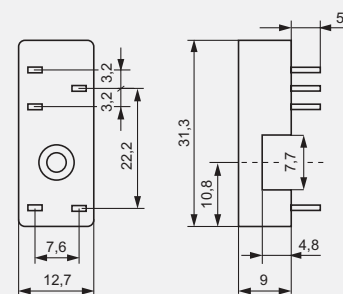


### Pinout



### Accessories

### Dimensions



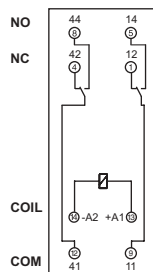
## GZT2

For R2

Screw terminals  
Maximum screw torque: 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 ②  
Two poles  
12 A, 300 V AC

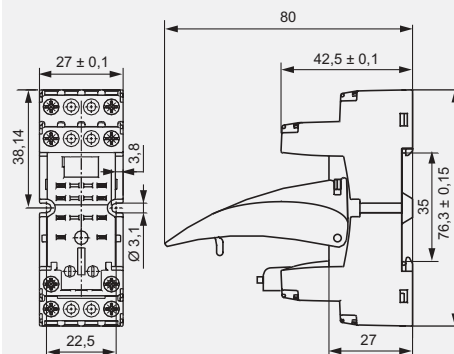


### Connection diagram



Module type M...

### Dimensions

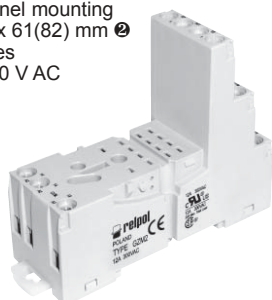


### Accessories ①

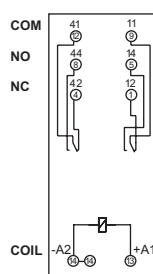
## GZM2

For R2

Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
75 x 27 x 61(82) mm ②  
Two poles  
12 A, 300 V AC

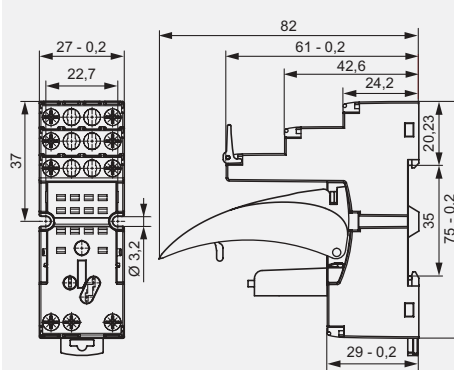


### Connection diagram



Module type M...

### Dimensions



### Accessories ①

① Mounting and sub-assemblies of accessories in the socket - see page 249. Signalling / protecting modules type M... - see page 250.

② In the bracket the height of socket with retainer / retractor clip is shown.

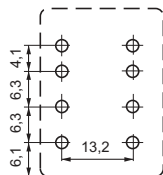
## SU4/2D

For R2

For PCB  
29,6 x 21,5 x 11mm  
Two poles  
12 A, 250 V AC



### Pinout

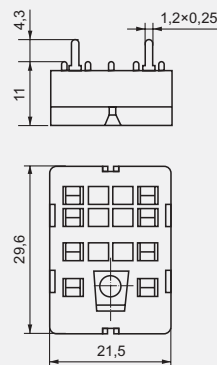


### Accessories ⑤

G4 1053

G4 1050

### Dimensions



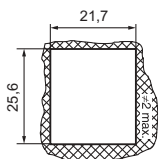
## SU4/2L

For R2

Solder terminals  
29,6 x 21,5 x 18,1 mm  
Two poles  
12 A, 250 V AC



### Dimensions of opening on panel mounting



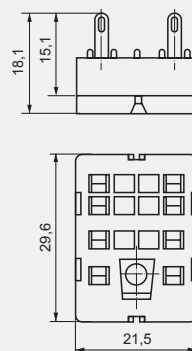
### Accessories ⑤

G4 1053

G4 1050

G4 1040

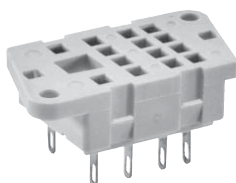
### Dimensions



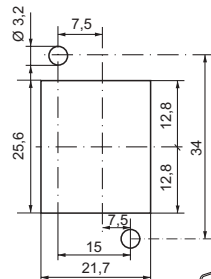
## G4/2

For R2

Solder terminals  
40,5 x 21,5 x 18,1 mm  
Two poles  
12 A, 250 V AC



### Pinout of openings on panel mounting

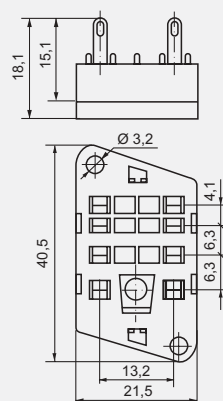


### Accessories ⑤

G4 1053

G4 1050

### Dimensions



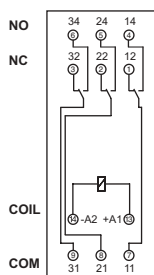
## GZT3

For R3

Screw terminals  
Maximum screw torque: 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 ②  
Three poles  
10 A, 300 V AC



### Connection diagram



ZGGZ4



GZT4-0040



G4 1052

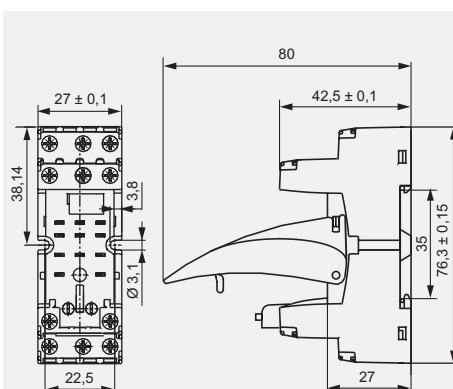


GZT4-0035

Module type M...

### Accessories ①

### Dimensions



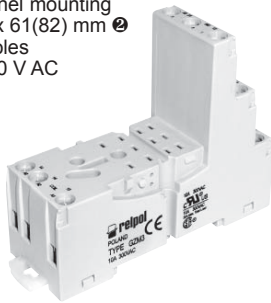
① Mounting and sub-assemblies of accessories in the socket - see page 249. Signalling / protecting modules type M... - see page 250.

② In the bracket the height of socket with retainer / retractor clip is shown. ⑤ G4 1053 - for R2...WT, R4...WT relays; G4 1050 - for R2, R4 without WT

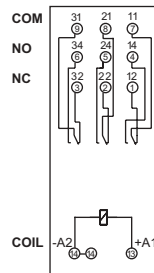
## GZM3

For R3

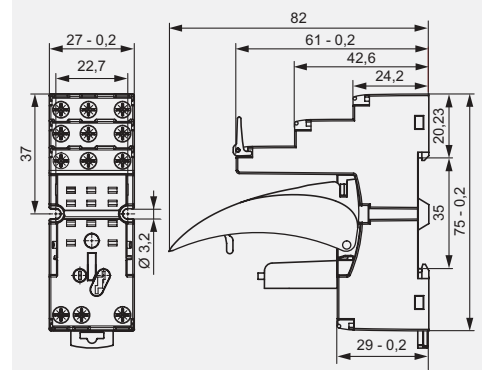
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
75 x 27 x 61(82) mm ②  
Three poles  
10 A, 300 V AC



### Connection diagram



### Dimensions



### Accessories ①

GZT4-0035 Module type M...

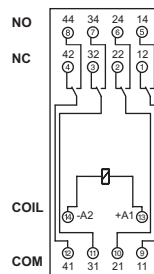
## GZT4 ⑥

For R4, T-R4

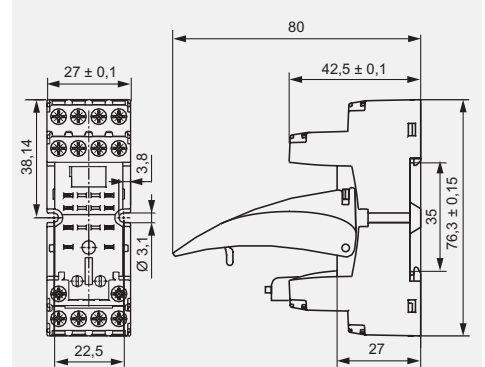
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
76,3 x 27 x 42,5(80) mm ②  
Four poles  
6 A, 300 V AC



### Connection diagram



### Dimensions



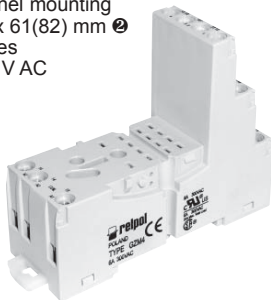
### Accessories ① ⑦

GZT4-0035 Module type M...

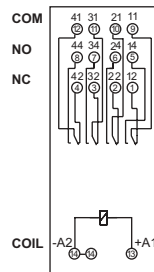
## GZM4

For R4, T-R4

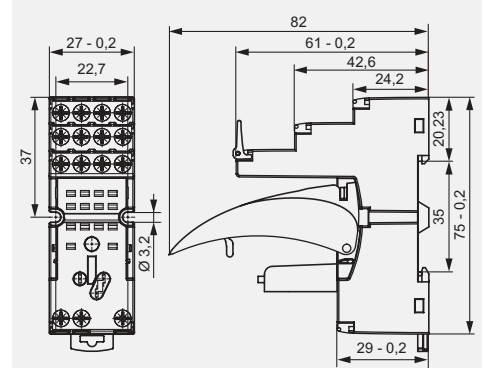
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
75 x 27 x 61(82) mm ②  
Four poles  
6 A, 300 V AC



### Connection diagram



### Dimensions



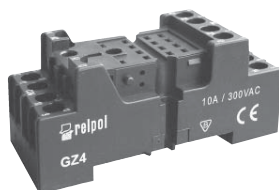
### Accessories ① ⑦

GZT4-0035 Module type M...

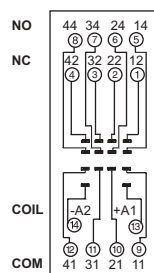
## GZ4

For R4

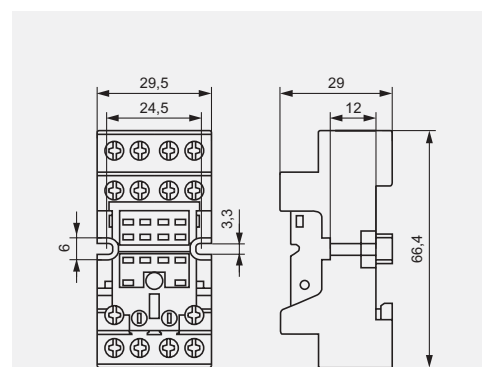
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
66,4 x 29,5 x 29 mm  
Four poles  
10 A, 300 V AC



### Connection diagram



### Dimensions



### Accessories

G4 1052

① Mounting and sub-assemblies of accessories in the socket - see page 249. Signalling / protecting modules type M... - see page 250.

② In the bracket the height of socket with retainer / retractor clip is shown. ③ Have obtained LR Type Approval Certificate (Lloyd's Register).

