

## Power PCB Relay RT1

- 1 pole 12A/16A, 1 form C (CO) or 1 form A (NO) contact
- DC or AC coil
- 5kV/10mm coil-contact, reinforced insulation
- Ambient temperature 85°C (DC coil)
- WG version: product in accordance to IEC 60335-1
- Reflow version: for THR (Through-Hole Reflow) soldering process

### Typical applications

Boiler control, timers, garage door control, POS automation, interface modules



F0144-C



### Approvals

VDE Cert. No. 40007571, cULus E214025, cCSAus 1142018;  
CQC in preparation  
Technical data of approved types on request

| Contact Data                                        | 12A                                          | 16A          |
|-----------------------------------------------------|----------------------------------------------|--------------|
| Contact arrangement                                 | 1 form C (CO) or 1 form A (NO)               |              |
| Rated voltage                                       | 250VAC                                       |              |
| Max. switching voltage                              | 400VAC                                       |              |
| Rated current                                       | 12A                                          | 16A          |
| Limiting continuous current                         | 12A                                          | 16A, UL: 20A |
| Limiting making current<br>max. 4s, duty factor 10% | 25A                                          | 30A          |
| Breaking capacity max.                              | 3000VA                                       | 4000VA       |
| Contact material                                    | AgNi 90/10, AgNi 90/10 gold plated           |              |
| Frequency of operation, with/without load           |                                              |              |
| DC coil                                             | 360/72000h <sup>-1</sup>                     |              |
| AC coil                                             | 360/36000h <sup>-1</sup>                     |              |
| Operate/release time max., DC coil                  | 8/6ms                                        |              |
| Bounce time max., DC coil, form A/form B            | 4/6ms                                        |              |
| Electrical endurance                                | see electrical endurance graph <sup>1)</sup> |              |

| Contact ratings |         |      |        |
|-----------------|---------|------|--------|
| Type            | Contact | Load | Cycles |

#### IEC 61810

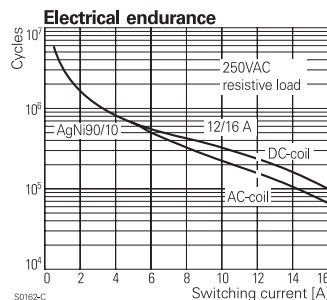
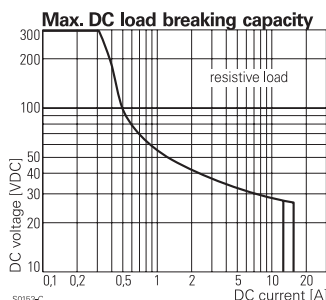
|               |        |                           |                     |
|---------------|--------|---------------------------|---------------------|
| RT314 DC-coil | A (NO) | 16A, 250VAC, cosφ=1, 85°C | 30x10 <sup>3</sup>  |
| RT314 DC-coil | C (CO) | 16A, 250VAC, cosφ=1, 85°C | 10x10 <sup>3</sup>  |
| RT314 DC-coil | A (NO) | 10A, 400VAC, cosφ=1, 85°C | 150x10 <sup>3</sup> |
| RT114 DC-coil | A (NO) | 12A, 250VAC, cosφ=1, 85°C | 50x10 <sup>3</sup>  |
| RT114 AC-coil | A (NO) | 12A, 250VAC, cosφ=1, 70°C | 100x10 <sup>3</sup> |

#### UL 508

|       |             |                                    |                     |
|-------|-------------|------------------------------------|---------------------|
| RT314 | A/B (NO/NC) | 20A, 250VAC, general purpose, 85°C | 6x10 <sup>3</sup>   |
| RT334 | A (NO)      | 16A, 250VAC, gen. purpose, 85°C    | 50x10 <sup>3</sup>  |
| RT314 | A (NO)      | 1hp, 240VAC, 40°C                  | 1x10 <sup>3</sup>   |
| RT314 | A (NO)      | FLA/LRA, 4.5/13.1A, 480VAC, 70°C   | 100x10 <sup>3</sup> |

