

## Power PCB Relay RT1 Inrush

- 1 pole 16A, 1 form C (CO) or 1 form A (NO) contact
- For inrush peak currents up to 80A
- Mono- or bistable coil
- 5kV/10mm coil-contact
- Reinforced insulation
- Ambient temperature 85°C
- WG version: product in accordance to IEC 60335-1

### Typical applications

Domestic appliances, heating control, lighting control



F0177-C



### Approvals

VDE Cert. No. 40007571, UL E214025, cCSAus 1142018

Technical data of approved types on request

### Contact Data

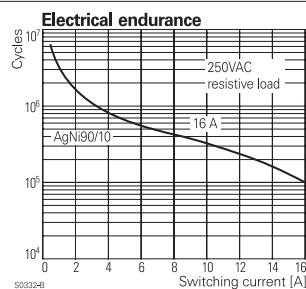
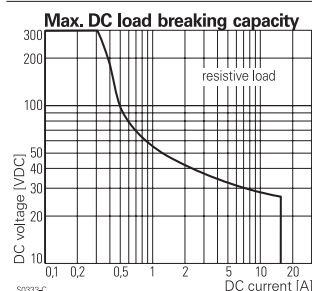
|                                               |                                |
|-----------------------------------------------|--------------------------------|
| Contact arrangement                           | 1 form C (CO) or 1 form A (NO) |
| Rated voltage                                 | 250VAC                         |
| Max. switching voltage                        | 400VAC                         |
| Rated current                                 | 16A                            |
| Limiting continuous current                   | 16A, UL: 20A (K-version)       |
| Limiting making current,                      |                                |
| max. 4s, df 10%                               | 30A                            |
| max. 20ms (incandescent lamps), RT33L version | 80A                            |
| Breaking capacity max.                        | 4000VA                         |
| Contact material                              | AgNi90/10, AgSnO               |
| Frequency of operation, with/without load     | 360/72000h <sup>-1</sup>       |
| Operate/release time max., DC coil            | 9/6ms                          |
| Operate/Reset time max., bistable version     | 10/10ms                        |
| Bounce time max., form A/form B               | 3/6ms                          |

### Contact ratings

| Type             | Contact | Load                                        | Cycles             |
|------------------|---------|---------------------------------------------|--------------------|
| <b>IEC 61810</b> |         |                                             |                    |
| RT33L            | A (NO)  | 16A, 250VAC resistive, 85°C                 | 50x10 <sup>3</sup> |
| RT33L            | A (NO)  | 10A, 400VAC resistive, 85°C                 | 10x10 <sup>3</sup> |
| RT31             | C (CO)  | 16A, 250VAC resistive, 85°C                 | 6x10 <sup>3</sup>  |
| RT33K            | A (NO)  | 16A, 250VAC resistive, 85°C                 | 30x10 <sup>3</sup> |
| <b>UL 508</b>    |         |                                             |                    |
| RT33K            | A (NO)  | 20A, 277VAC general purpose, 40°C           | 10x10 <sup>3</sup> |
| RT33L            | A (NO)  | 16A, 250VAC resistive, 85°C                 | 50x10 <sup>3</sup> |
| RT31             | C (CO)  | 16A, 250VAC resistive, 85°C                 | 6x10 <sup>3</sup>  |
| RT33L            | A (NO)  | 1000W Tungsten, 120VAC, 60 Hz, 40°C         | 6x10 <sup>3</sup>  |
| RT33L            | A (NO)  | 1000W standard ballast, 120VAC, 60 Hz, 40°C | 6x10 <sup>3</sup>  |

### EN 60947-4-1

|                      |                    |       |
|----------------------|--------------------|-------|
| RT31L/RT33L A (NO)   | 250V/6A, AC-3      | 6.050 |
| Mechanical endurance |                    |       |
| monostable version   | >30x106 operations |       |
| bistable version     | >5x106 operations  |       |



### Coil Data, DC coil

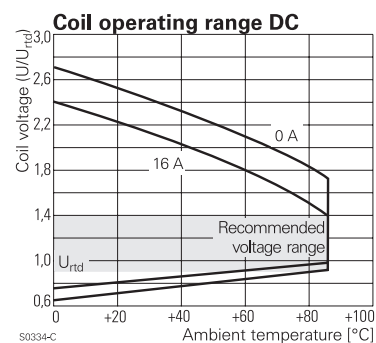
|                                     |             |
|-------------------------------------|-------------|
| Coil voltage range                  | 5 to 110VDC |
| Operative range, IEC 61810          | 2           |
| Coil insulation system according UL | class F     |

### Coil versions, DC coil

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance $\Omega \pm 10\%$ <sup>1)</sup> | Rated coil power mW |
|-----------|-------------------|---------------------|---------------------|-------------------------------------------------|---------------------|
| 005       | 5                 | 3.5                 | 0.5                 | 62                                              | 403                 |
| 006       | 6                 | 4.2                 | 0.6                 | 90                                              | 400                 |
| 012       | 12                | 8.4                 | 1.2                 | 360                                             | 400                 |
| 024       | 24                | 16.8                | 2.4                 | 1440                                            | 400                 |
| 048       | 48                | 33.6                | 4.8                 | 5520                                            | 417                 |
| 060       | 60                | 42.0                | 6.0                 | 8570 <sup>1)</sup>                              | 420                 |

1) Coil resistance  $\pm 12\%$ .