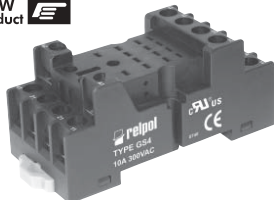
⑦ For R4 relays: G4 1052, GZT4-0040, GZT4-0035, module type M...; for T-R4 relays: TR4-2000, GZT4-0035

## GS4

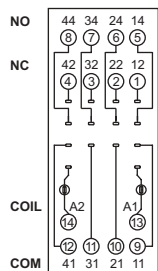
For R4

Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
67 x 30,8 x 30(~63,7) mm   
Four poles  
6 A, 300 V AC

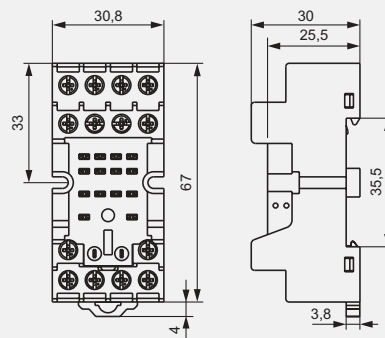
NEW product 



## Connection diagram



## Dimensions

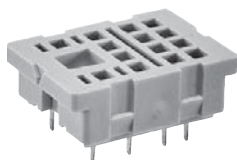


## Accessories

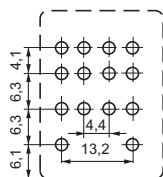
## SU4D

For R4

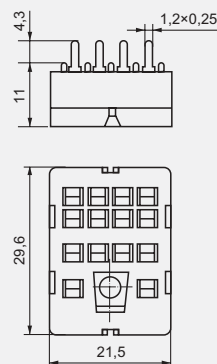
For PCB  
29,6 x 21,5 x 11 mm  
Four poles  
6 A, 250 V AC



## Pinout



## Dimensions



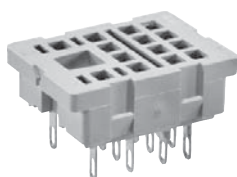
## Accessories

G4 1053 G4 1050

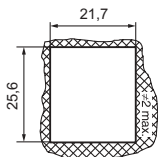
## SU4L

For R4

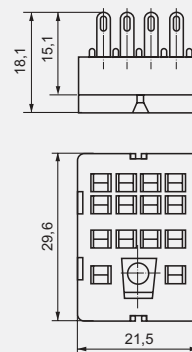
Solder terminals  
29,6 x 21,5 x 18,1 mm  
Four poles  
6 A, 250 V AC



## Dimensions of opening on panel mounting



## Dimensions



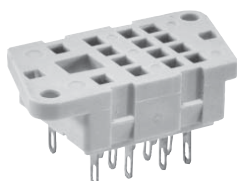
## Accessories

G4 1053 G4 1050 G4 1040

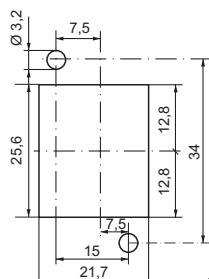
## G4

For R4

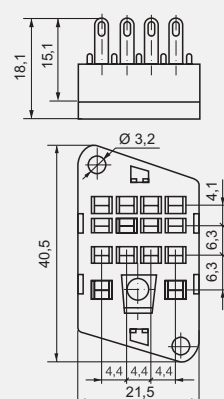
Solder terminals  
40,5 x 21,5 x 18,1 mm  
Four poles  
6 A, 250 V AC



## Pinout of openings on panel mounting



## Dimensions



## Accessories

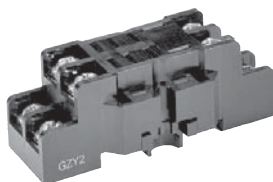
G4 1053 G4 1050

 G4 1053 - for R2...WT, R4...WT relays; G4 1050 - for R2, R4 without WT  
 In the bracket the height of socket with spring wire clip is shown.

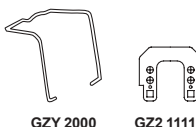
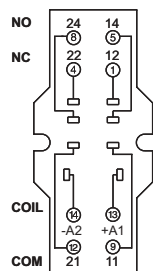
## GZY2

For RY2

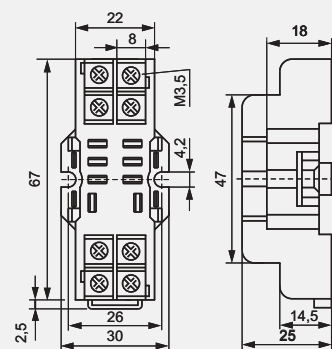
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
67 x 22 x 25 mm  
Two poles  
12 A, 250 V AC



### Connection diagram



### Dimensions



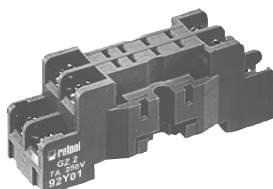
### Accessories

GZY 2000 GZ2 1111

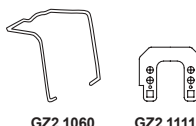
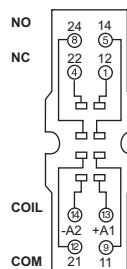
## GZ2

For R2M

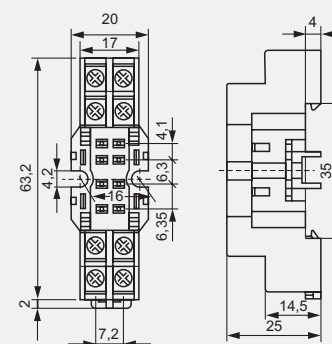
Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
63,2 x 17 x 25 mm  
Two poles  
7 A, 250 V AC



### Connection diagram



### Dimensions



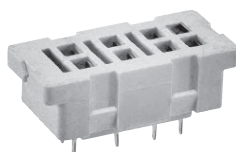
### Accessories

GZ2 1060 GZ2 1111

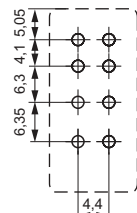
## S2M

For R2M

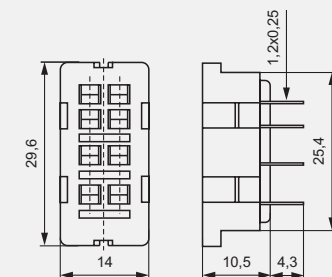
For PCB  
29,6 x 14 x 10,5 mm  
Two poles  
5 A, 250 V AC



### Pinout



### Dimensions



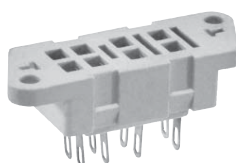
### Accessories

G4 1050

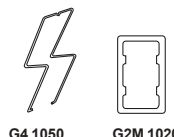
## G2M

For R2M

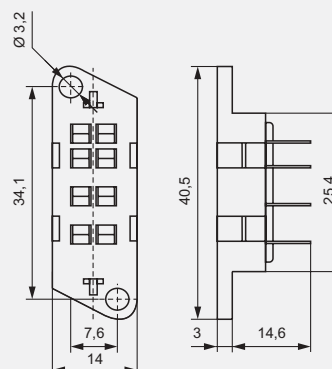
Solder terminals  
40,5 x 14 x 10,5 mm  
Two poles  
5 A, 250 V AC



### Accessories



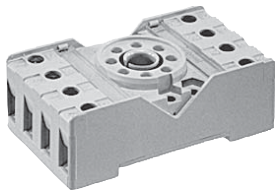
### Dimensions



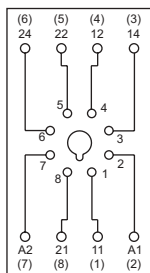
**PZ8 ⑥**

For R15 2 C/O

Screw terminals  
Maximum screw torque: 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

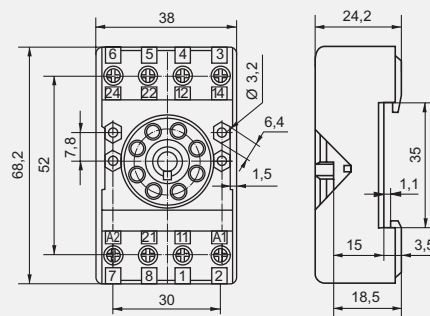


### Connection diagram



PZ11 0031

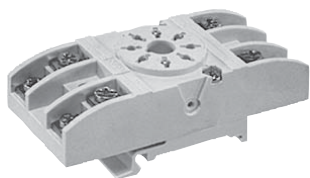
## Dimensions



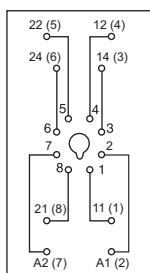
**GZU8**

For R15 2 C/O

Screw terminals  
Maximum screw torque: 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

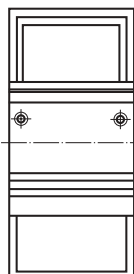


### Connection diagram

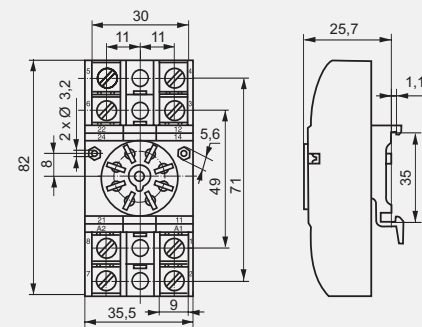


GZU 1052

## Adaptor



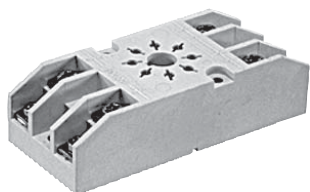
## Dimensions



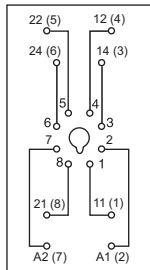
## GZ8

For R15 2 C/O

Screw terminals  
Maximum screw torque: 0,7 Nm  
On panel mounting  
82,8 x 35,5 x 22,5 mm  
Two poles  
10 A, 300 V AC

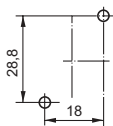


### Connection diagram

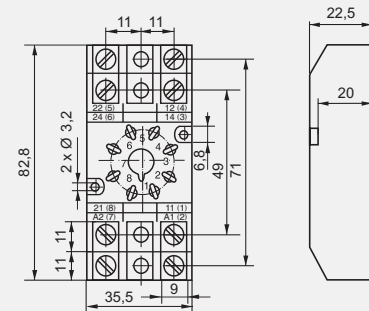


**GZ 1050**

## Mounting dimensions



## Dimensions

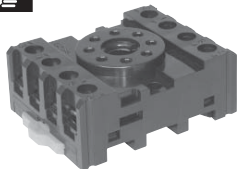


## GZS8

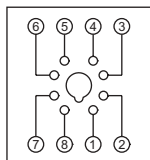
For R15 2 C/O

Screw terminals  
Maximum screw torque: 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

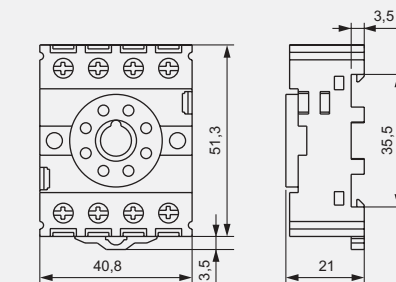
**NEW**  
product 



### Connection diagram



## Dimensions



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

## GZP8

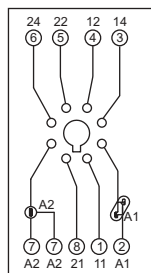
For R15 2 C/O

Screw terminals  
Maximum screw torque: 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

NEW product



### Connection diagram



Time module T<sub>1</sub>(COM3)