#### EN60947-4-1

|               |        |               |       |
|---------------|--------|---------------|-------|
| RT314 DC-coil | A (NO) | 250V/6A, AC-3 | 6.050 |
| RT314 AC-coil | A (NO) | 250V/2A, AC-3 | 6.050 |



### EN60947-5-1

RT314 DC-coil A/B (NO/NC) 2A, 24VDC, DC13 6.050

### EN60730-1

RT314 DC-coil A (NO) 12(2)A, 250VAC, 85°C 100x10<sup>3</sup>

1) For reflow solderable versions: actual contact performance may be influenced by the reflow soldering process.

### Contact Data (continued)

|                         |                                |
|-------------------------|--------------------------------|
| Mechanical endurance    |                                |
| DC coil                 | >30x10 <sup>6</sup> operations |
| AC coil                 | >10x10 <sup>6</sup> operations |
| AC coil, reflow version | >5x10 <sup>6</sup> operations  |

### Coil Data

Coil voltage range, DC coil/ AC coil 5 to 110VDC / 24 to 230VAC

Operative range, IEC 61810 2

Coil insulation system according UL class F

### Coil versions, DC coil

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ω±10% <sup>2)</sup> | Rated coil power mW |
|-----------|-------------------|---------------------|---------------------|-------------------------------------|---------------------|
| 005       | 5                 | 3.5                 | 0.5                 | 62                                  | 403                 |
| 006       | 6                 | 4.2                 | 0.6                 | 90                                  | 400                 |
| 009       | 9                 | 6.3                 | 0.9                 | 200                                 | 400                 |
| 012       | 12                | 8.4                 | 1.2                 | 360                                 | 400                 |
| 018       | 18                | 12.6                | 1.8                 | 770                                 | 420                 |
| 020       | 20                | 14.0                | 2.0                 | 952                                 | 420                 |
| 024       | 24                | 16.8                | 2.4                 | 1440                                | 400                 |
| 048       | 48                | 33.6                | 4.8                 | 5520                                | 417                 |
| 060       | 60                | 42.0                | 6.0                 | 8570 <sup>2)</sup>                  | 420                 |
| 110       | 110               | 77.0                | 11.0                | 28800 <sup>2)</sup>                 | 420                 |

2) Coil resistance ±12%.

All figures are given for coil without pre-energization, at ambient temperature +23°C.

Other coil voltages on request.

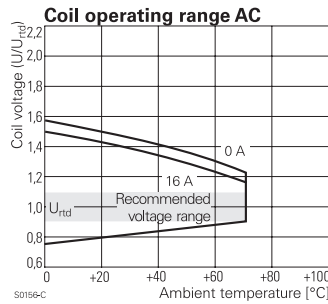
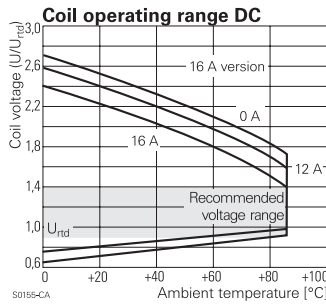
### Coil versions, AC coil 50/60 Hz

| Coil code | Rated voltage VAC | Operate voltage VAC | Release voltage VAC | Coil resistance Ω±15% <sup>3)</sup> | Rated coil power VA |
|-----------|-------------------|---------------------|---------------------|-------------------------------------|---------------------|
| 524       | 24                | 18.0                | 3.6                 | 350 <sup>3)</sup>                   | 0.76                |
| 615       | 115               | 86.3                | 17.3                | 8100                                | 0.76                |
| 620       | 120               | 90.0                | 18.0                | 8800                                | 0.75                |
| 700       | 200               | 150.0               | 30.0                | 24350                               | 0.76                |
| 730       | 230               | 172.5               | 34.5                | 32500                               | 0.74                |

3) Coil resistance ±10%.

All figures are given for coil without pre-energization, at ambient temperature +23°C, 50 Hz. Other coil voltages on request.

