

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



F0177-C



Typical applications

Domestic appliances, heating control, lighting control

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 | 360/7200h ⁻¹ |
| 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

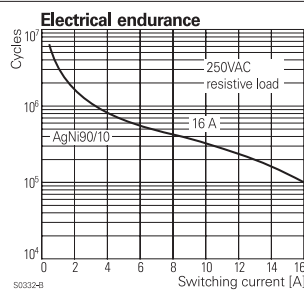
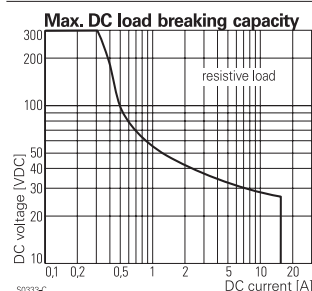
| Type | Contact | Load | Cycles |
|------------------|---------|---|--------------------|
| IEC 61810 | | | |
| RT33L | A (NO) | 16A, 250VAC resistive, 85°C | 50x10 ³ |
| RT33L | A (NO) | 10A, 400VAC resistive, 85°C | 10x10 ³ |
| RT31 | C (CO) | 16A, 250VAC resistive, 85°C | 5x10 ³ |
| RT33K | A (NO) | 16A, 250VAC resistive, 85°C | 30x10 ³ |
| UL 508 | | | |
| RT33K | A (NO) | 20A, 277VAC general purpose, 40°C | 10x10 ³ |
| RT33L | A (NO) | 16A, 250VAC resistive, 85°C | 50x10 ³ |
| RT31 | C (CO) | 16A, 250VAC resistive, 85°C | 6x10 ³ |
| RT33L | A (NO) | 1000W Tungsten, 120VAC, 60 Hz, 40°C | 6x10 ³ |
| RT33L | A (NO) | 1000W standard ballast, 120VAC, 60 Hz, 40°C | 6x10 ³ |

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

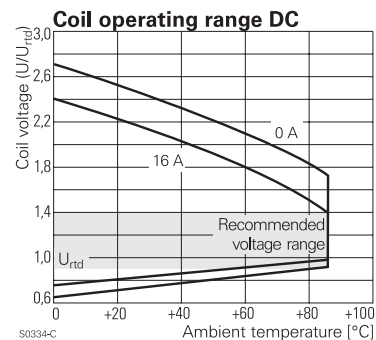
| | |
|-------------------------------------|-------------|
| Coil voltage range | 5 to 110VDC |
| Operative range, IEC 61810 | 2 |
| Coil insulation system according UL | class F |

Coil versions, DC coil

| Coil code | Rated voltage VDC | Operate voltage VDC | Release voltage VDC | Coil resistance Ω±10% ¹⁾ | Rated coil power mW |
|-----------|-------------------|---------------------|---------------------|-------------------------------------|---------------------|
| 003 | 3 | 2.1 | 0.3 | 21.4 | 421 |
| 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 ¹⁾ | 420 |

1) Coil resistance ±12%.

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



Power PCB Relay RT1 Inrush (Continued)

| 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 | |

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 |
|--------------------------|-------------------|-----------------|-------------------|-----------------------------------|---------------------|
| bistable, 1 coil | | | | | |
| A03 | 3 | 2.1 | 1.7 | 21.4 | 429 |
| 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 | | | | | |
| F03 | 3 | 2.1 | 1.7 | 15 | 600 |
| 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 _{rms} |
| between contact and coil | 5000V _{rms} |
| 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 www.te.com/customer-support/rohssupportcenter

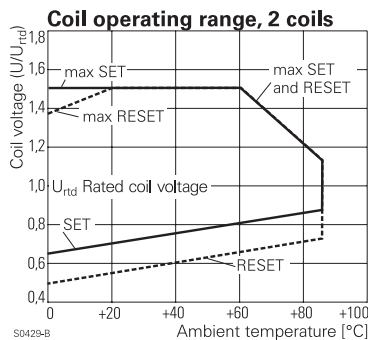
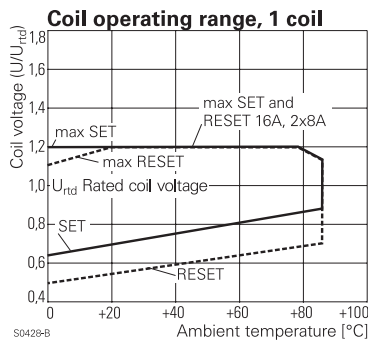
| | |
|--|-------------------------------------|
| Resistance to heat and fire | |
| WG version | according EN60335-1 |
| Ambient temperature | -40 to 85°C |
| Category of environmental protection | |
| IEC 61810 | RTII - flux proof RTIII - sealed |
| Vibration resistance (functional), form A/form B contact, 30 to 500Hz | 20/5g |
| Shock resistance (destructive) | 100g |
| Terminal type | PCB-THT, plug-in ²⁾ |
| 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

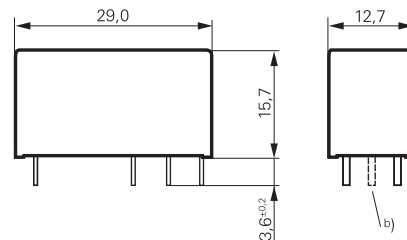
Accessories

For details see datasheet [Accessories Industrial Power Relay RT^{2\)}](#)
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



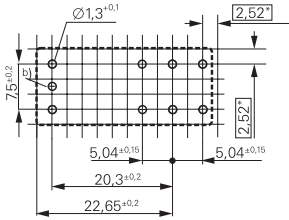
S0272-BC

Power PCB Relay RT1 Inrush (Continued)

