

## SF Relays

RELAYS WITH FORCIBLY GUIDED CONTACTS



# Relays with forcibly guided contacts – what is that?

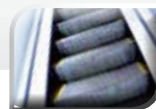
During the 1970s, the wish to make automation functions safer became ever more prevalent, especially from European industry. The reason for this was the increasing focus on protecting employees' health, preventing expensive machines from being damaged, and safeguarding complex processes such as those found in the chemical industry.

As a switching device for motor drives, relay control centers or signals, for example, relays shoulder the main responsibility for guaranteeing machine safety. Workers can be severely injured or killed if, for example, a relay in a press malfunctions and the press begins operation prematurely.

In relays designed according to the standard EN 61810-3 (former EN 50205), the contacts are interconnected in such a way that in case of failure, e.g. when a load contact for a motor welds, the corresponding forcibly guided contacts are blocked. Redundancy in the circuit can, for example, allow a motor to be shut off whereby the blocked contact prevents the motor from being turned on again because the release circuit is not closed.

What this boils down to are relays with forcibly guided contacts, usually power relays with several NO and NC contacts that comply with the relay standards EN 61810-1 and EN 61810-3. This technology guarantees defined and hence safe operating conditions in the event of a failure.

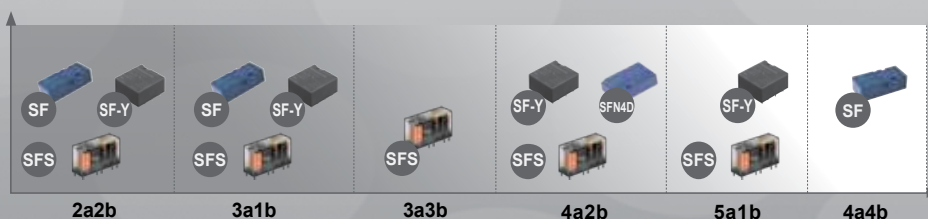
**You can download data sheets for all Panasonic relays at:**  
**[www.panasonic-electric-works.com](http://www.panasonic-electric-works.com)**



## Application examples

- › Emergency stop switches
- › Machine safety engineering
- › Safety control units
- › Automation technology
- › Elevators
- › Cable cars
- › Escalators
- › Process technology
- › Railway and signal technology
- › Medical technology
- › Mining engineering
- › Conveyance
- › Overcurrent protection with monitor contact

## CONTACT ARRANGEMENT



## SF-Y RELAY FAMILY

- Low profile design, just 14.5mm high
- Available with 2 NO and 2 NC contacts, 3 NO and 1 NC contacts, 4 NO and 2 NC contacts, or 5 NO and 1 NC contacts

1:3



39.0 x 28.6 x 14.5mm

- Forcibly guided contacts according to EN 61810-3, Type A
- Reinforced insulation according to EN 50178, creepage and clearance distance  $\geq 5.5\text{mm}$  ( $U=230\text{V}$  overvoltage category III, 6kV)

1:3



31.0 x 28.6 x 14.5mm

### Highlights

- » Gold clad contacts on request
- » Low coil power dissipation thanks to polarized drive system
- » High shock and vibration resistance thanks to rotating armature
- » Degree of protection: RTIII
- » Suitable for applications requiring IEC/EN 60335-1
- » Suitable for applications in explosive environments. Please contact your local Panasonic office.
- » Approvals: TÜV, cULus

## SFS RELAY FAMILY

- Available with 2 NO and 2 NC contacts, 3 NO and 1 NC contacts, 4 NO and 2 NC contacts, 3 NO and 3 NC contacts, or 5 NO and 1 NC contacts
- Forcibly guided contacts according to EN 61810-3, Type A
- Available with LED to indicate operating position
- Available with integrated free wheeling diode
- Sockets for PC boards or DIN-rail mounting available

1:3

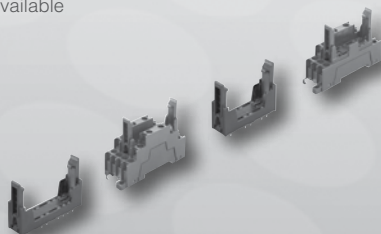


40 x 13 x 24mm

1:3



50 x 13 x 24mm



### Highlights

- » Little mounting space required on PC boards thanks to small surface area
- » Low coil power dissipation thanks to polarized drive system
- » Degree of protection: RTII (RTIII on request)
- » Approvals: TÜV, cULus

