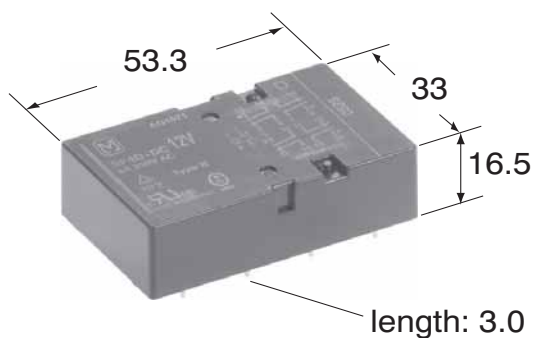


Panasonic
ideas for life

**POLARIZED, MONOSTABLE
SAFETY RELAY WITH
FORCIBLY GUIDED
DOUBLE CONTACTS**

**SF4D
RELAY**



Tolerance ± 0.3mm
Weight approx. 47g

Features

- Relay complies with EN 50205, Type B
- Overvoltage category as per IEC 60664-1 III / 4kV
- Rated voltage as per IEC 60664-1 basic insulation

	Pollution degree		
	2 inside	2 outside	3 inside
Coil-contact	400V	400V	250V
Contact-contact	forcibly linked pair only	250V	250V
	all other contacts	400V	400V

SPECIFICATIONS

Contact

Contact configuration (a = normally open / NO, b = normally closed / NC)	4a4b
Contact material	AgSnO ₂ , with Au flash
Contact resistance (initial at 6V DC, 1A)	≤30mΩ
Making and breaking capacities (breathing hole open) ^{*1}	6A 250V / 3A 24V
Max. switching voltage	400V
Min. switching voltage / min. switching current	10V / 10mA
Pick-up / drop-out / bounce time (approx. values at U _{nominal})	18.5 / 7.5 / 3ms
Mechanical life	10 ⁷ ops

Coil

Operate / release voltage (% of U _{nominal} at 20°C)	75% / 15%
Pick-up/nominal power consumption at 20°C	280 / 500mW

Remarks

- ^{*1} According to EN 60947-5-1: 1997, table 4 AC15 / DC13
^{*2} Contact interruption <10μs
^{*3} Breathing hole open

Characteristics

Max. switching frequency (without load)	10Hz
Permissible ambient temperature at nominal power consumption	-40°C to +70°C
Upper temperature limit	105°C
Test voltage: open contact / contact-contact / contact-coil	2500 / 2500 / 2500V _{rms}
Insulation resistance at 500V DC (initial)	10 ⁹ Ω
Shock resistance (11ms) NO/NC ^{*2}	30G
Vibration resistance 10 – 200 Hz (10 – 55 Hz, amplitude 2 mm) ^{*2}	10G
Degree of protection	IP67 / IP30 ^{*3}
Unit weight	47g

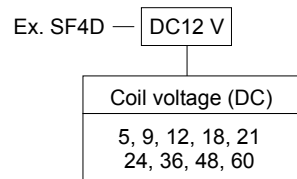
Important: Relay characteristics may be influenced by:

- strong external magnetic fields
- magnetic conductive materials near the relay
- narrow top-to-top mounting (printed surface to printed surface)

Note:

Suitable for most common washing methods except ultrasonic cleaning.

ORDERING INFORMATION



Note: Standard packing; Carton: 20 pcs. Case 200 pcs.

SF4D

COIL DATA

Part number	Coil nominal voltage V DC	Operate voltage V DC	Release voltage V DC	Coil resistance Ω ($\pm 10\%$, 20°C)	Coil inductance (mH)
SF4D-DC5V	5	3.75	0.75	50	47
SF4D-DC9V	9	6.75	1.35	162	145
SF4D-DC12V	12	9.00	1.80	288	252
SF4D-DC18V	18	13.50	2.70	648	551
SF4D-DC21V	21	15.75	3.15	882	742
SF4D-DC24V	24	18.00	3.60	1152	959
SF4D-DC36V	36	27.00	5.40	2592	2097
SF4D-DC48V	48	36.00	7.20	4608	3654
SF4D-DC60V	60	45.00	9.00	7200	5612

