Safety Relay Terminal Blocks

# SFT Series

INSTRUCTION MANUAL

TCD230052AB

Autonics

Thank you for choosing our Autonics product.
**Read and understand the instruction manual and manual thoroughly before using the product.**
**For your safety, read and follow the below safety considerations before using.**
**For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.**
Keep this instruction manual in a place where you can find easily.
The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.
Follow Autonics website for the latest information.

## Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

**⚠ Warning** Failure to follow instructions may result in serious injury or death.

**01. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss.(e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
Failure to follow this instruction may result in personal injury, economic loss or fire.
**02. Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
Failure to follow this instruction may result in explosion or fire.
**03. Do not connect, repair, or inspect the unit, remove connector, or change Relay while connected to a power source.**
Failure to follow this instruction may result in fire or electric shock.
**04. Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire or electric shock.

**⚠ Caution** Failure to follow instructions may result in injury or product damage.

**01. Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
**02. Use a dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in fire or electric shock.
**03. Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
Failure to follow this instruction may result in fire or product damage.
**04. Do not use the product when a screw of terminal is loosened.**
Failure to follow this instruction may result in fire or product damage.

## Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- Check the polarity of power or COMMON before connecting PLC or other controllers.
- Do not touch the unit immediately after the load power is supplied or cut. It may cause burn by high temperature.
- 24VDC⎓ power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Wire as short as possible and keep away from high voltage lines or power lines, to prevent surge and inductive noise. Do not use near the equipment which generates strong magnetic force or high frequency noise (transceiver, etc.). In case installing the product near the equipment which generates strong surge (motor, welding machine, etc.), use diode or varistor to remove surge.
- This unit may be used in the following environments.
  - Indoors (in the environment condition rated in 'Specifications')
  - Altitude max. 2,000 m
  - Pollution degree 2
  - Installation category II

## Product Components

- Product
- Safety relay
- Instruction manual

## Safety Relay

- Safety relays provided by the model are different.
- It is possible to purchase the safety relay separately.
  For the detailed specification, refer to the materials from the manufacturer (PANASONIC).

| Model | SFS2-DC24V | SFS3-DC24V | SFS4-DC24V | SFS5-DC24V | SFS6-DC24V |
|---|---|---|---|---|---|
| No. of pole | 4 | | 6 | | |
| Contact arrangement | 2A2B | 3A1B | 4A2B | 5A1B | 3A3B |
| Applied models | SFTS-4P-24V-□ / SFTL-4P-24V-□ | | SFTS-6P-24V-□ / SFTL-6P-24V-□ | | |

## Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

SFT ❶ - ❷ - ❸ - ❹

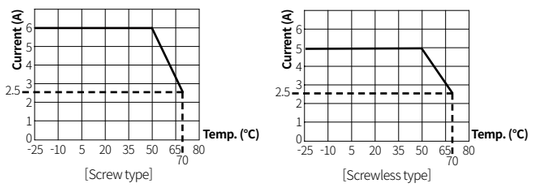
| ❶ Terminal type | ❷ Number of pole | ❸ Power supply | ❹ Relay Contact |
|---|---|---|---|
| S: Screw type | 4P: 4-pole | 24V: 24 VDC | 2A2B: 2A2B (4-pole) |
| L: Screwless type | 6P: 6-pole | | 3A1B: 3A1B (4-pole) |
| | | | 4A2B: 4A2B (6-pole) |
| | | | 5A1B: 5A1B (6-pole) |
| | | | 3A3B: 3A3B (6-pole) |