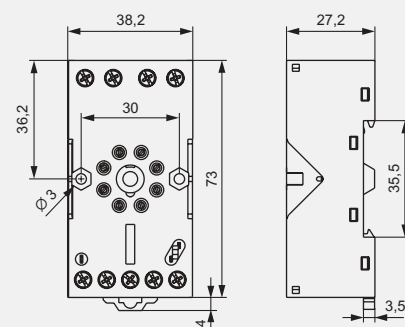
GZP-0054



GZP-0035

### Accessories

### Dimensions



## GOP8

For R15 2 C/O

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



### Accessories

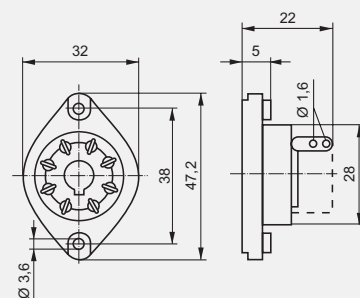


R159 1051



R15 5922

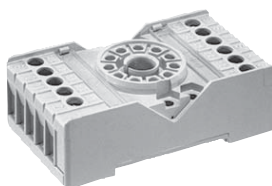
### Dimensions



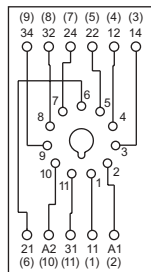
## PS11 ⑥

For R15 3 C/O

Screw terminals  
Maximum screw torque: 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



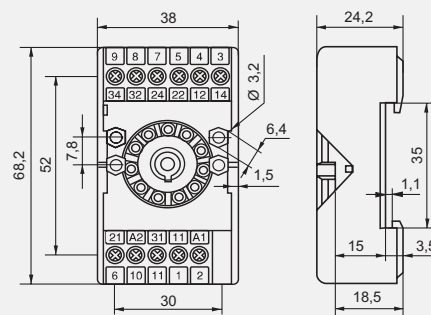
### Connection diagram



PZ11 0031

### Accessories

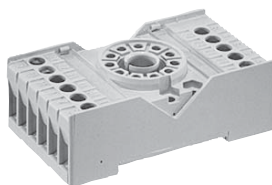
### Dimensions



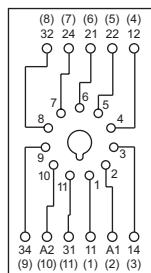
## PZ11 ⑥

For R15 3 C/O

Screw terminals  
Maximum screw torque: 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



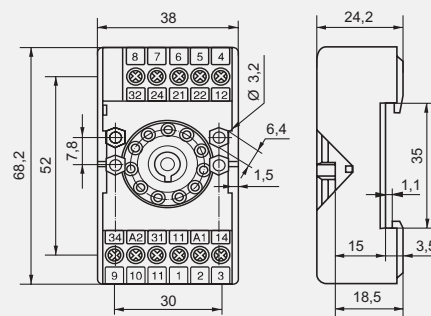
### Connection diagram



PZ11 0031

### Accessories

### Dimensions



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

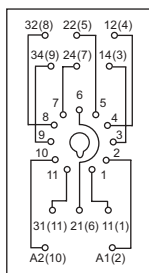
## GZU11

For R15 3 C/O

Screw terminals  
Maximum screw torque: 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

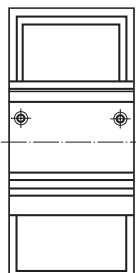


### Connection diagram

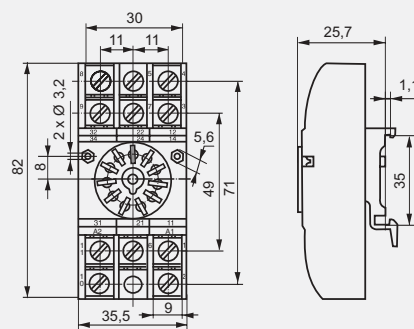


GZU 1052

### Adaptor



### Dimensions

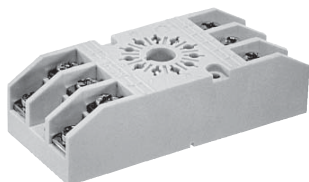


### Accessories

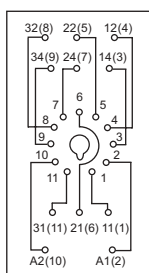
## GZ11

For R15 3 C/O

Screw terminals  
Maximum screw torque: 0,7 Nm  
On panel mounting  
82,8 x 35,5 x 22,5 mm  
Three poles  
10 A, 250 V AC

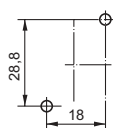


### Connection diagram

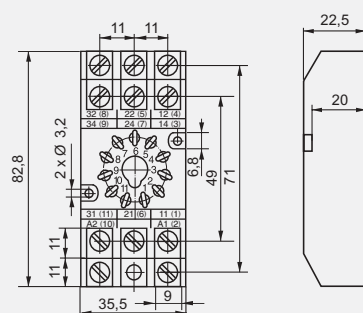


GZ 1050

### Mounting dimensions



### Dimensions



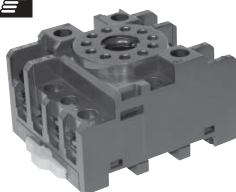
### Accessories

## GZS11

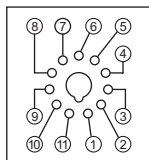
For R15 3 C/O

Screw terminals  
Maximum screw torque: 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

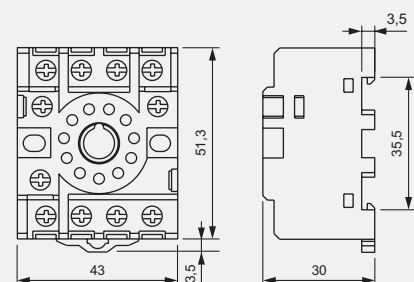
NEW product



### Connection diagram



### Dimensions

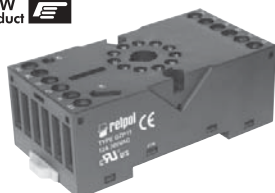


## GZP11

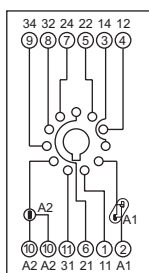
For R15 3 C/O

Screw terminals  
Maximum screw torque: 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

NEW product



### Connection diagram



GZP-0054

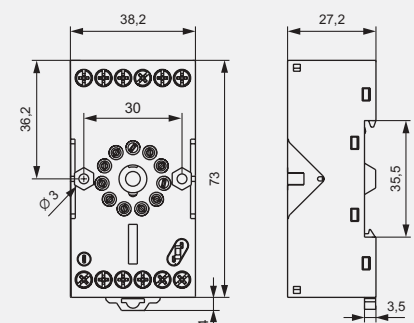


Time module T(COM3)



GZP-0035

### Dimensions

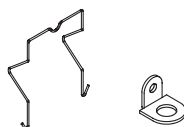


### Accessories

## GOP11

For R15 3 C/O

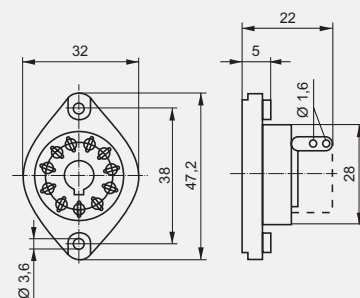
Solder terminals  
47,2 x 32 x 22 mm  
Three poles  
10 A, 250 V AC



R159 1051

R15 5922

### Dimensions



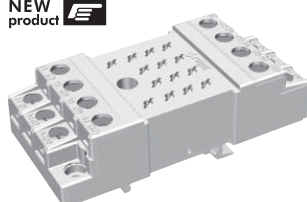
### Accessories

## GZ14U

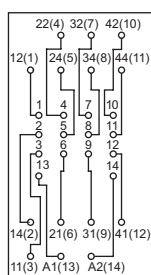
For R15 4 C/O

Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
96,8 x 46,2 x 33,3 mm  
Four poles  
10 A, 250 V AC

NEW product

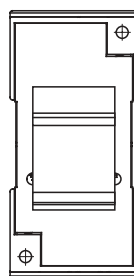


### Connection diagram

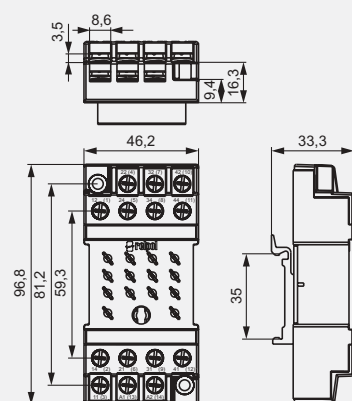


GZ14 0737

### Adaptor



### Dimensions



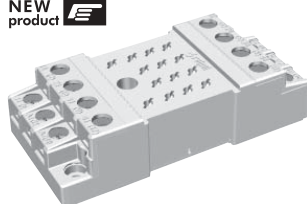
### Accessories

## GZ14

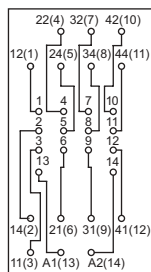
For R15 4 C/O

Screw terminals  
Maximum screw torque: 0,7 Nm  
On panel mounting  
96,8 x 46,2 x 24,5 mm  
Four poles  
10 A, 250 V AC

NEW product

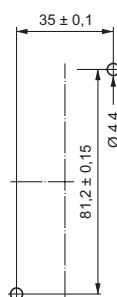


### Connection diagram

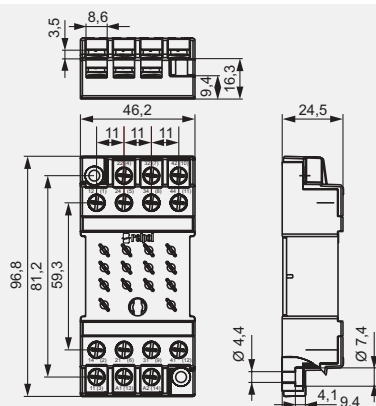


GZ14 0737

### Mounting dimensions



### Dimensions

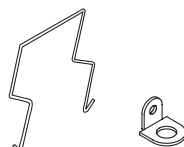
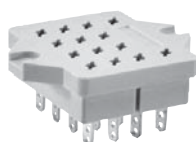


### Accessories

## GOP14

For R15 4 C/O

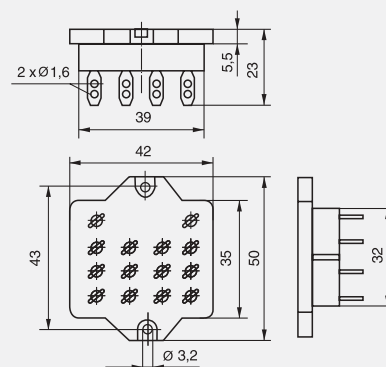
Solder terminals  
50 x 42 x 23 mm  
Four poles  
10 A, 250 V AC



R15 0736

R15 5922

### Dimensions



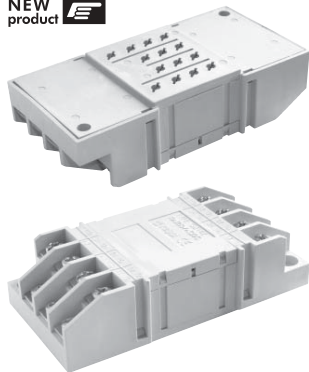
### Accessories

## GZ14Z

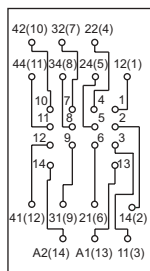
For R15 4 C/O

Screw terminals  
Maximum screw torque: 0,7 Nm  
**On panel mounting, behind**  
92,2 x 46 x 23 mm  
Four poles  
10 A, 250 V AC