# Product overview

## SFN4D

- › 4 NO contacts, 2 NC contacts, double contacts
- › Forcibly guided contacts according to EN 61810-3, Type B
- › Reinforced insulation according to EN 50178, creepage and clearance distance  $\geq 5.5\text{mm}$  ( $U=230\text{V}$  overvoltage category III, 6kV)
- › Extremely low coil power dissipation of 390mW for coil voltages up to 24VDC

1:3



53.3 x 33 x 14.5mm

## SF4D

- › 4 NO contacts, 4 NC contacts, double contacts
- › Forcibly guided contacts according to EN 61810-3, Type B
- › Basic insulation according to EN 50178, creepage and clearance distance  $\geq 3\text{mm}$  ( $U=230\text{V}$  overvoltage category III, 4kV)
- › Extended glow wire test according to IEC/EN 60335-1 for unsupervised devices

1:3

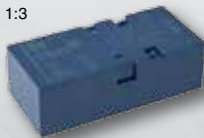


53.3 x 33 x 16.5mm

## SF2D

- › 2 NO contacts, 2 NC contacts, double contacts
- › Forcibly guided contacts according to EN 61810-3, Type A
- › Basic insulation according to EN 50178, creepage and clearance distance  $\geq 3\text{mm}$  ( $U=230\text{V}$  overvoltage category III, 4kV)
- › Extended glow wire test according to IEC/EN 60335-1 for unsupervised devices

1:3

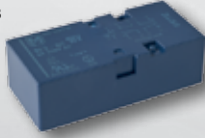


53.3 x 25 x 16.5mm

## SF3

- › 3 NO contacts, 1 NC contact
- › Forcibly guided contacts according to EN 61810-3, Type A
- › Basic insulation according to EN 50178, creepage and clearance distance  $\geq 3\text{mm}$  ( $U=230\text{V}$  overvoltage category III, 4kV)
- › Extended glow wire test according to IEC/EN 60335-1 for unsupervised devices

1:3



53.3 x 25 x 16.5mm

## Highlights

- › Low coil power dissipation thanks to polarized drive system
- › High shock and vibration resistance thanks to rotating armature
- › Degree of protection: RTIII
- › Suitable for railway applications according to EN 50155
- › Suitable for applications requiring IEC/EN 60335-1
- › Suitable for applications in explosive environments. Please contact your local Panasonic office.
- › Approvals: TÜV, cULus

# At a glance

Type	Contact arrangement	Switching current	Max. switching voltage	Coil voltage	Breakdown voltage		
					Between open contacts	Between contact sets	Contacts to coil
<b>SF-Y</b> 	2a2b, 3a1b, 4a2b, 5a1b	Max.: 8A Min.: 10mA 	125V DC 250V AC	(DC) 5; 12; 16; 18; 21; 24V	1500V <sub>rms</sub>	4000V <sub>rms</sub>	NC [5-6] 2500V <sub>rms</sub> NO 4000V <sub>rms</sub>
<b>SFS</b> 	2a2b, 3a1b, 4a2b, 5a1b, 3a3b	Max.: 6A Min.: 1mA 	125V DC 250V AC	(DC) 5; 12; 16; 18; 21; 24; 48V	1500V <sub>rms</sub>	2500V <sub>rms</sub> / 4000V <sub>rms</sub>	4000V <sub>rms</sub>
<b>SFN4D</b> 	4a2b	Max.: 8A Min.: 10mA 	500V DC 500V AC	(DC) 5; 9; 12; 16; 18; 21; 24; 36; 48; 60V	2500V <sub>rms</sub>	4000V <sub>rms</sub>	5000V <sub>rms</sub>
<b>SF2D</b> 	2a2b	Max.: 8A Min.: 10mA 	400V DC 400V AC	(DC) 5; 9; 12; 18; 21; 24; 36; 48; 60V	2500V <sub>rms</sub>	2500V <sub>rms</sub>	2500V <sub>rms</sub>
<b>SF3</b> 	3a1b	Max.: 8A Min.: 10mA 	400V DC 400V AC	(DC) 5; 9; 12; 18; 21; 24; 36; 48; 60V	2500V <sub>rms</sub>	2500V <sub>rms</sub>	2500V <sub>rms</sub>
<b>SF4D</b> 	4a4b	Max.: 8A Min.: 10mA 	400V DC 400V AC	(DC) 5; 9; 12; 18; 21; 24; 36; 48; 60V	2500V <sub>rms</sub>	2500V <sub>rms</sub>	2500V <sub>rms</sub>



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