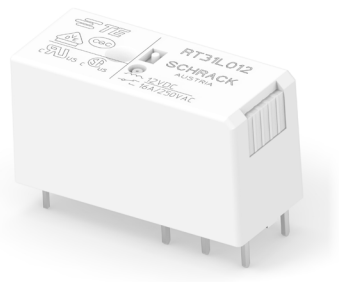
Power PCB Relay RT1 Inrush

- **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**
- **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,
CQC 18002197247 (monostable), 18002197364 (bistable)
Technical data of approved types on request

Contact Data

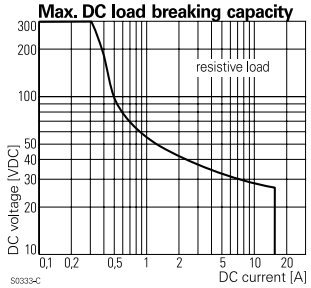
Contact arrangement	1 form C (CO) or 1 form A (NO)
Rated voltage	250VAC
Max. switching voltage	400VAC
Rated current	16A
Limiting continuous current	16A, UL: 20A (K-version)
Limiting making current,	
max. 4s, df 10%	30A
max. 20ms (incandescent lamps), RT33L version	80A
Breaking capacity max.	4000VA
Contact material	AgNi90/10, AgSnO
Frequency of operation, with/without load	360/72000h^{-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

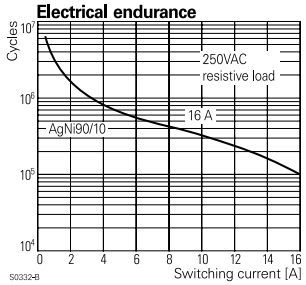
Type	Contact	Load	Cycles
IEC 61810			
RT33L	A (NO)	16A, 250VAC resistive, 85°C	50x10^3
RT33L	A (NO)	10A, 400VAC resistive, 85°C	10x10^3
RT31	C (CO)	16A, 250VAC resistive, 85°C	5x10^3
RT33K	A (NO)	16A, 250VAC resistive, 85°C	30x10^3
UL 61810-1 (former UL 508)			
RT33K	A (NO)	20A, 277VAC general purpose, 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	>30x10^6 operations
bistable version	>5x10^6 operations

Max. DC load breaking capacity



Electrical endurance



Coil Data, DC coil

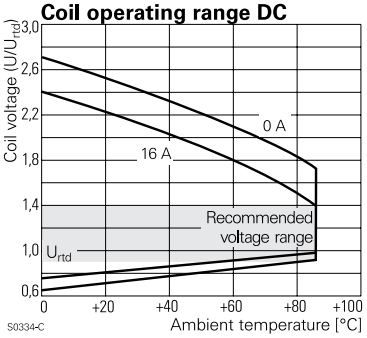
Coil voltage range	3 to 110VDC
Operative range, IEC 61810	2
Coil insulation system according UL	class F

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.

Coil operating range DC



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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 Ω±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

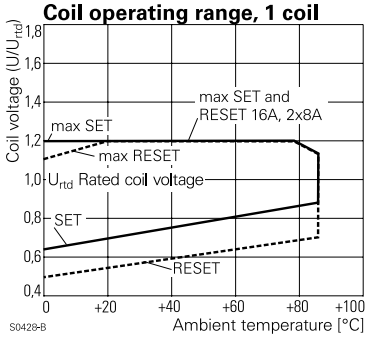
All figures are given for coil without pre-energization, at ambient temperature +23°C.
Other coil voltages on request.

Bistable coils - operation

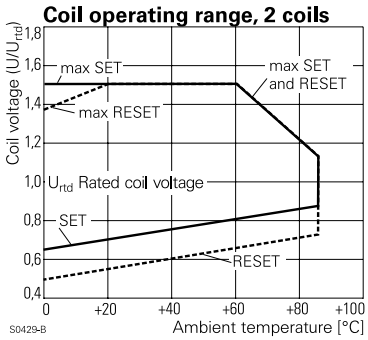
Version	1 coil		2 coils		
Coil terminals	A1	A2	A1	A3	A2
Operate	+	-		+	-
Reset	-	+	-	+	

Contact position not defined at delivery

Coil operating range, 1 coil



Coil operating range, 2 coils



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/customersupport/rohssupportcenter	
Resistance to heat and fire	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

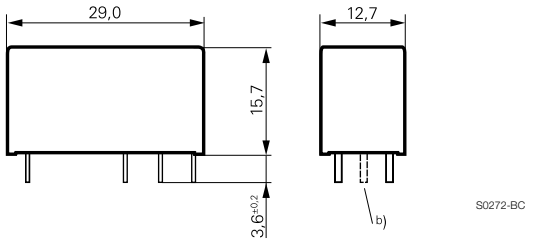
Accessories

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



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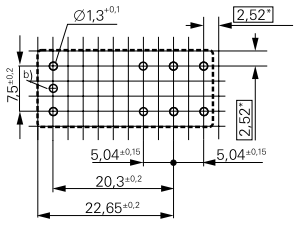
Power PCB Relay RT1 Inrush (Continued)

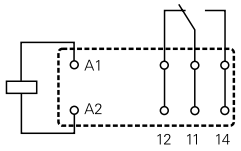
PCB layout / terminal assignment
Bottom view on solder pins

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



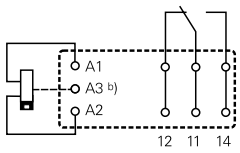
S0418-CM

monostable version



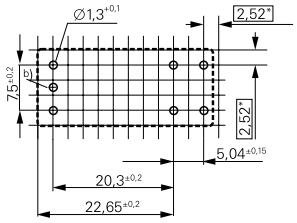
S0163-BE

bistable version a)



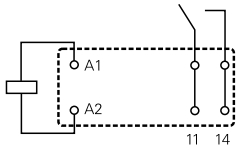
S0163-DI

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



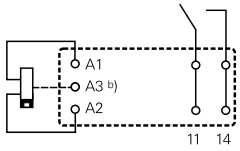
S0418-CV

monostable version



S0163-BF

bistable version a)

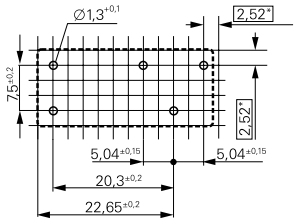


S0163DPS

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

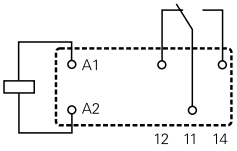
b) for 2 coil version only

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



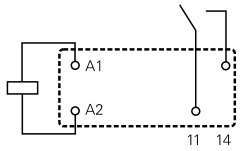
S0418-CN

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 $AgSnO_2$

Coil
Coil code: please refer to coil versions table

Version
Blank Standard version

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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
RT31L024					24VDC		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			24VDC		2-1393240-4
RT33KF12				Bistable 2 coils	12VDC		1-1415540-1
RT33L005			$AgSnO_2$	Monostable	5VDC		3-1393240-0
RT33L006					6VDC		3-1393240-1
RT33L012					12VDC		3-1393240-3
RT33L024					24VDC		3-1393240-5
RT33L048					48VDC		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

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