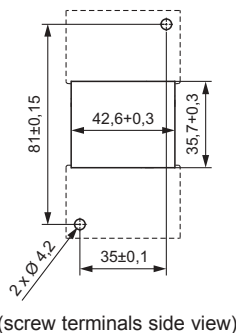
NEW product



### Connection diagram

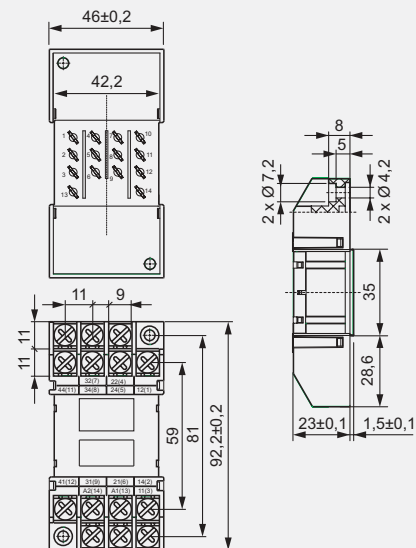


### Mounting dimensions



GZ14 0737

### Dimensions

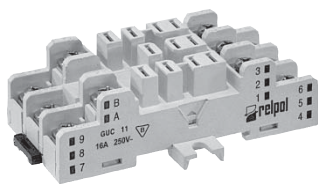


### Accessories

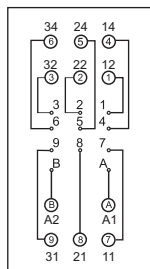
## GUC11 ⑨

For RUC faston 4,8 x 0,5, RUC-M

Screw terminals  
Maximum screw torque: 0,7 Nm  
35 mm rail mount acc. to PN-EN 60715  
or on panel mounting  
82 x 42,2 x 26,5 mm  
Three poles  
16 A, 250 V AC

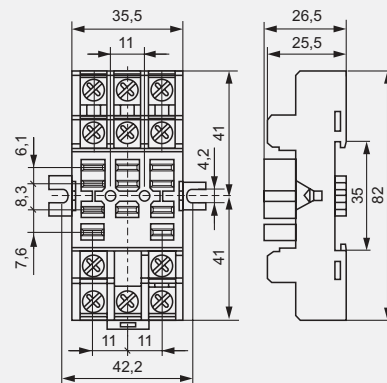


### Connection diagram



MBA

### Dimensions

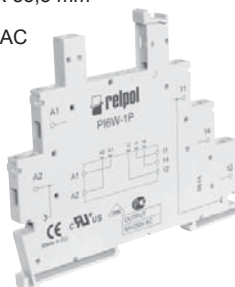


### Accessories

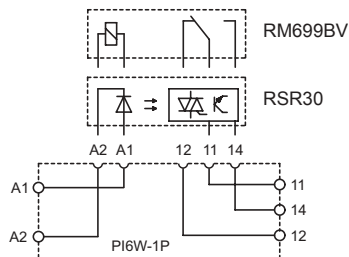
## PI6W-1P

For RM699BV, RSR30 ⑩

Screw terminals  
Maximum screw torque: 0,3 Nm  
35 mm rail mount acc. to PN-EN 60715  
98,5 x 6,2 x 85,5 mm  
One pole  
6 A, 250 V AC



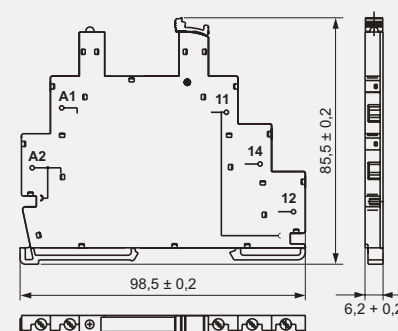
### Connection diagram



ZG20

PI6W-1246

### Dimensions

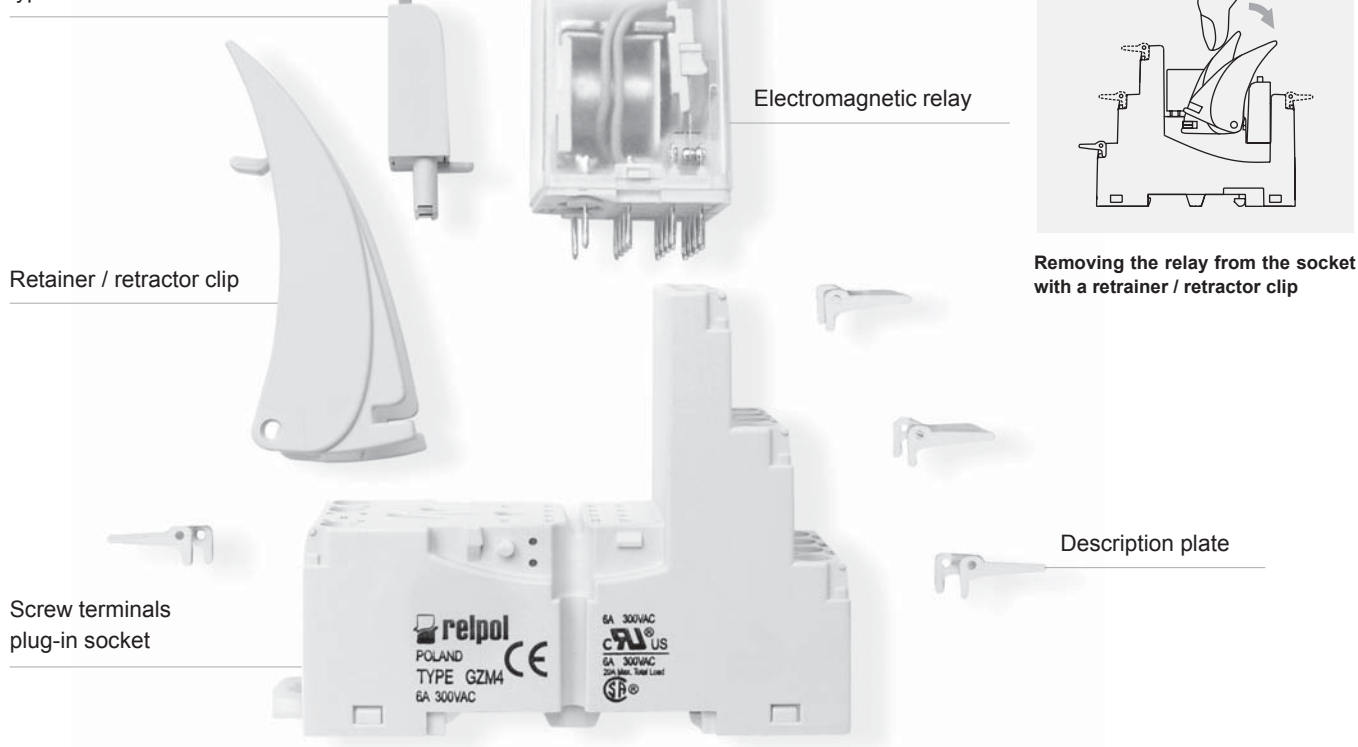


### Accessories

⑨ For RUC faston 4,8 x 0,5 and RUC-M, with GUC11 socket, max. switching voltages and coil voltages of relays are limited to 250 V AC/DC.

⑩ Solid state relays RSR30 type - see catalogue "Solid state relays" and [www.relpol.com.pl](http://www.relpol.com.pl)

Signalling / protecting module  
type M...



## Accessories

retainer / retractor clips and description plates

| Type<br>of plug-in socket     | GZT80, GZT92,<br>GZM80, GZM92                                                 | GZS80, GZS92                                                                  | ES 32        | GZT2, GZT3, GZT4,<br>GZM2, GZM3, GZM4 |
|-------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------|---------------------------------------|
| Retainer / retractor<br>clips |                                                                               |                                                                               |              |                                       |
| Type                          | <b>GZT80-0040</b>                                                             | <b>GZS-0040 ①</b>                                                             | <b>MS16</b>  | <b>GZT4-0040</b>                      |
| Colour                        | gray, black                                                                   | black                                                                         | black        | gray, black                           |
| Description plates            |                                                                               |                                                                               |              |                                       |
| Type                          | <b>GZT80-0035</b>                                                             | <b>TR</b>                                                                     | <b>TR</b>    | <b>GZT4-0035</b>                      |
| Colour                        | white                                                                         | white                                                                         | white        | white                                 |
| Designed for relays           | RM84, RM85,<br>RM85 inrush,<br>RM85 105 °C sensitive,<br>RM87, RM87 sensitive | RM84, RM85,<br>RM85 inrush,<br>RM85 105 °C sensitive,<br>RM87, RM87 sensitive | RM96 1 C/O   | R2, R3, R4                            |
| Height of relay               | 15...16,5 mm                                                                  | 15...16,5 mm ①                                                                | 15...16,5 mm | 35,6 mm                               |

① Relpol S.A. offers also retainer / retractor clip GZS-0025 designed for relays of the height 25...26 mm.



For sockets type:  
GZT80, GZT92,  
GZM80, GZM92,  
GZS80, GZS92,  
ES 32,  
GZT2, GZT3, GZT4,  
GZM2, GZM3, GZM4

| Modules type M...                                                                                      | Layout | Voltage                                          | Type of module ①                       |
|--------------------------------------------------------------------------------------------------------|--------|--------------------------------------------------|----------------------------------------|
| <b>Module D (polarization P)</b><br>It limits overvoltage on DC coils.                                 |        | 6/230 V DC                                       | M21P                                   |
| <b>Module D (polarization N)</b><br>It limits overvoltage on DC coils.                                 |        | 6/230 V DC                                       | M21N                                   |
| <b>Module LD (polarization P)</b><br>It limits overvoltage on DC coils.<br>Coil energizing indication. |        | 6/24 V DC<br>24/60 V DC<br>110/230 V DC          | M31R, M31G<br>M32R, M32G<br>M33R, M33G |
| <b>Module LD (polarization N)</b><br>It limits overvoltage on DC coils.<br>Coil energizing indication. |        | 6/24 V DC<br>24/60 V DC<br>110/230 V DC          | M41R, M41G<br>M42R, M42G<br>M43R, M43G |
| <b>Module RC</b><br>It protects against EMC disturbance.<br>It limits overvoltage.                     |        | 6/24 V AC<br>24/60 V AC<br>110/240 V AC          | M51<br>M52<br>M53                      |
| <b>Module L</b><br>Coil energizing indication.                                                         |        | 6/24 V AC/DC<br>24/60 V AC/DC<br>110/230 V AC/DC | M61R, M61G<br>M62R, M62G<br>M63R, M63G |
| <b>Module LV</b><br>It limits overvoltage on AC and DC coils.<br>Coil energizing indication.           |        | 6/24 V AC/DC<br>24/60 V AC/DC<br>110/230 V AC/DC | M91R, M91G<br>M92R, M92G<br>M93R, M93G |
| <b>Module V</b><br>It limits overvoltage on AC and DC coils.<br>No indication.                         |        | 24 V AC<br>130 V AC<br>230 V AC                  | M71<br>M72<br>M73                      |
| <b>Module R</b><br>It limits overvoltage on AC coils.                                                  |        | 110/230 V AC                                     | M103                                   |

① M...R - LED red colour

M...G - LED green colour

Modules type M... are parallelly connected with relay coil. Polarity P: -A1/+A2. Polarity N: +A1/-A2.

## Additional features for industrial relays

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

**WT** - mechanical indicator + lockable front test button

Standard features for industrial relays: R15 2 C/O, R15 3 C/O, R2, R3, R4.

② Available combinations:

**WT, WTL, WTD, WTLD, WTV, WTLV** - relays for plug-in sockets: R15 2 C/O, R15 3 C/O.

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

**K, L, D, KL, KD, KLD** - relays for plug-in sockets R15 4 C/O.

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

Detailed information for individual relays: see Ordering codes - Additional features.

