

Make Life Easy



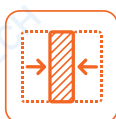
Slim Design Easy Wiring



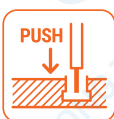
International Safety Standard Compliant

Safety Controllers SFC Series

The SFC series safety controllers are used together with safety input devices (switches, sensors, etc.) to provide safe working environments. The controllers feature self-diagnosis function and safety integrity to meet safety standards. The space-saving slim design and screw or screw-less push-in connection allows easy installation.



Slim Size



Push-In Connection



Screw Connection



Modular Expansion



OFF-Delay Output



Status LED



Safety Rating

Ordering Information

SFC - ① ② ③ ② - ④ ⑤ ⑥ - ⑦

- ① Function**
No mark: Basic unit
A: Advanced unit
N: Non-contact door switch unit
(for Autonics SFN Series)
ER: Expansion relay unit
R: Relay unit

② No. of safety instantaneous outputs
Number: Number of outputs

③ No. of auxiliary outputs
Number: Number of outputs

④ Off-delay output elements
No mark: P channel FET
R: Relay (Relay unit)
- ⑤ No. of Off-delay outputs**
No mark: None
2: 2

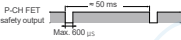
⑥ Max. Off-delay time
Number: Time (unit: sec)

⑦ Terminal type
No mark: Screw
L: Screwless

Specifications

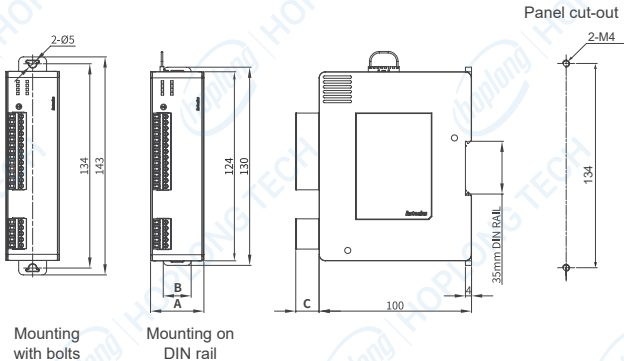
Unit	Basic	Advanced	Non-contact door switch
Model	SFC-422-□	SFC-A322-2□-□	SFC-N322-2□-□
Power supply	24 VDC≒		
Allowable voltage range	85 to 110% of rated voltage		
Power consumption ^{①)}	≤ 2.5 W	≤ 3.0 W	≤ 3.5 W
Input	ON: ≥ 11 VDC≒ ≥ 5 mA, OFF: ≤ 5 VDC≒ ≤ 1 mA		
Input time	≥ 50 ms, feedback start (manual) : ≥ 100 ms		
Cable	≤ 100 m (≤ 100Ω, ≤ 10nF)		
Safety output	P channel FET ^{②)}		
Instantaneous	4 ×	3 × ^{③)}	3 × ^{③)}
Off-delay ^{④)}	-	2 × ^{③)}	2 × ^{③)}
Time accuracy	-	≤ ± 5%	≤ ± 5%
Load current	Below 2-point output: ≤ DC 1 A, Over 3-point output: ≤ DC 0.8 A		
Leakage current	≤ 0.1 mA		
	Safety input: ≤ 50 ms		
Operating time (OFF → ON) ^{⑤)}	-	Logic input: ≤ 200 ms	-
	-	-	Non-contact door switch input: ≤ 100 ms
Response (return) time (ON → OFF) ^{⑤)}	≤ 15 ms, non-contact door switch input or logic input: ≤ 20 ms		
Auxiliary output	2 × PNP transistor: X1, X2 (error)		
Load current	≤ 100 mA		
Leakage current	≤ 0.1 mA		
Logical AND connections	No. of connections: max. 4 units, no. of total connections: max. 20 units		
SFN connections ^{⑥)}	No. of layers: max. 5 layers, cable length: ≤ 100 m		
	-	-	Max. 30 units
Approval	IEC/EN 61508 (SIL3), IEC/EN 62061 (SILCL3) IEC/EN 60947-5-1, EN ISO 13849-1 (Category 4, PL _e) UL listed E249635		
Certification	CE		
Unit weight (package)	≈ 70 g (≈ 120 g)	≈ 90 g (≈ 140 g)	≈ 100 g (≈ 150 g)





- ①) Not include the power consumption of loads.
(SFC-N exclude the power supplied to the non-contact door switch.)
- ②) Includes a diagnostic pulse (max. 600 μs). Be cautious when using the output signal as an input signal for the control device.
- ③) Available changing via setting switch on the back side of the product.
- ④) Available to set Off-delay time (max. 3 sec. / 30 sec., depends on model)
- ⑤) The operation (response) time of each model. The time increases when a logical connection or expansion relay unit is connected.
- ⑥) SFC-N units can only be connected to Autonics non-contact door switch units SFN Series.



Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics web site.
- The below is based on SFC-A (screw type) model



Unit	Expansion relay		Relay	
Model	SFC-ER412-□	SFC-R412-□	SFC-R212-□	SFC-R212-R2□-□
Power supply	24 VDC≡			
Allowable voltage range	85 to 110% of rated voltage			
Power consumption ^{①)}	≤ 2.5 W	≤ 4.0 W	≤ 4.0 W	≤ 6.0 W
Input	ON: ≥ 11 VDC≡ ≥ 5 mA, OFF: ≤ 5 VDC≡ ≤ 1 mA			
Input time	≥ 50 ms, feedback start (manual) : ≥ 100 ms			
Cable	≤ 100 m (≤ 100Ω, ≤ 10nF)			
Safety output	Relay (A contact)		Relay (A contact)	
Instantaneous	4 ×	4 ×	2 ×	2 ×
Off-delay ^{②)}	-	-	-	2 ×
Time accuracy	-	-	-	≤ ± 5%
Capacity	240 VAC~ 5 A resistance load, 30 VDC≡ 5 A resistance load			
Life expectancy	Mechanical: ≥ 10,000,000 operations, Malfunction: ≥ 50,000 operations			
Contact resistance	≤ 100 mΩ			
Inductive load switching	IEC60947-5-1: AC-15(230 V/2 A), DC-13(24 V/1.5 A), UL508: B300/R300			
Conditional short-circuit current	100 A ^{③)}			
Operating time (OFF → ON) ^{④)}	≤ 30 ms ^{⑤)}		≤ 100 ms	
Response (return) time (ON → OFF) ^{④)}	≤ 10 ms		≤ 15 ms	
Auxiliary output	1 × PNP transistor: X2 (error)		1 × PNP transistor: X1	
Load current	≤ 100 mA		≤ 100 mA	
Leakage current	≤ 0.1 mA			
Expansion units connections	Max. 5 units		-	
Approval	IEC/EN 61508 (SIL3), IEC/EN 62061 (SILCL3) IEC/EN 60947-5-1, EN ISO 13849-1 (Category 4, PL _e) UL listed E249635			
Certification	CE 		CE   	
Unit weight (package)	≈ 100 g (≈ 150 g)	≈ 110 g (≈ 160 g)	≈ 80 g (≈ 130 g)	≈ 110 g (≈ 150 g)

- ①) Not include the power consumption of loads.
- ②) Available to set Off-delay time (max. 3 sec. / 30 sec., depends on model)
- ③) Use 6 A fast-blow fuse under the IEC 60127 standard as a short-circuit protection device.
- ④) The operation (response) time of each model. The time increases when a logical connection or expansion relay unit is connected.
- ⑤) Except operation time of advanced unit, non-contact door switch unit

Pollution	3
Overvoltage category	III
Impulse withstand volt for relay unit (IEC/EN 60947-5-1)	Input terminals and relay output terminals: 6 kV Relay contacts between 13-14 / 23-24 and 33-34 / 43-44 (37-38 / 47-48): 6 kV between 13-14 and 23-24: 4 kV between 33-34 and 43-44 (37-38 and 47-48): 4 kV
Dielectric strength	Basic / Advanced / Non-contact door switch unit: 500 VAC~ 50/60 Hz for 1 min. (between all terminals and case) Expansion relay / relay unit: 1,500 VAC~ 50/60 Hz for 1 min. (between all terminals and case) 2,500VAC~ 50/60Hz for 1 min. (between input terminals and output terminals ^{①)})
Insulation resistance	≥ 100 MΩ (500 VDC≒ megger)
Vibration ^{②)}	0.75 mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 1 hour
Vibration (malfunc.) ^{②)}	0.5 mm amplitude at frequency of 10 to 55 Hz (for 1 min) in each X, Y, Z direction for 10 minutes
Shock ^{②)}	300 m/s ² (≈ 30 G) in each X, Y, Z direction for 3 times
Shock (malfunc.) ^{②)}	100 m/s ² (≈ 10 G) in each X, Y, Z direction for 3 times
Protection structure	IP20
Ambient temperature	-10 to 55 °C, storage: -25 to 65 °C (rated at no freezing or condensation)
Ambient humidity	25 to 85 %RH, storage: 25 to 85 %RH (rated at no freezing or condensation)

- ①) In case of relay unit, output terminals between 13-14, 23-24 and 33-34, 43-44 (37-38, 47-48)
- ②) This data based on the product is mounted with bolts. When installing DIN rail, use the product in an environment with small vibration (condition: less than 0.4 mm double amplitude)

Model		A	B	C
Basic unit	SFC-422-□	22.5	18.3	Screw type: 15.3 Screwless type: 15.5
Advanced unit	SFC-A322-□-□	35	18.3	
Non-contact door switch unit	SFC-N322-□-□	35	18.3	
Expansion relay unit	SFC-ER412-□	22.5	18.3	
Relay unit	SFC-R412-□	22.5	18.3	
	SFC-R212-□	17.5	13.3	
	SFC-R212-R□-□	22.5	18.3	