**Power PCB Relay RT1** (Continued)



**Insulation Data**

|                                    |                      |
|------------------------------------|----------------------|
| Initial dielectric strength        |                      |
| between open contacts              | 1000V <sub>rms</sub> |
| between contact and coil           | 5000V <sub>rms</sub> |
| Clearance/creepage                 |                      |
| between contact and coil           | ≥10/10mm             |
| Material group of insulation parts | IIIa                 |
| Tracking index of relay base       | PTI 250V             |
| reflow version                     | PTI 175V             |

**Other Data**

Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content refer to the Product Compliance Support Center at [www.te.com/customersupport/rohssupportcenter](http://www.te.com/customersupport/rohssupportcenter)

|                                                 |                                       |
|-------------------------------------------------|---------------------------------------|
| Resistance to heat and fire                     |                                       |
| WG version or Reflow version                    | according EN60335, par30              |
| Ambient temperature                             |                                       |
| DC coil                                         | -40 to 85°C                           |
| AC coil                                         | -40 to 70°C                           |
| Category of environmental protection, IEC 61810 |                                       |
| standard version                                | RTII - flux proof, RTIII - wash tight |
| reflow version                                  | RTII - flux proof                     |
| Vibration resistance (functional)               |                                       |
| form A/form B contact, 30 to 500Hz              | 20g/5g                                |
| Shock resistance (destructive)                  | 100g                                  |

**Other Data** (continued)

|                                       |                                                                   |
|---------------------------------------|-------------------------------------------------------------------|
| Terminal type                         |                                                                   |
| standard version                      | PCB-THT, plug-in                                                  |
| reflow version                        | PCB-THR                                                           |
| Mounting distance                     | AC coil: ≥2.5mm                                                   |
| Weight                                | 14g                                                               |
| Resistance to soldering heat          | THT, IEC 60068-2-20                                               |
| RTII                                  | 270°C/10s                                                         |
| RTIII                                 | 260°C/5s                                                          |
| Resistance to soldering heat          | THR                                                               |
| reflow soldering (for reflow version) | forced gas convection <sup>4)</sup> or vapour phase <sup>5)</sup> |
| temperature profile                   | according EN61730                                                 |
| Packaging/unit                        | tube/20 pcs., box/500 pcs.                                        |

<sup>4)</sup> infrared heating not allowed  
<sup>5)</sup> recommended fluid LS/230

**Accessories**

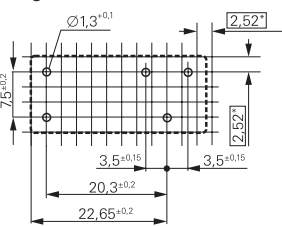
For details see datasheet [Accessories Industrial Power Relay RT](#)

NOTE: indicated contact ratings and electrical endurance data for direct wiring of relays (according IEC 61810-1); for relays mounted on sockets deratings may apply.

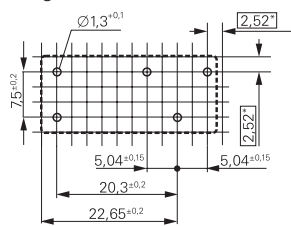
**PCB layout / terminal assignment**

Bottom view on solder pins

12A, pinning 3.5mm

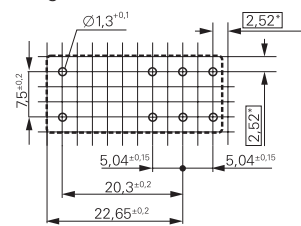


12A, pinning 5mm

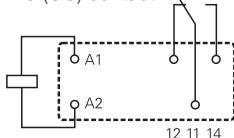


<sup>\*)</sup> With the recommended PCB hole sizes a grid pattern from 2.5mm to 2.54mm can be used.