**Test buttons** are recommended for R2...WT, R3...WT, R4...WT, R15...WT 2 C/O, R15...WT 3 C/O 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.

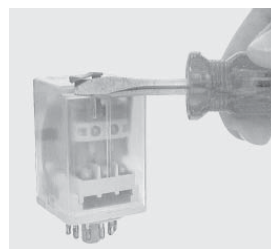


Fig. 1

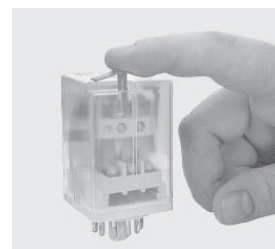
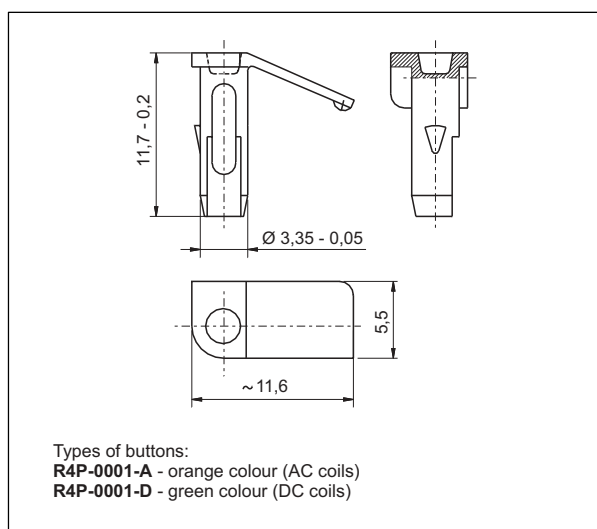
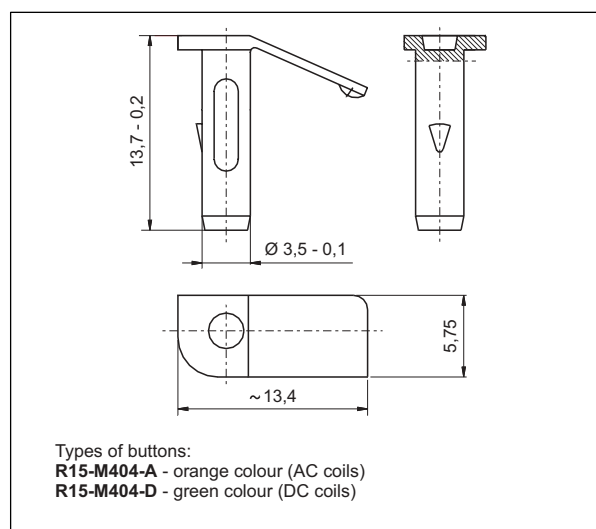


Fig. 2

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

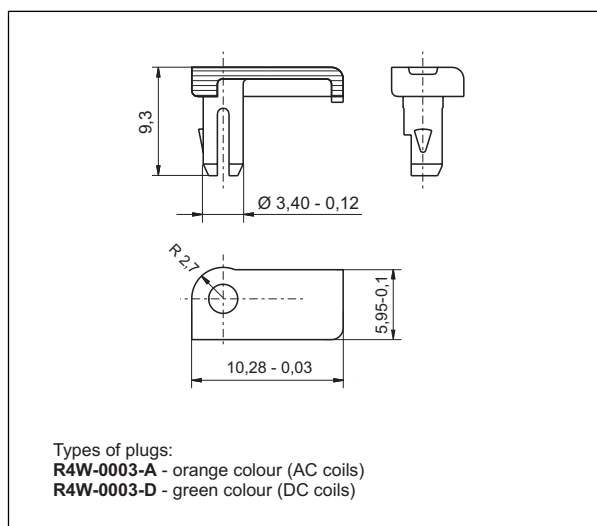


## Dimensions - test button R15-M404 for relays R15...WT 2 C/O, R15...WT 3 C/O

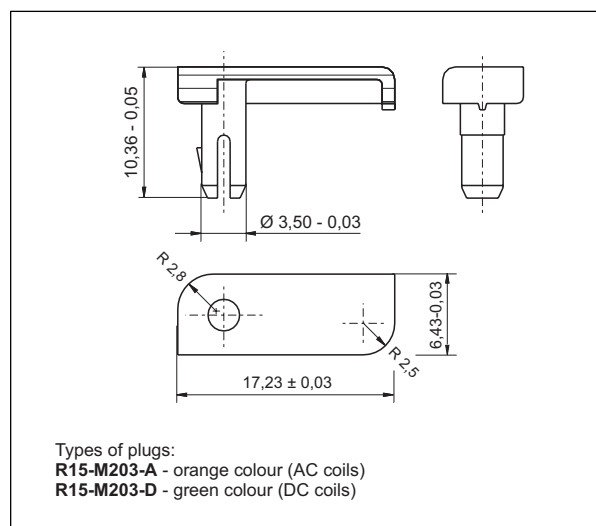


**Plugs R4W-0003 or R15-M203** can substitute button type **T** if **manual operation (latching and testing) is not allowed**. Changing button type **T** for plug can be done by Customer themselves in the same way as changing button type **T** for button (no latching).

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



## Dimensions - plug R15-M203 for relays R15...WT 2 C/O, R15...WT 3 C/O



The relays not specified in the table are designed for other manners of mounting.

Relays mounting options are specified in the table, pages 254, 255.

| Type of relay                                | Plug-in sockets  |                      |                                        |                                         |
|----------------------------------------------|------------------|----------------------|----------------------------------------|-----------------------------------------|
|                                              | Solder terminals | For PCB mounting     | Screw terminals<br>On panel mounting   | 35 mm rail mount<br>acc. to PN-EN 60715 |
| <b>Miniature relays</b>                      |                  |                      |                                        |                                         |
| RM699BV, RSR30 ❶                             | —                | —                    | —                                      | PI6W-1P                                 |
| RM84                                         | —                | (EC50, PW80, GD50 ❷) | (GZT80, GZM80 ❸), GZS80 ❹              | (GZT80, GZM80 ❸), GZS80 ❹               |
| RM85                                         | —                | (EC50, PW80, GD50 ❷) | (GZT80, GZM80 ❸), GZS80 ❹              | (GZT80, GZM80 ❸), GZS80 ❹               |
| RM85 inrush                                  | —                | (EC50, PW80, GD50 ❷) | (GZT80, GZM80 ❸), GZS80 ❹              | (GZT80, GZM80 ❸), GZS80 ❹               |
| RM85 105 °C sensitive                        | —                | (EC50, PW80, GD50 ❷) | (GZT80, GZM80 ❸), GZS80 ❹              | (GZT80, GZM80 ❸), GZS80 ❹               |
| RM87N, RM87N sensitive                       | —                | (EC35, GD35 ❷)       | (GZT92, GZM92 ❸), GZS92 ❹              | (GZT92, GZM92 ❸), GZS92 ❹               |
| RM87L, RM87L sensitive                       | —                | (EC50, PW80, GD50 ❷) | (GZT80, GZM80 ❸), GZS80 ❹              | (GZT80, GZM80 ❸), GZS80 ❹               |
| RM87P, RM87P sensitive                       | —                | (EC50, PW80, GD50 ❷) | (GZT80, GZM80 ❸), GZS80 ❹              | (GZT80, GZM80 ❸), GZS80 ❹               |
| RM96 1 C/O                                   | —                | —                    | ES 32                                  | ES 32                                   |
| RM83                                         | —                | (EC50, PW80, GD50 ❷) | —                                      | —                                       |
| RM92                                         | —                | (EC35, GD35 ❷)       | —                                      | —                                       |
| RM94                                         | —                | (EC50, PW80, GD50 ❷) | —                                      | —                                       |
| <b>Miniature industrial relays</b>           |                  |                      |                                        |                                         |
| R2                                           | SU4/2L ❺, G4/2 ❻ | SU4/2D ❻             | GZT2, GZM2                             | GZT2, GZM2                              |
| R3                                           | —                | —                    | GZT3, GZM3                             | GZT3, GZM3                              |
| R4                                           | SU4L ❺, G4 ❻     | SU4D ❻               | GZT4, GZM4<br>GZ4 ❷, GS4 ❷ ❸           | GZT4, GZM4<br>GZ4 ❷, GS4 ❷ ❸            |
| RY2                                          | —                | —                    | GZY2 ❶                                 | GZY2 ❶                                  |
| R2M                                          | G2M ❷            | S2M ❷                | GZ2 ❸                                  | GZ2 ❸                                   |
| <b>Industrial relays of small dimensions</b> |                  |                      |                                        |                                         |
| R15 2 C/O                                    | GOP8 ❹           | —                    | PZ8 ❺, GZ8 ❻, GZS8, GZP8 ❷             | PZ8 ❺, GZU8 ❻, GZS8, GZP8 ❷             |
| R15 3 C/O                                    | GOP11 ❹          | —                    | (PS11, PZ11 ❺), GZ11 ❻, GZS11, GZP11 ❷ | (PS11, PZ11 ❺), GZU11 ❻, GZS11, GZP11 ❷ |
| R15 4 C/O                                    | GOP14 ❹          | —                    | GZ14, GZ14Z                            | GZ14U                                   |
| RUC faston 4,8 x 0,5, RUC-M                  | —                | —                    | GUC11                                  | GUC11                                   |
| <b>Time relays</b>                           |                  |                      |                                        |                                         |
| T-R4                                         | —                | —                    | GZT4, GZM4                             | GZT4, GZM4                              |

❶ Solid state relays **RSR30** type - see catalogue "Solid state relays" and [www.relpol.com.pl](http://www.relpol.com.pl) ❷ For EC35, EC50, GD35, GD50 sockets apply: plastic clips MP16-2 or MP25-2; spring wire clips MH16-2, MH25-2, GD-0025, RM81-0001. For GD35 and GD50 sockets apply also spring wire clips GD-0016. For PW80 sockets apply spring wire clips MH16-2, MH25-2, GD-0025, RM81-0001 ❸ For GZT80, GZT92, GZM80, GZM92 sockets apply retainer / retractor clips GZT80-0040 or spring wire clips GZM80-0041 and description plates GZT80-0035 ❹ For GZS80, GZS92 sockets apply retainer / retractor clips GZS-0040 or spring wire clips GZM80-0041 and description plates TR ❺ For SU4/2L, SU4L sockets apply spring wire clips G4 1053 or G4 1050 and spring clamps G4 1040 ❻ For SU4/2D, SU4D, G4/2, G4 sockets apply spring wire clips G4 1053 or G4 1050 ❷ For GZ4, GS4 sockets not applicable retainer / retractor clips GZT4-0040, description plates GZT4-0035, modules type M... and interconnection strip type ZGGZ4 ❸ For GS4 sockets apply spring wire clips GS4-0036 and description plates GS4-0035 ❹ Information on buttons (no latching) R4P-0001, R15-M404 and plugs R4W-0003, R15-M203 - see page 251.