## Specifications

| Model | SFTS-4P-24V-□ | SFTS-6P-24V-□ | SFTL-4P-24V-□ | SFTL-6P-24V-□ |
|---|---|---|---|---|
| No. of pole | 4 | 6 | 4 | 6 |
| Applied relay 01) | 4-pole - SFS2-DC24V: 2A2B, SFS3-DC24V: 3A1B<br>6-pole - SFS4-DC24V: 4A2B, SFS5-DC24V: 5A1B, SFS6-DC24V: 3A3B | | | |
| Power supply | 24 VDC⎓ ±10 % | | | |
| Rated load voltage | 250 VAC~ 50/60 Hz, 30 VDC⎓ | | | |
| Continuous current | 6 A 02) | | | |
| Indicator | Operation indicator: green | | | |
| Terminal type | Screw | | Screwless | |
| Applicable wire - solid | Ø 0.3 to Ø 1.2 mm | | Ø 0.6 to 1.25 mm 03) | |
| Applicable wire - stranded | AWG 22-16 (0.30 to 1.25 mm²) | | AWG 22-18 (0.30 to 0.80 mm²) 03) 04) | |
| Crimp terminal connection tensile strength | ≥ 30 N | | - | |
| Tightening torque | 0.5 to 0.6 N m | | - | |
| Stripped length | - | | 8 to 10 mm | |
| Insulation resistance | ≥ 1,000 MΩ (500 VDC⎓ megger) | | | |
| Dielectric strength (coil-contact) | 4,000 VAC~ 50/60 Hz for 1 minute | | | |
| Dielectric strength (different poles contact) | 2,500 VAC~ 50/60 Hz for 1 minute | | | |
| Dielectric strength (same polarity contact) | 2,500 VAC~ 50/60 Hz for 1 minute | | | |
| Vibration | 0.75 mm amplitude at frequency 10 to 55 Hz in each X, Y, Z direction for 2 hours | | | |
| Vibration (malfunction) | 0.75 mm amplitude at frequency 10 to 55 Hz in each X, Y, Z direction for 10 minutes | | | |
| Shock | 300 m/s² (≈ 30 G) in each X, Y, Z direction for 3 times | | | |
| Shock (malfunction) | 150 m/s² (≈ 15 G) in each X, Y, Z direction for 3 times | | | |
| Ambient temperature | -25 to 70 °C, storage: -30 to 80 °C (no freezing or condensation) | | | |
| Ambient humidity | 25 to 85 % RH, storage: 25 to 85 % RH (no freezing or condensation) | | | |
| Protection structure | IP20 (IEC standard) | | | |
| Material | CASE, BASE, COVER: PC<br>Terminal: C2680 | | CASE, BASE: PC, Terminal: PA66, Copper, Stainless Steel | |
| Certification | CE UK CA cULus | | | |
| Unit weight (packaged) | ≈ 37.8 g (≈ 85.8 g) | ≈ 51.2 g (≈ 99.2 g) | ≈ 39.8 g (≈ 88 g) | ≈ 51.2 g (≈ 99.2 g) |

01) For the detailed specification, refer to the materials from the manufacturer (PANASONIC).
02) Continuous current is the maximum current at each contact and must not exceed the total current depending on the number of contacts.
03) Use the cable of copper conductor in 60°C temperature class.
04) When using the stranded wire, use End Sleeve (Ferrule Terminal).

## Ambient Temperature depending on Contact Current



[Screw type]



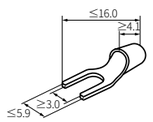
[Screwless type]

- The current in the graph is max. total current, based on the max. current at each contact.
  Ex) Max. total current is 25 A and max. current at each contact is 5 A, when the safety relay SFS5-DC24V (6-pole, 5A1B) is inserted into the safety screwless terminal block SFTL-6P-24V.
- Max. current are not guaranteed when the ambient temperature is above 50°C.
  Refer to the graph to use it by reducing the current.

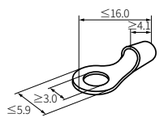
## Terminal Specification

- Unit: mm, Use the UL approved crimp terminal (screw) and wire ferrule (screwless).

■ Screw

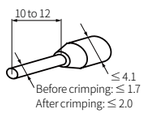


Fork crimp terminal



Round crimp terminal

■ Screwless



Wire ferrule

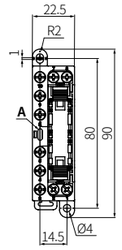
## Dimensions

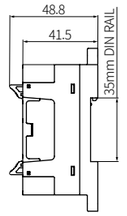
- Unit: mm, For the detailed drawings, follow the Autonics website.

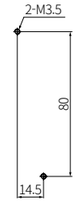
| A | Operation indicator (green) |
|---|---|

■ Screw type

• 4-pole

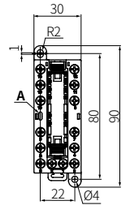


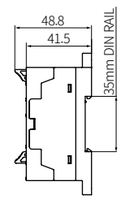



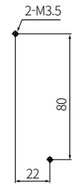



[Panel cut-out]

• 6-pole



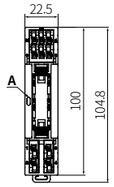



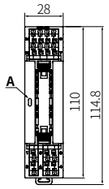
[Panel cut-out]

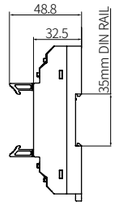
■ Screwless type

• 4 -pole




• 6-pole

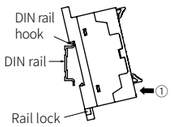


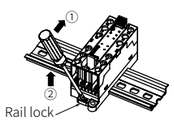

## Installation

■ DIN Rail

• Mounting
1. Hang the DIN rail hook on the rear of the product onto the DIN rail.
2. Push the product to the direction ①, and fix onto the DIN rail.
3. Install DIN rail stoppers (sold separately) on both sides of the product for use.