ELECTRICAL LIFE

Voltage	Current	Load type	Frequency	Duty cycle	No. of contacts	No. of ops.
230V AC	8A	AC 1	0.25Hz	25%	4 ^{*2}	85,000 ^{*5}
250V AC	6A	AC 1	0.33Hz	50%	4 ^{*2} / 8 ^{*3}	100,000 ^{*5}
230V AC	6A	AC 1	0.33Hz	10%	2 ^{*3}	200,000 ^{*4,*5}
230V AC	30 / 3A	AC 15 ^{*1}	0.33Hz	10%	1 ^{*3}	200,000 ^{*4,*5}
24V DC	8A	DC 1	0.33Hz	10%	2 ^{*3}	200,000 ^{*4,*5}
24V DC	3A	DC 13 ^{*1}	0.33Hz	10%	1 ^{*3}	50,000 ^{*4,*5}
24V DC	3A	L/R = 40ms	0.33Hz	10%	1 ^{*3}	100,000 ^{*4,*5}

*1 EN 60947-5-1: 1997; table C.1

*2 Breathing hole closed

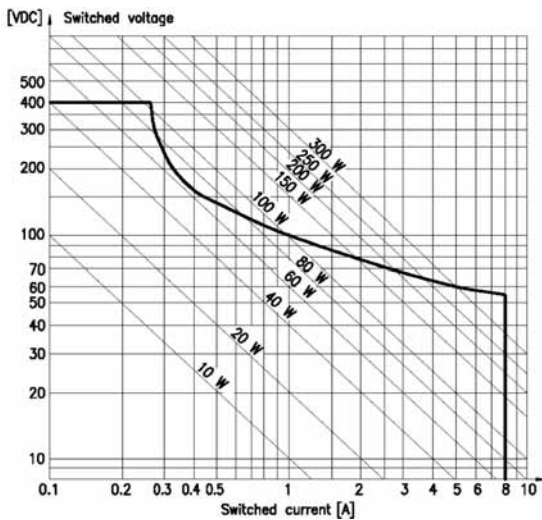
*3 Breathing hole open

*4 Ambient temperature +70°C

*5 Dielectric strength according to EN61810-1:2004.

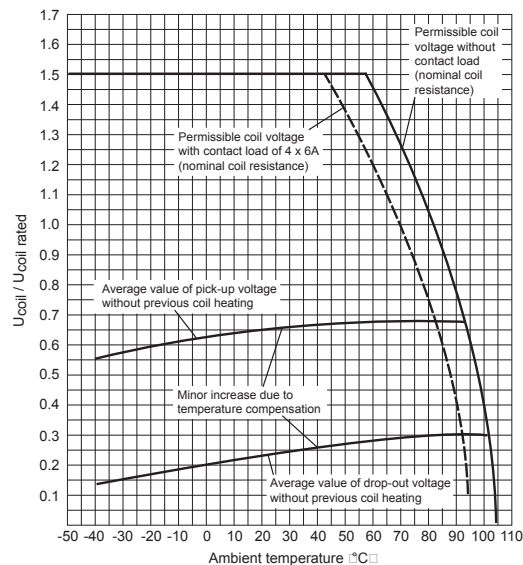
REFERENCE DATA

Load limit curve



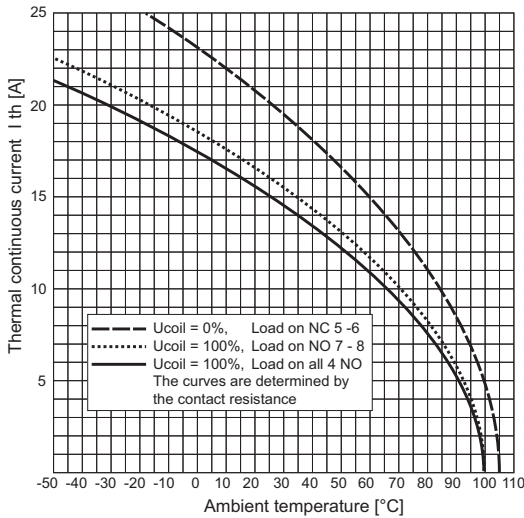
Loads in the range under the curve can be switched safely. The arc will extinguish before the opposite contact makes.

Coil voltage characteristics



Permissible coil voltages and pick-up and drop-out characteristics at various ambient temperatures.