| Accessories                                                       |                             |                            |                                 | Additional features                                            |
|-------------------------------------------------------------------|-----------------------------|----------------------------|---------------------------------|----------------------------------------------------------------|
| Spring wire clips                                                 | Retainer / retractor clips  | Description plates         | Signalling / protecting modules |                                                                |
| –                                                                 | –                           | PI6W-1246                  | –                               | interconnection strip type ZG20                                |
| (MP16-2, MH16-2, GD-0016 ②),<br>GZM80-0041 ③ ④                    | GZT80-0040 ③,<br>GZS-0040 ④ | GZT80-0035 ③,<br>TR ④      | type M...                       | interconnection strip type ZGGZ80                              |
| (MP16-2, MH16-2, GD-0016 ②),<br>(GZM80-0041 ③)                    | GZT80-0040 ③,<br>GZS-0040 ④ | GZT80-0035 ③,<br>TR ④      | type M...                       | interconnection strip type ZGGZ80                              |
| (MP16-2, MH16-2, GD-0016 ②),<br>GZM80-0041 ③ ④                    | GZT80-0040 ③,<br>GZS-0040 ④ | GZT80-0035 ③,<br>TR ④      | type M...                       | interconnection strip type ZGGZ80                              |
| (MP16-2, MH16-2, GD-0016 ②),<br>GZM80-0041 ③ ④                    | GZT80-0040 ③,<br>GZS-0040 ④ | GZT80-0035 ③,<br>TR ④      | type M...                       | interconnection strip type ZGGZ80                              |
| (MP16-2, MH16-2, GD-0016 ②),<br>GZM80-0041 ③ ④                    | GZT80-0040 ③,<br>GZS-0040 ④ | GZT80-0035 ③,<br>TR ④      | type M...                       | interconnection strip type ZGGZ80                              |
| (MP16-2, MH16-2, GD-0016 ②),<br>GZM80-0041 ③ ④                    | GZT80-0040 ③,<br>GZS-0040 ④ | GZT80-0035 ③,<br>TR ④      | type M...                       | interconnection strip type ZGGZ80                              |
| (MP16-2, MH16-2, GD-0016 ②),<br>GZM80-0041 ③ ④                    | GZT80-0040 ③,<br>GZS-0040 ④ | GZT80-0035 ③,<br>TR ④      | type M...                       | interconnection strip type ZGGZ80                              |
| GZM80-0041                                                        | MS16                        | TR                         | type M...                       | interconnection strip type ZGGZ80                              |
| (MP25-2, MH25-2, GD-0025,<br>RM81-0001 ②)                         | –                           | –                          | –                               | –                                                              |
| (MP25-2, MH25-2, GD-0025,<br>RM81-0001 ②)                         | –                           | –                          | –                               | –                                                              |
| (MP25-2, MH25-2, GD-0025,<br>RM81-0001 ②)                         | –                           | –                          | –                               | –                                                              |
| (G4 1053, G4 1050 ⑤ ⑥),<br>G4 1052                                | GZT4-0040                   | GZT4-0035                  | type M...                       | interconnection strip type ZGGZ4,<br>(test buttons, plugs ⑨)   |
| G4 1052                                                           | GZT4-0040                   | GZT4-0035                  | type M...                       | interconnection strip type ZGGZ4,<br>(test buttons, plugs ⑨)   |
| (G4 1053, G4 1050 ⑤ ⑥),<br>G4 1052, GS4-0036 ③                    | GZT4-0040 ⑦                 | GZT4-0035 ⑦,<br>GS4-0035 ③ | type M... ⑦                     | interconnection strip type ZGGZ4 ⑦,<br>(test buttons, plugs ⑨) |
| GZY 2000 ①                                                        | –                           | –                          | –                               | –                                                              |
| G4 1050 ②, GZ2 1060 ③                                             | –                           | –                          | –                               | –                                                              |
| R159 1051 ④, PZ11 0031 ⑤,<br>(GZ 1050, GZU 1052 ⑥),<br>GZP-0054 ⑦ | –                           | GZP-0035 ⑦                 | –                               | (test buttons, plugs ⑨),<br>time module T(COM3) ⑦              |
| R159 1051 ④, PZ11 0031 ⑤,<br>(GZ 1050, GZU 1052 ⑥),<br>GZP-0054 ⑦ | –                           | GZP-0035 ⑦                 | –                               | (test buttons, plugs ⑨),<br>time module T(COM3) ⑦              |
| R15 0736 ④, GZ14 0737                                             | –                           | –                          | –                               | –                                                              |
| MBA                                                               | –                           | –                          | –                               | –                                                              |
| TR4-2000                                                          | –                           | GZT4-0035                  | –                               | interconnection strip type ZGGZ4                               |

① For GZY2 sockets apply spring wire clips GZY 2000 and spring clamps GZ2 1111 ② For G2M sockets apply spring wire clips G4 1050 and spring clamps G2M 1020. For S2M sockets apply spring wire clips G4 1050 ③ For GZ2 sockets apply spring wire clips GZ2 1060 and spring clamps GZ2 1111 ④ For GOP8, GOP11 sockets apply spring wire clips R159 1051 and spring clamps R15 5922. For GOP14 sockets apply spring wire clips R15 0736 and spring clamps R15 5922 ⑤ For PZ8, PS11, PZ11 sockets apply spring wire clips PZ11 0031 ⑥ For GZ8, GZ11 sockets apply spring wire clips GZ 1050. For GZU8, GZU11 sockets apply spring wire clips GZU 1052 ⑦ For GZP8, GZP11 sockets apply spring wire clips GZP-0054, description plates GZP-0035 and time modules T(COM3)

| Type of relay               | Method of mounting |             |                   |                                      |                                                |                                 |
|-----------------------------|--------------------|-------------|-------------------|--------------------------------------|------------------------------------------------|---------------------------------|
|                             | For PCB mounting   |             | On panel mounting | 35 mm rail mount acc. to PN-EN 60715 | Cover with mounting flange - on panel mounting | Flat insert connectors - faston |
| Subminiature signal relays  |                    |             |                   |                                      |                                                |                                 |
| RSM822                      | direct             | —           | —                 | —                                    | —                                              | —                               |
| RSM954                      | direct             | —           | —                 | —                                    | —                                              | —                               |
| RSM957                      | direct             | —           | —                 | —                                    | —                                              | —                               |
| Miniature relays            |                    |             |                   |                                      |                                                |                                 |
| RM40                        | direct             | —           | —                 | —                                    | —                                              | —                               |
| RM50                        | direct             | —           | —                 | —                                    | —                                              | —                               |
| RM699BV, RSR30 ❶            | direct             | —           | —                 | with socket                          | —                                              | —                               |
| RM699BH                     | direct             | —           | —                 | —                                    | —                                              | —                               |
| RM84                        | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM84 SMT                    | direct             | —           | —                 | —                                    | —                                              | —                               |
| RM85                        | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM85 ❷                      | direct             | —           | —                 | —                                    | —                                              | —                               |
| RM85 inrush                 | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM85 105 °C sensitive       | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM85 SMT                    | direct             | —           | —                 | —                                    | —                                              | —                               |
| RM85 faston                 | direct             | —           | —                 | —                                    | —                                              | 6,3 x 0,8 mm                    |
| RM87N                       | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM87N sensitive             | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM87L                       | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM87L sensitive             | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM87P                       | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM87P sensitive             | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RM87N SMT                   | direct             | —           | —                 | —                                    | —                                              | —                               |
| RM96 1 C/O                  | direct             | —           | with socket       | with socket                          | —                                              | —                               |
| RM96 1 NO, 1 NC             | direct             | —           | —                 | —                                    | —                                              | —                               |
| RM83                        | direct             | with socket | —                 | —                                    | —                                              | —                               |
| RM92                        | direct             | with socket | —                 | —                                    | —                                              | —                               |
| RM94                        | direct             | with socket | —                 | —                                    | —                                              | —                               |
| Automotive relays           |                    |             |                   |                                      |                                                |                                 |
| RA2                         | direct             | —           | —                 | —                                    | —                                              | —                               |
| Miniature industrial relays |                    |             |                   |                                      |                                                |                                 |
| R2                          | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| R3                          | —                  | —           | with socket       | with socket                          | —                                              | —                               |
| R4                          | direct             | with socket | with socket       | with socket                          | —                                              | —                               |
| RY2                         | —                  | —           | with socket       | with socket                          | on request                                     | 4,8 x 0,5 mm                    |
| R2M                         | direct             | with socket | with socket       | with socket                          | —                                              | —                               |

⚡ **RM85** with increased contact gap

❶ Solid state relays **RSR30** type - see catalogue "Solid state relays" and [www.relpol.com.pl](http://www.relpol.com.pl)

| Type of relay                                | Method of mounting |                   |                                      |                                                |                                 |              |
|----------------------------------------------|--------------------|-------------------|--------------------------------------|------------------------------------------------|---------------------------------|--------------|
|                                              | For PCB mounting   | On panel mounting | 35 mm rail mount acc. to PN-EN 60715 | Cover with mounting flange - on panel mounting | Flat insert connectors - faston |              |
| <b>Industrial relays of small dimensions</b> |                    |                   |                                      |                                                |                                 |              |
| R15 2 C/O                                    | direct             | —                 | with socket                          | with socket                                    | —                               | —            |
| R15 3 C/O                                    | direct             | —                 | with socket                          | with socket                                    | —                               | —            |
| R15 4 C/O                                    | —                  | —                 | with socket ②                        | with socket                                    | —                               | —            |
| RUC faston 4,8 x 0,5                         | direct             | —                 | with socket ③                        | with socket ③<br>direct ④                      | on request                      | 4,8 x 0,5 mm |
| RUC faston 6,3 x 0,8                         | —                  | —                 | —                                    | direct ④                                       | on request                      | 6,3 x 0,8 mm |
| RUC-M                                        | direct             | —                 | with socket ③                        | with socket ③<br>direct ④                      | on request                      | 4,8 x 0,5 mm |
| RG25                                         | —                  | —                 | —                                    | direct                                         | —                               | —            |
| R20                                          | —                  | —                 | direct                               | —                                              | standard                        | 6,3 x 0,8 mm |
| R30                                          | direct             | —                 | —                                    | —                                              | —                               | —            |
| RS35, RS50                                   | direct             | —                 | —                                    | —                                              | —                               | —            |
| <b>Interface relays</b>                      |                    |                   |                                      |                                                |                                 |              |
| PI84 with socket GZT80                       | —                  | —                 | direct                               | direct                                         | —                               | —            |
| PI85 with socket GZT80                       | —                  | —                 | direct                               | direct                                         | —                               | —            |
| PI84 with socket GZM80                       | —                  | —                 | direct                               | direct                                         | —                               | —            |
| PI85 with socket GZM80                       | —                  | —                 | direct                               | direct                                         | —                               | —            |
| PIR2 with socket GZM2                        | —                  | —                 | direct                               | direct                                         | —                               | —            |
| PIR3 with socket GZM3                        | —                  | —                 | direct                               | direct                                         | —                               | —            |
| PIR4 with socket GZM4                        | —                  | —                 | direct                               | direct                                         | —                               | —            |
| PIR2M with socket GZ2                        | —                  | —                 | direct                               | direct                                         | —                               | —            |
| PI6-1P                                       | —                  | —                 | —                                    | direct                                         | —                               | —            |
| PI6-1T                                       | —                  | —                 | —                                    | direct                                         | —                               | —            |
| PI6-OC                                       | —                  | —                 | —                                    | direct                                         | —                               | —            |
| PIR6W-1P-...                                 | —                  | —                 | —                                    | direct                                         | —                               | —            |
| PIR6W-1PS-...- ⑤                             | —                  | —                 | —                                    | direct                                         | —                               | —            |
| PIR6WB-1PS-...- ⑤                            | —                  | —                 | —                                    | direct                                         | —                               | —            |
| <b>Installation relays</b>                   |                    |                   |                                      |                                                |                                 |              |
| MT-PI-...                                    | —                  | —                 | —                                    | direct                                         | —                               | —            |
| <b>Time relays</b>                           |                    |                   |                                      |                                                |                                 |              |
| MT-TUA-...                                   | —                  | —                 | —                                    | direct                                         | —                               | —            |
| MT-TUB-...                                   | —                  | —                 | —                                    | direct                                         | —                               | —            |
| MT-T-...                                     | —                  | —                 | —                                    | direct                                         | —                               | —            |
| MT-TSD-...                                   | —                  | —                 | —                                    | direct                                         | —                               | —            |
| TR4N 4 C/O                                   | —                  | —                 | —                                    | direct                                         | —                               | —            |
| TR4N 1 C/O, 2 C/O                            | —                  | —                 | —                                    | direct                                         | —                               | —            |
| T-R4                                         | —                  | —                 | with socket                          | with socket                                    | —                               | —            |
| PIR15...T ⑥                                  | —                  | —                 | direct                               | direct                                         | —                               | —            |

② Available socket to be mounted behind the assembly panel - **GZ14Z**.