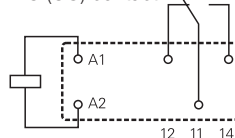
16A, pinning 5mm



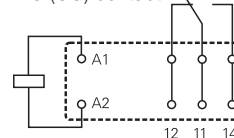
1 form C (CO) contact



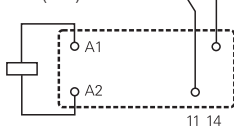
1 form C (CO) contact



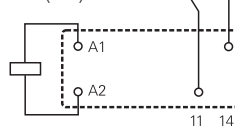
1 form C (CO) contact



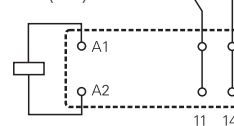
1 form A (NO) contact



1 form A (NO) contact

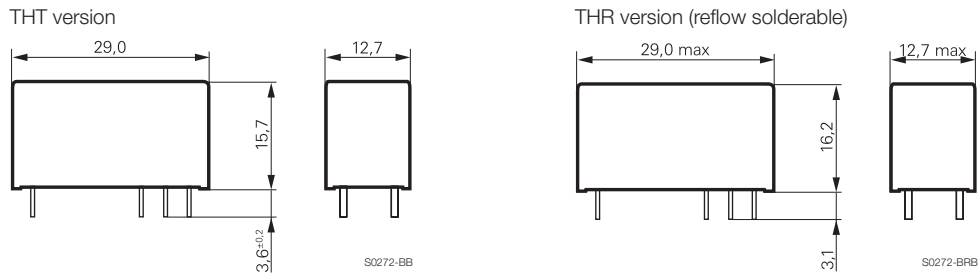


1 form A (NO) contact

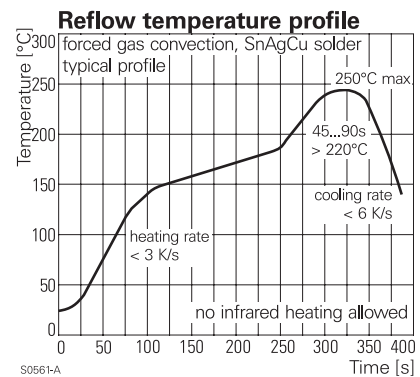
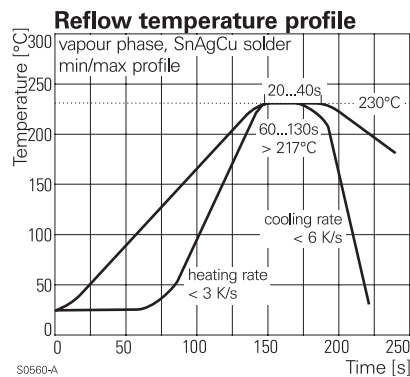


**Power PCB Relay RT1 (Continued)**

**Dimensions**



**Process conditions for Reflow soldering**  
according to EN61760-1



**Product code structure**

Typical product code

**RT 3 1 4 024**

**Type**

**RT** Power PCB Relay RT1

**Version**

- 1** 12A, pinning 3.5mm, flux proof
- 2** 12A, pinning 5mm, flux proof \*)
- 3** 16A, pinning 5mm, flux proof
- B** 12A, pinning 3.5mm, wash tight
- D** 16A, pinning 5mm, wash tight

**Contact arrangement**

- 1** 1 form C (CO) contact
- 3** 1 form A (NO) contact

**Contact material**

- 4** AgNi 90/10
- 5** AgNi 90/10 gold plated (for type RT31.)

**Coil**

Coil code: please refer to coil versions table

**Version**

- Blank** Standard version
- WG** Product in accordance with IEC 60335-1 (domestic appliances)
- R** Reflow solderable