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



### Coil Data, bistable coils

|                                           | 1 coil                        | 2 coils |
|-------------------------------------------|-------------------------------|---------|
| Magnetic system                           | polarized, bistable           |         |
| Coil voltage range                        | 5 to 24VDC                    |         |
| Operative range, IEC 61810                | 2                             |         |
| Limiting voltage, % of rated coil voltage | 120%                          | 150%    |
| Min./Max. energization duration           | 30ms/1min at <10% duty factor |         |
| Coil insulation system according UL       | class F                       |         |

**Power PCB Relay RT1 Inrush** (Continued)

**Coil Data** (continued)

**Coil versions, bistable coil**

| Coil code               | Rated voltage VDC | Set voltage VDC | Reset voltage VDC | Coil resistance $\Omega \pm 10\%$ | Rated coil power mW |
|-------------------------|-------------------|-----------------|-------------------|-----------------------------------|---------------------|
| <b>bistable, 1 coil</b> |                   |                 |                   |                                   |                     |
| A05                     | 5                 | 3.5             | 2.8               | 62                                | 403                 |
| A06                     | 6                 | 4.2             | 3.3               | 90                                | 400                 |
| A12                     | 12                | 8.4             | 6.6               | 360                               | 400                 |
| A24                     | 24                | 16.8            | 13.2              | 1440                              | 400                 |

**bistable, 2 coils**

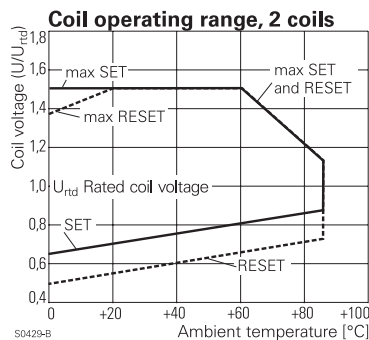
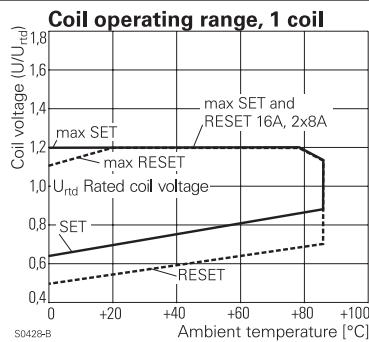
|     |    |      |      |     |     |
|-----|----|------|------|-----|-----|
| F05 | 5  | 3.5  | 2.8  | 42  | 595 |
| F06 | 6  | 4.2  | 3.3  | 55  | 655 |
| F12 | 12 | 8.4  | 6.6  | 240 | 600 |
| F24 | 24 | 16.8 | 13.2 | 886 | 650 |

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

**Bistable coils - operation**

| Version        | 1 coil |    | 2 coils |    |    |
|----------------|--------|----|---------|----|----|
| Coil terminals | A1     | A2 | A1      | A3 | A2 |
| Operate        | +      | -  | +       | +  | -  |
| Reset          | -      | +  | -       | +  | +  |

Contact position not defined at delivery



**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             |

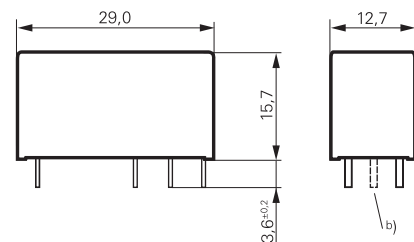
**Other Data**

|                                                                                                                  |                                     |
|------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Material compliance: EU RoHS/ELV, China RoHS, REACH, Halogen content                                             |                                     |
| refer to the Product Compliance Support Center at                                                                |                                     |
| <a href="http://www.te.com/customer-support/rohssupportcenter">www.te.com/customer-support/rohssupportcenter</a> |                                     |
| Resistance to heat and fire                                                                                      |                                     |
| WG version                                                                                                       | according EN60335-1                 |
| Ambient temperature                                                                                              | -40 to 85°C                         |
| Category of environmental protection                                                                             |                                     |
| IEC 61810                                                                                                        | RTII - flux proof<br>RTIII - sealed |
| Vibration resistance (functional),                                                                               |                                     |
| form A/form B contact, 30 to 500Hz                                                                               | 20/5g                               |
| Shock resistance (destructive)                                                                                   | 100g                                |
| Terminal type                                                                                                    | PCB-THT, plug-in <sup>2)</sup>      |
| Weight                                                                                                           | 14g                                 |
| Resistance to soldering heat                                                                                     | THT, IEC 60068-2-20                 |
| RTII                                                                                                             | 270°C/10s                           |
| RTIII                                                                                                            | 260°C/5s                            |
| Packaging/unit                                                                                                   | tube/20 pcs., box/500 pcs.          |
| 2) socket available for 1 coil version only, see Accessories                                                     |                                     |

**Accessories**

For details see datasheet [Accessories Industrial Power Relay RT<sup>2\)</sup>](#)  
Socket available for 1 coil version only.  
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.