③ For RUC faston 4,8 x 0,5 and RUC-M, with GUC11 socket, max. switching voltages and coil voltages of relays are limited to 250 V AC/DC.

④ Version with adaptor: (V) or (H).

⑤ R - operational electromagnetic relay **RM699BV** type for PIR6W.-1PS-...-R.

T/C/O - operational solid state relay **RSR30** type for PIR6W.-1PS-...-T (or C or O) - see catalogue "Solid state relays" and [www.relpol.com.pl](http://www.relpol.com.pl)

⑥ With time module T(COM3).

| Plug-in socket                                                                            | Terminals type       | Insulation (PN-EN 60664-1) |               |                                                                   |             |
|-------------------------------------------------------------------------------------------|----------------------|----------------------------|---------------|-------------------------------------------------------------------|-------------|
|                                                                                           |                      | Insulation rated voltage   | Rated current | Dielectric strength 50/60 Hz, 1 min.<br>between coil and contacts |             |
|                                                                                           |                      |                            |               |                                                                   | pole - pole |
| GZT80                                                                                     | for screw terminals  | 300 V AC                   | 12 A          | 5 000 V AC                                                        | 3 000 V AC  |
| GZM80                                                                                     | for screw terminals  | 300 V AC                   | 12 A          | 5 000 V AC                                                        | 3 000 V AC  |
| GZS80    | for screw terminals  | 300 V AC                   | 10 A          | 4 000 V AC                                                        | 2 500 V AC  |
| EC50                                                                                      | for PCB              | 300 V AC                   | 8 A           | 6 kV (1,2 / 50 µs)                                                | 2 000 V AC  |
| PW80                                                                                      | for PCB              | 250 V AC                   | 8 A           | 2 000 V AC                                                        | 2 000 V AC  |
| GD50     | for PCB              | 300 V AC                   | 8 A           | 2 000 V AC                                                        | 2 000 V AC  |
| GZT92                                                                                     | for screw terminals  | 300 V AC                   | 12 A          | 5 000 V AC                                                        | —           |
| GZM92                                                                                     | for screw terminals  | 300 V AC                   | 12 A          | 5 000 V AC                                                        | —           |
| GZS92    | for screw terminals  | 300 V AC                   | 12 A          | 4 000 V AC                                                        | —           |
| EC35                                                                                      | for PCB              | 300 V AC                   | 12 A          | 6 kV (1,2 / 50 µs)                                                | —           |
| GD35     | for PCB              | 300 V AC                   | 12 A          | 2 000 V AC                                                        | —           |
| ES 32                                                                                     | for screw terminals  | 300 V AC                   | 12 A          | 4 000 V AC                                                        | —           |
| EC32                                                                                      | for PCB              | 300 V AC                   | 12 A          | 6 kV (1,2 / 50 µs)                                                | —           |
| GZT2                                                                                      | for screw terminals  | 300 V AC                   | 12 A          | 3 000 V AC                                                        | 3 000 V AC  |
| GZM2                                                                                      | for screw terminals  | 300 V AC                   | 12 A          | 4 000 V AC                                                        | 3 000 V AC  |
| SU4/2D                                                                                    | for PCB              | 250 V AC                   | 12 A          | 2 500 V AC                                                        | 2 500 V AC  |
| SU4/2L                                                                                    | for solder terminals | 250 V AC                   | 12 A          | 2 500 V AC                                                        | 2 500 V AC  |
| G4/2                                                                                      | for solder terminals | 250 V AC                   | 12 A          | 2 500 V AC                                                        | 2 500 V AC  |
| GZT3                                                                                      | for screw terminals  | 300 V AC                   | 10 A          | 3 000 V AC                                                        | 3 000 V AC  |
| GZM3                                                                                      | for screw terminals  | 300 V AC                   | 10 A          | 4 000 V AC                                                        | 3 000 V AC  |
| GZT4                                                                                      | for screw terminals  | 300 V AC                   | 6 A           | 3 000 V AC                                                        | 3 000 V AC  |
| GZM4                                                                                      | for screw terminals  | 300 V AC                   | 6 A           | 4 000 V AC                                                        | 3 000 V AC  |
| GZ4                                                                                       | for screw terminals  | 300 V AC                   | 10 A          | 2 500 V AC                                                        | 2 000 V AC  |
| GS4    | for screw terminals  | 300 V AC                   | 6 A           | 2 500 V AC                                                        | 2 000 V AC  |
| SU4D                                                                                      | for PCB              | 250 V AC                   | 6 A           | 2 500 V AC                                                        | 2 000 V AC  |
| SU4L                                                                                      | for solder terminals | 250 V AC                   | 6 A           | 2 500 V AC                                                        | 2 000 V AC  |
| G4                                                                                        | for solder terminals | 250 V AC                   | 6 A           | 2 500 V AC                                                        | 2 000 V AC  |
| GZY2                                                                                      | for screw terminals  | 250 V AC                   | 12 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZ2                                                                                       | for screw terminals  | 250 V AC                   | 7 A           | 2 000 V AC                                                        | 2 000 V AC  |
| S2M                                                                                       | for PCB              | 250 V AC                   | 5 A           | 2 000 V AC                                                        | 2 000 V AC  |
| G2M                                                                                       | for solder terminals | 250 V AC                   | 5 A           | 2 000 V AC                                                        | 2 000 V AC  |
| PZ8                                                                                       | for screw terminals  | 250 V AC                   | 10 A          | 2 500 V AC                                                        | 2 500 V AC  |
| GZU8                                                                                      | for screw terminals  | 300 V AC                   | 10 A          | 2 500 V AC                                                        | 2 500 V AC  |
| GZ8                                                                                       | for screw terminals  | 300 V AC                   | 10 A          | 2 500V AC                                                         | 2 500 V AC  |
| GZS8   | for screw terminals  | 300 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZP8   | for screw terminals  | 300 V AC                   | 12 A          | 4 000 V AC                                                        | 2 500 V AC  |
| GOP8                                                                                      | for solder terminals | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| PS11                                                                                      | for screw terminals  | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| PZ11                                                                                      | for screw terminals  | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZU11                                                                                     | for screw terminals  | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZ11                                                                                      | for screw terminals  | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZS11  | for screw terminals  | 300 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZP11  | for screw terminals  | 300 V AC                   | 12 A          | 2 500 V AC                                                        | 2 000 V AC  |
| GOP11                                                                                     | for solder terminals | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZ14U  | for screw terminals  | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZ14   | for screw terminals  | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GOP14                                                                                     | for solder terminals | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GZ14Z  | for screw terminals  | 250 V AC                   | 10 A          | 2 000 V AC                                                        | 2 000 V AC  |
| GUC11                                                                                     | for screw terminals  | 250 V AC                   | 16 A          | 2 000 V AC                                                        | 2 000 V AC  |
| PI6W-1P                                                                                   | for screw terminals  | 250 V AC                   | 6 A           | 4 000 V AC                                                        | —           |