\*) Wash tight version on request

**Power PCB Relay RT1** (Continued)

| Product code | Version                           | Contacts                 | Contact material    | Coil   | Version              | Part number |
|--------------|-----------------------------------|--------------------------|---------------------|--------|----------------------|-------------|
| RT114009     | 12A, pinning 3.5mm,<br>flux proof | 1 form C (CO)<br>contact | AgNi 90/10          | 9VDC   | Standard             | 1393239-9   |
| RT114012     |                                   |                          |                     | 12VDC  |                      | 1419108-1   |
| RT114012WG   |                                   |                          |                     |        | IEC60335-1 compliant | 7-1415538-6 |
| RT114024     |                                   |                          |                     | 24VDC  | Standard             | 1-1393239-3 |
| RT114024WG   |                                   |                          |                     |        | IEC60335-1 compliant | 1415539-4   |
| RT114730     |                                   |                          |                     | 230VAC | Standard             | 1-1393239-9 |
| RT115024     |                                   |                          | AgNi 90/10 gold pl. | 24VDC  |                      | 2-1393239-1 |
| RT134012     |                                   | 1 form A (NO)<br>contact | AgNi 90/10          | 12VDC  |                      | 2-1393239-6 |
| RT134024     |                                   |                          |                     | 24VDC  |                      | 3-1393239-0 |
| RT214012     | 12A, pinning 5mm,<br>flux proof   | 1 form C (CO)<br>contact |                     | 12VDC  |                      | 5-1393239-4 |
| RT214024     |                                   |                          |                     | 24VDC  |                      | 5-1393239-5 |
| RT214524     |                                   |                          |                     | 24VAC  |                      | 5-1393239-9 |
| RT214730     |                                   |                          |                     | 230VAC |                      | 1419108-6   |
| RT314005     | 16A, pinning 5mm,<br>flux proof   |                          |                     | 5VDC   |                      | 9-1393239-1 |
| RT314006     |                                   |                          |                     | 6VDC   |                      | 9-1393239-3 |
| RT314012     |                                   |                          |                     | 12VDC  |                      | 9-1393239-5 |
| RT314012WG   |                                   |                          |                     |        | IEC60335-1 compliant | 8-1415535-6 |
| RT314018     |                                   |                          |                     | 18VDC  | Standard             | 9-1393239-7 |
| RT314024     |                                   |                          |                     | 24VDC  |                      | 9-1393239-8 |
| RT314024WG   |                                   |                          |                     |        | IEC60335-1 compliant | 1415538-7   |
| RT314048     |                                   |                          |                     | 48VDC  | Standard             | 1393240-1   |
| RT314524     |                                   |                          |                     | 24VAC  |                      | 1393240-4   |
| RT314548     |                                   |                          |                     | 48VAC  |                      | 1393240-5   |
| RT314730     |                                   |                          |                     | 230VAC |                      | 1393240-7   |
| RT315024     |                                   |                          | AgNi 90/10 gold pl. | 24VDC  |                      | 1-1393240-4 |
| RT334009WG   |                                   | 1 form A (NO)<br>contact | AgNi 90/10          | 9VDC   | IEC60335-1 compliant | 3-1415538-1 |
| RT334012     |                                   |                          |                     | 12VDC  | Standard             | 4-1393240-5 |
| RT334012WG   |                                   |                          |                     |        | IEC60335-1 compliant | 1-1415527-1 |
| RT334024     |                                   |                          |                     | 24VDC  | Standard             | 4-1393240-8 |
| RT334048     |                                   |                          |                     | 48VDC  |                      | 5-1393240-0 |
| RTB14005     | 12A, pinning 3.5mm,<br>wash tight | 1 form C (CO)<br>contact |                     | 5VDC   |                      | 1-1393238-2 |
| RTB14012     |                                   |                          |                     | 12VDC  |                      | 1-1393238-5 |
| RTB14024     |                                   |                          |                     | 24VDC  |                      | 1-1393238-9 |
| RTB14524     |                                   |                          |                     | 24VAC  |                      | 2-1393238-4 |
| RTD14005     | 16A, pinning 5mm,<br>wash tight   |                          |                     | 5VDC   |                      | 5-1393238-9 |
| RTD14012     |                                   |                          |                     | 12VDC  |                      | 6-1393238-2 |
| RTD14024     |                                   |                          |                     | 24VDC  |                      | 6-1393238-8 |
| RTD14048     |                                   |                          |                     | 48VDC  |                      | 6-1393238-9 |

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