**Dimensions**



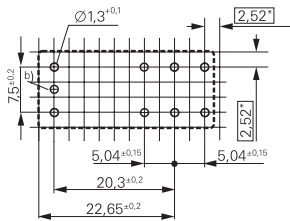
S0272-BC

**Power PCB Relay RT1 Inrush** (Continued)

**PCB layout / terminal assignment**

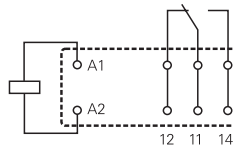
Bottom view on solder pins

16A, 1 form C (CO) contact, pinning 5mm



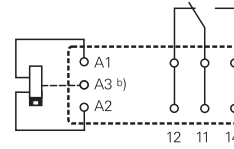
S0418-CM

monostable version



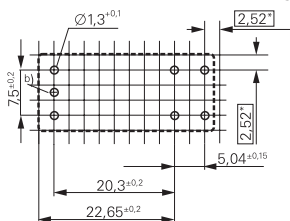
S0163-BE

bistable version a)



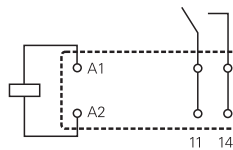
S0163-DI

16A, 1 form A (NO) contact, pinning 5mm



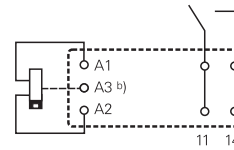
S0418-CV

monostable version



S0163-BF

bistable version a)

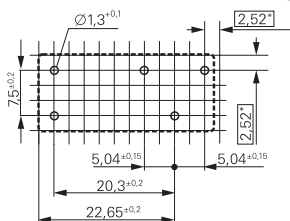


a) Indicated contact position during or after coil energization with reset voltage.

b) for 2 coil version only

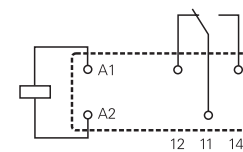
S0163DPS

12A, 1 form C (CO) contact, pinning 5mm



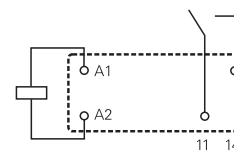
S0418-CN

monostable version, 1 form C (CO)



S0163-BC

monostable version, 1 form A (NO)



S0163-BD

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

**Product code structure**

Typical product code

**RT 3 3 L 012**

**Type**

Power PCB Relay RT1 Inrush

**Version**

**3** 16A, pinning 5mm, flux proof

**D** 16A, pinning 5mm, sealed

**Contact configuration**

**1** 1 form C (CO) contact

**3** 1 form A (NO) contact

**Contact material**

**K** AgNi 90/10

**L** AgSnO<sub>2</sub>

**Coil**

Coil code: please refer to coil versions table

**Version**

**Blank** Standard version

**WG** Product in accordance to IEC 60335-1

**Power PCB Relay RT1 Inrush** (Continued)

| Product code | Version          | Contact material   | Coil             | Coil  | Part Number |
|--------------|------------------|--------------------|------------------|-------|-------------|
| RT31L012     | 1 form C (CO)    | AgSnO <sub>2</sub> | Monostable       | 12VDC | 7-1393239-3 |
| RT31L024     | 16A, pinning 5mm |                    |                  | 24VDC | 7-1393239-5 |
| RT31L048     | flux proof       |                    |                  | 48VDC | 7-1393239-6 |
| RT33K012     | 1 form A (NO)    | AgNi 90/10         |                  | 12VDC | 2-1393240-3 |
| RT33K024     | 16A, pinning 5mm |                    |                  | 24VDC | 2-1393240-4 |
| RT33KF12     | flux proof       |                    | Bistable 2 coils | 12VDC | 1-1415540-1 |
| RT33L012     |                  | AgSnO <sub>2</sub> | Monostable       |       | 3-1393240-3 |
| RT33L012WG   |                  |                    |                  |       | 2-1415538-2 |
| RT33L024     |                  |                    |                  | 24VDC | 3-1393240-5 |
| RT33LA12     |                  |                    | Bistable 1 coil  | 12VDC | 2-1393240-7 |
| RT33LA24     |                  |                    |                  | 24VDC | 3-1415379-1 |
| RT33LF12     |                  |                    | Bistable 2 coils | 12VDC | 2-1393240-8 |
| RTD1L005     | 1 form C (CO)    | AgSnO <sub>2</sub> | Monostable       | 5VDC  | 1-1415537-7 |
| RTD1L012     | 16a, pinning 5mm |                    |                  | 12VDC | 5-1393238-6 |
| RTD1L024     | sealed           |                    |                  | 24VDC | 8-1415398-1 |

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