① Also relays RM85 inrush, RM85 105 °C sensitive

② Also versions RM87L sensitive, RM87P sensitive

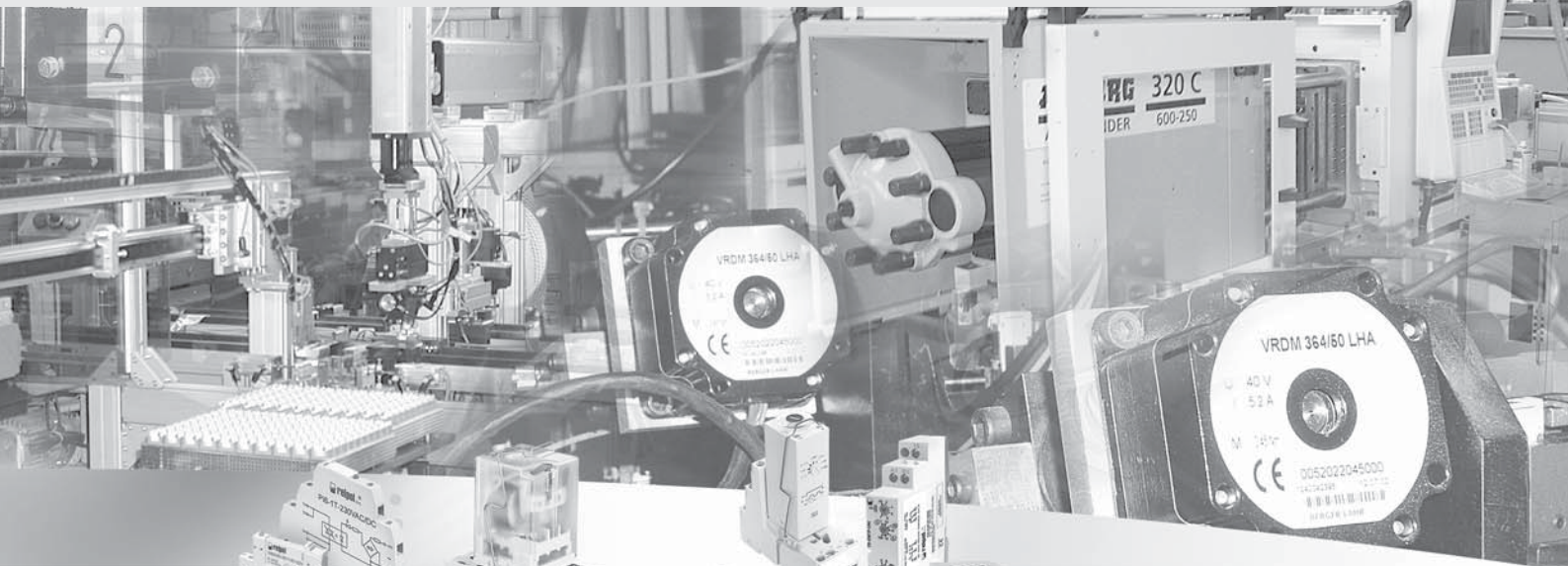
③ Also versions RM87N sensitive

| General data    |                                 |                                   | Terminal capacity    |                                     | For relays                                 |
|-----------------|---------------------------------|-----------------------------------|----------------------|-------------------------------------|--------------------------------------------|
| Number of poles | Ambient temperature (operating) | Protection category (PN-EN 60529) | Maximum screw torque | Maximum size of wires (multi-cable) |                                            |
| 2               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | RM84, RM85 ❶, (RM87L, RM87P ❷)             |
| 2               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | RM84, RM85 ❶, (RM87L, RM87P ❷)             |
| 2               | -40...+85 °C                    | IP 20                             | 0,5 Nm               | 2 x 2,5 mm <sup>2</sup>             | RM84, RM85 ❶, (RM87L, RM87P ❷)             |
| 2               | -40...+85 °C                    | —                                 | —                    | —                                   | RM84, RM85 ❶, (RM87L, RM87P ❷), RM83, RM94 |
| 2               | -40...+85 °C                    | —                                 | —                    | —                                   | RM84, RM85 ❶, (RM87L, RM87P ❷), RM83, RM94 |
| 2               | -40...+85 °C                    | —                                 | —                    | —                                   | RM84, RM85 ❶, (RM87L, RM87P ❷), RM83, RM94 |
| 1               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | RM87N ❸                                    |
| 1               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | RM87N ❸                                    |
| 1               | -40...+85 °C                    | IP 20                             | 0,5 Nm               | 2 x 2,5 mm <sup>2</sup>             | RM87N ❸                                    |
| 1               | -40...+85 °C                    | —                                 | —                    | —                                   | RM87N ❸, RM92                              |
| 1               | -40...+85 °C                    | —                                 | —                    | —                                   | RM87N ❸, RM92                              |
| 1               | -40...+85 °C                    | IP 20                             | 0,5 Nm               | —                                   | RM96 1 C/O                                 |
| 1               | -40...+85 °C                    | —                                 | —                    | —                                   | —                                          |
| 2               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R2                                         |
| 2               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R2                                         |
| 2               | -40...+70 °C                    | —                                 | —                    | —                                   | R2                                         |
| 2               | -40...+70 °C                    | —                                 | —                    | 2 x 0,75 mm <sup>2</sup>            | R2                                         |
| 2               | -40...+70 °C                    | —                                 | —                    | 2 x 0,75 mm <sup>2</sup>            | R2                                         |
| 3               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R3                                         |
| 3               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R3                                         |
| 4               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R4, T-R4                                   |
| 4               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R4, T-R4                                   |
| 4               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 1,5 mm <sup>2</sup>             | R4                                         |
| 4               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 1,5 mm <sup>2</sup>             | R4                                         |
| 4               | -40...+70 °C                    | —                                 | —                    | —                                   | R4                                         |
| 4               | -40...+70 °C                    | —                                 | —                    | —                                   | R4                                         |
| 4               | -40...+70 °C                    | —                                 | —                    | 2 x 0,75 mm <sup>2</sup>            | R4                                         |
| 2               | -40...+70 °C                    | IP 00                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | RY2                                        |
| 2               | -40...+70 °C                    | IP 00                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R2M                                        |
| 2               | -40...+70 °C                    | —                                 | —                    | —                                   | R2M                                        |
| 2               | -40...+70 °C                    | —                                 | —                    | —                                   | R2M                                        |
| 2               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 2 C/O                                  |
| 2               | -40...+70 °C                    | IP 00                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 2 C/O                                  |
| 2               | -40...+70 °C                    | IP 00                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 2 C/O                                  |
| 2               | -40...+70 °C                    | IP 00                             | 1,0 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 2 C/O                                  |
| 2               | -40...+70 °C                    | IP 20                             | 0,5 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 2 C/O                                  |
| 2               | -40...+70 °C                    | —                                 | —                    | —                                   | R15 2 C/O                                  |
| 3               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 3 C/O                                  |
| 3               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 3 C/O                                  |
| 3               | -40...+70 °C                    | IP 00                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 3 C/O                                  |
| 3               | -40...+70 °C                    | IP 00                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 3 C/O                                  |
| 3               | -40...+70 °C                    | IP 00                             | 1,0 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 3 C/O                                  |
| 3               | -40...+70 °C                    | IP 20                             | 0,5 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 3 C/O                                  |
| 3               | -40...+70 °C                    | —                                 | —                    | —                                   | R15 3 C/O                                  |
| 4               | -40...+70 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 4 C/O                                  |
| 4               | -40...+55 °C                    | IP 20                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 4 C/O                                  |
| 4               | -40...+70 °C                    | —                                 | —                    | —                                   | R15 4 C/O                                  |
| 4               | -40...+55 °C                    | IP 00                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | R15 4 C/O                                  |
| 3               | -40...+70 °C                    | IP 00                             | 0,7 Nm               | 2 x 2,5 mm <sup>2</sup>             | RUC faston 4,8 x 0,5, RUC-M                |
| 1               | -40...+55 °C                    | IP 20                             | 0,3 Nm               | 1 x 2,5 / 2 x 1,5 mm <sup>2</sup>   | RM699BV, RSR30 ❹                           |

❹ Solid state relays **RSR30** type - see catalogue "Solid state relays" and [www.repol.com.pl](http://www.repol.com.pl)

Lined area for notes.

**You have not found the relay you wanted?**  
**The catalogue does not show the information about**  
**the switching capacity for the type of load you are looking for?**  
**Detailed contact data is presented on the last page of the catalogue**  
**and at [www.relpol.com.pl](http://www.relpol.com.pl)**



electromagnetic  
and interface relays

time and  
monitoring relays

NEED  
programmable relays

RPS - DIN rail  
power supply

solid state relays

softstarts

contactors

motor protection  
circuit breakers

overvoltage  
arresters

digital protection  
sets CZIP

switches and  
rotary switches



## ZGGZ80 are designed for:

| Plug-in sockets | Relays for plug-in sockets          | Interface relays ①           |
|-----------------|-------------------------------------|------------------------------|
| GZT80           | RM84, RM85,                         | PI84-...-M..G (GZT80 + RM84) |
| GZM80           | RM85 inrush, RM85 105 °C sensitive, | PI84-...-00L. (GZM80 + RM84) |
| GZS80           | RM87L ②, RM87P ②                    | PI85-...-M..G (GZT80 + RM85) |
| GZT92           |                                     | PI85-...-00L. (GZM80 + RM85) |
| GZM92           | RM87N ②                             |                              |
| GZS92           |                                     |                              |
| ES 32           | RM96 1 C/O                          |                              |

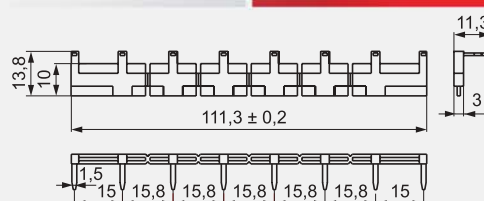
① Interface relay **PI84** (**PI85**) is offered as a **set**: plug-in socket **GZT80** or **GZM80** + miniature relay **RM84** (**RM85**) + signalling / protecting module **type M..** + retainer / retractor clip **GZT80-0040** + description plate **GZT80-0035**. ② Also versions RM87. sensitive

NEW PRODUCT

## Interconnection strip ZGGZ80

- designed for the co-operation with plug-in sockets of miniature relays and with interface relays PI84 and PI85, which are equipped with screw terminals; sockets and relays are mounted on 35 mm rail mount acc. to PN-EN 60715,
- bridges common input signals (coil terminals A1 or A2) or output signals - see photo at the top,
- maximum permissible current is 10 A / 250 V AC,
- possibility of connection of 8 sockets or relays,
- colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black.

**NEW product**





## ZGGZ4 are designed for:

| Plug-in sockets | Relays for plug-in sockets | Interface relays ①             |
|-----------------|----------------------------|--------------------------------|
| GZT2            | R2...WT                    | PIR2-...-00L. (GZM2 + R2...WT) |
| GZM2            |                            | PIR3-...-00L. (GZM3 + R3...WT) |
| GZT3            | R3...WT                    | PIR4-...-00L. (GZM4 + R4...WT) |
| GZM3            |                            |                                |
| GZT4            | R4...WT                    |                                |
| GZM4            |                            |                                |

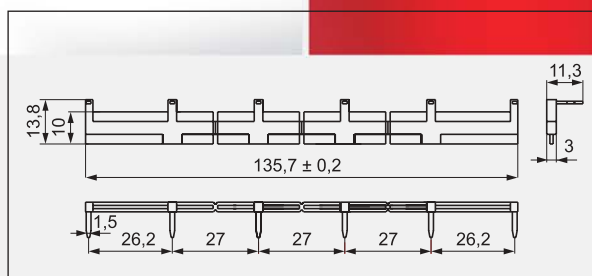
① Interface relay **PIR2** (**PIR3**, **PIR4**) is offered as a **set**: plug-in socket **GZM2** (**GZM3**, **GZM4**) + miniature industrial relay **R2** (**R3**, **R4**) + signalling / protecting module **type M...** + retainer / retractor clip **GZT4-0040** + description plate **GZT4-0035**.

NEW PRODUCT

## Interconnection strip ZGGZ4

- designed for the co-operation with plug-in sockets of miniature industrial relays and with interface relays PIR2, PIR3 and PIR4, which are equipped with screw terminals; sockets and relays are mounted on 35 mm rail mount acc. to PN-EN 60715,
- bridges common input signals (coil terminals A1 or A2) or output signals - see photo at the top,
- maximum permissible current is 10 A / 250 V AC,
- possibility of connection of 6 sockets or relays,
- colours of strips: **ZGGZ4-1** grey, **ZGGZ4-2** black.

**NEW product**



# Declaration of conformity RoHS

RELPOL S.A.

ul. 11 Listopada 37  
68-200 Żary, Poland

**RELPOL S.A. hereby confirms**  
that timers, relays and sockets supplied  
by our company meet the requirements  
of the **Directive 2002/95/EC "RoHS"**.

1.11.2005

Date

A handwritten signature in blue ink, appearing to read 'A. Hyska'.

R&D Department Director  
Andrzej Hyska



The offer of Relpol S.A.  
includes the following products:

- **subminiature signal relays**  
rated switching capacity: from 2 A to 3 A,  
coil voltage range: from 3 V to 48 V DC
- **miniature relays**  
rated switching capacity: from 5 A to 20 A
- **industrial relays**  
rated switching capacity: from 5 A to 30 A,  
mounting: to plug-in sockets on 35 mm rail mount  
acc. to PN-EN 60715 or on panel mounting, for PCB
- **interface relays**  
rated switching capacity: from 0,5 A to 16 A,  
number of contacts: from 1 to 4
- **plug-in sockets for relays**  
PCB plug-in sockets, plug-in sockets  
for 35 mm rail mount acc. to PN-EN 60715
- **contactors**  
rated switching power: from 2,2 kW to 200 kW  
/at 400 V/
- **motor protection circuit breakers**  
setting range: from 0,1 A to 63 A
- **time relays**  
single- and multifunction time relays,  
wide range of time adjustments
- **monitoring relays**  
monitoring of current, voltage, temperature, level
- **NEED programmable relays**  
versions: 8 inputs / 4 relay outputs,  
16 inputs / 8 relay outputs, programming: LAD, STL,  
supply voltages: 230 V AC, 12-24-220 V DC,  
LED indicators of the relay and input / output status
- **RPS - DIN rail power supply**  
for automation systems, output circuit: 12-24 V DC,  
rated currents: from 1,5 A to 20 A
- **solid state relays**  
rated load currents: from 1 A to 100 A,  
switching at zero or at any time
- **overvoltage arresters**  
classes I, II and III, available with changeover signal contact
- **switches and rotary switches**  
lever switches of 1-, 2-, 3- and 4-pole versions,  
rotary switches from 1 to 6 sections  
and from 2 to 12 positions
- **digital protection sets**  
for automation, measurements  
and control for mid-voltage fields
- **production and installation**  
of stationary devices for monitoring  
of radioactive radiation

Due to the permanent development policy, Relpol S.A. reserves the right to introduce changes of data and characteristics of the products. The devices shall be operated by skilled personnel in accordance with the regulations in force pertaining to electrical systems. The technical data are of informational nature. Thus, Relpol S.A. does not accept any liability for inappropriate use of the presented products.



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