Contact current characteristics



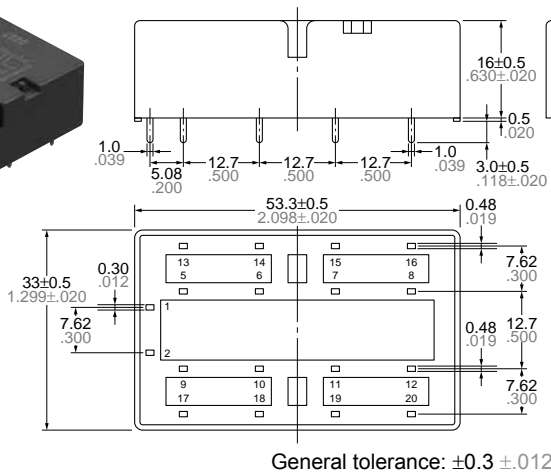
DIMENSIONS (mm inch)

Interested in CAD data? You can obtain CAD data for all products with a **CAD Data** mark from your local Panasonic Electric Works representative.

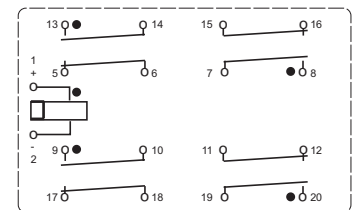
4 Form A 4 Form B

CAD Data

External dimensions

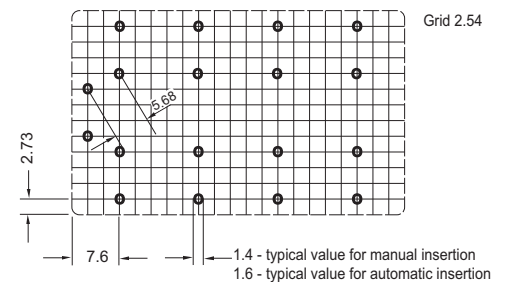


Schematic (Bottom view)



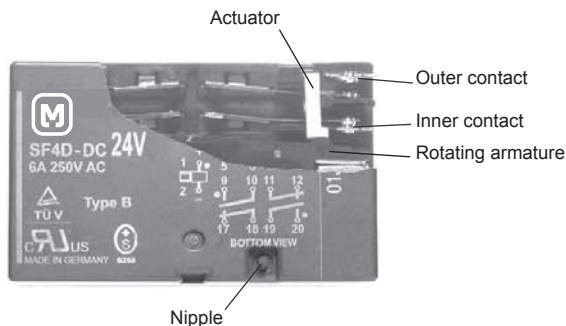
The contacts are shown in the deenergized condition.

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

APPLICATION NOTES



If required a breathing hole can be made in the cover by removing the nipple. However be aware that the degree of protection will reduce from IP67 to IP30!

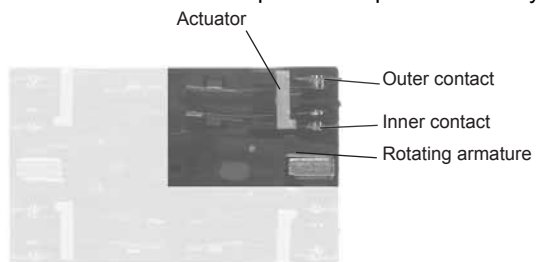
SF4D

Operation of forcibly guided contacts, Type B

If an outer contact should weld, then the forced operated inner contacts driven by the actuator remain open.

The rotating armature remains free to move.

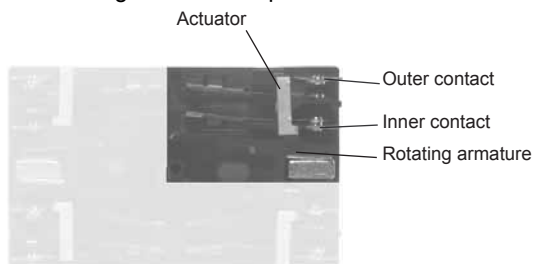
The unaffected contact pairs can operate normally, i.e. their function to make or break remains unaffected.



If an inner contact should weld, then the movement of the rotating armature is blocked via the actuator.

Open contacts of all four contact pairs remain open.

This arrangement corresponds to a conventional forcibly guided contact operation.



For Cautions for Use, see [Relay Technical Information](#).