PCB layout / terminal assignment

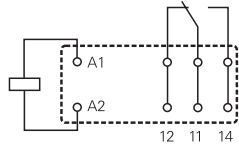
Bottom view on solder pins

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



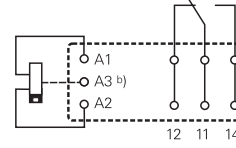
S0418-CM

monostable version



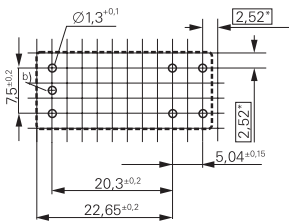
S0163-BE

bistable version a)



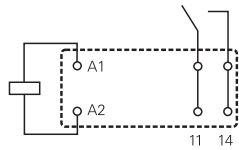
S0163-DI

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



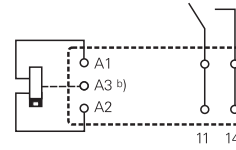
S0418-CV

monostable version



S0163-BF

bistable version a)

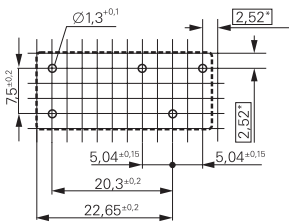


a) Indicated contact position during or after coil energization with reset voltage.

b) for 2 coil version only

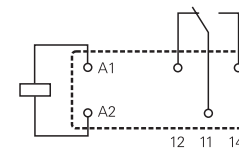
S0163-DPS

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



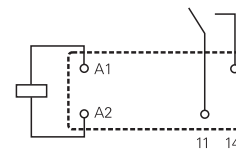
S0418-CN

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 AgSnO₂

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 | Contacts | Contact material | Coil version | Coil | Version | Part Number |
|--------------|-------------|---------------|--------------------|------------------|-------|----------------------|-------------|
| RT31L003 | 16A, | 1 form C (CO) | AgSnO ₂ | Monostable | 3VDC | Standard | 7-1415547-5 |
| RT31L006 | pinning 5mm | contact | | | 6VDC | | 7-1393239-2 |
| RT31L012 | flux proof | | | | 12VDC | | 7-1393239-3 |
| RT31L012WG | | | | | 12VDC | IEC60335-1 compliant | 4-1415539-8 |
| RT31L024 | | | | | 24VDC | Standard | 7-1393239-5 |
| RT31L048 | | | | | 48VDC | | 7-1393239-6 |
| RT31LA05 | | | | Bistable 1 coil | 5VDC | | 6-1415544-3 |
| RT31LA06 | | | | | 6VDC | | 3-1419136-9 |
| RT31LA12 | | | | | 12VDC | | 3-1415517-1 |
| RT31LA24 | | | | | 24VDC | | 7-1415014-1 |
| RT31LF03 | | | | Bistable 2 coils | 3VDC | | 8-1415389-1 |
| RT31LF05 | | | | | 5VDC | | 6-1415544-6 |
| RT31LF12 | | | | | 12VDC | | 3-1415402-1 |
| RT31LF24 | | | | | 24VDC | | 8-1415014-1 |
| RT33K012 | | 1 form A (NO) | AgNi 90/10 | Monostable | 12VDC | | 2-1393240-3 |
| RT33K024 | | contact | | | 5VDC | | 2-1393240-4 |
| RT33KF12 | | | | Bistable 2 coils | 12VDC | | 1-1415540-1 |
| RT33L005 | | | AgSnO ₂ | Monostable | 5VDC | | 3-1393240-0 |
| RT33L005WG | | | | | 5VDC | IEC60335-1 compliant | 6-1415544-7 |
| RT33L006 | | | | | 6VDC | Standard | 3-1393240-1 |
| RT33L012 | | | | | 12VDC | | 3-1393240-3 |
| RT33L012WG | | | | | 12VDC | IEC60335-1 compliant | 2-1415538-2 |
| RT33L024 | | | | | 24VDC | Standard | 3-1393240-5 |
| RT33L024WG | | | | | 24VDC | IEC60335-1 compliant | 2-1415544-3 |
| RT33L048 | | | | | 48VDC | Standard | 3-1393240-6 |
| RT33LA03 | | | | Bistable 1 coil | 3VDC | | 5-1415534-7 |
| RT33LA05 | | | | | 5VDC | | 8-1415528-1 |
| RT33LA06 | | | | | 6VDC | | 2-1393240-6 |
| RT33LA12 | | | | | 12VDC | | 2-1393240-7 |
| RT33LA24 | | | | | 24VDC | | 3-1415379-1 |
| RT33LF05 | | | | Bistable 2 coils | 5VDC | | 4-1419136-1 |
| RT33LF12 | | | | | 12VDC | | 2-1393240-8 |
| RT33LF24 | | | | | 24VDC | | 2-1393240-9 |
| RTD1L005 | 16A, | 1 form C (CO) | | Monostable | 5VDC | | 1-1415537-7 |
| RTD1L012 | pinning 5mm | contact | | | 12VDC | | 5-1393238-6 |
| RTD1L024 | wash tight | | | | 24VDC | | 8-1415398-1 |
| RTD1LA05 | | | | Bistable 1 coil | 5VDC | | 6-1415544-4 |
| RTD1LA24 | | | | | 24VDC | | 4-1415541-5 |
| RTD3L012 | | 1 form A (NO) | | Monostable | 12VDC | | 5-1415393-1 |
| RTD3L024 | | contact | | | 24VDC | | 4-1415538-9 |