• Removing
1. Insert a tool such as screwdriver into the hole of Rail lock.
2. Push the tool to the direction ① and pull the Rail lock.
3. Lift bottom of the product to the direction ② and remove the product from DIN rail.



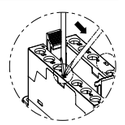

■ Panel (Screw type)

It is recommended to use M3.5×12 mm of spring washer screws.
Tighten the screw with the tightening torque of 0.7 to 1.0 N m.

## Wiring

■ Cover Removing (Screw Type)

1. Insert the (-) screwdriver into the hole as indicated.
   (SFTS-6P-24V: 2-hole / SFTS-4P-24V: 1-hole)
2. Remove the terminal block cover by pushing the screwdriver to the middle of the product.

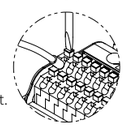


■ Connecting (Screwless Type)

Insert the wire ferrule into the terminal hole.

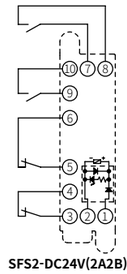
■ Removing (Screwless Type)

1. Put the (-) screwdriver at the groove on the clamp lever and press it.
2. Pull the cable to disassemble.

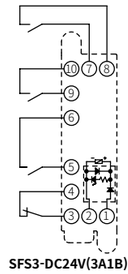


## Relay Installed Wire Connection

■ Screw type: 4-pole

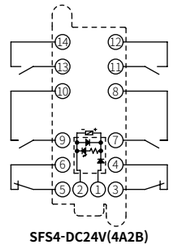


SFS2-DC24V(2A2B)

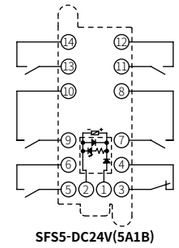


SFS3-DC24V(3A1B)

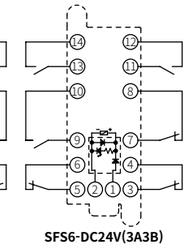
■ Screw type: 6-pole



SFS4-DC24V(4A2B)

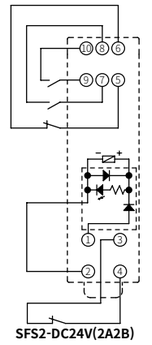


SFS5-DC24V(5A1B)

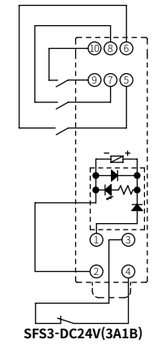


SFS6-DC24V(3A3B)

■ Screwless type: 4-pole

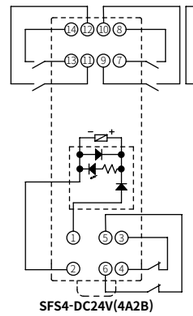


SFS2-DC24V(2A2B)

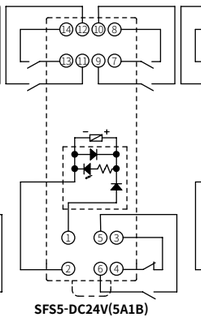


SFS3-DC24V(3A1B)

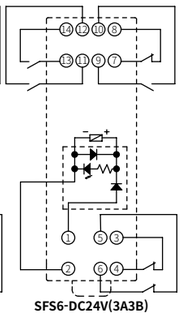
■ Screwless type: 6-pole



SFS4-DC24V(4A2B)



SFS5-DC24V(5A1B)

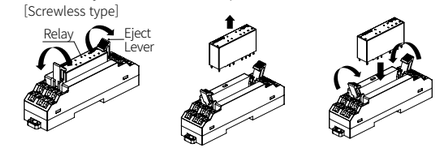


SFS6-DC24V(3A3B)

## Replacing Relay

1. Remove the relay by pushing the eject Lever in the direction of the arrow.
2. After checking the direction of the relay lead pin, insert the relay to be replaced to return the eject Lever to the initial position.

[Screwless type]

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