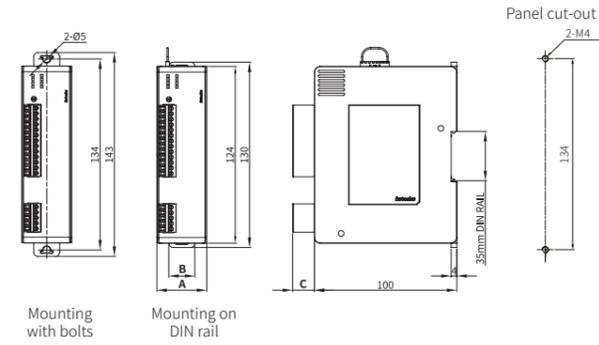




## Dimensions

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

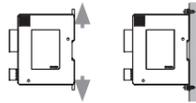


Model		A	B	C
Basic unit	SFC-422-□	22.5	18.3	Screw type: 15.3 Screwless type: 15.5
Advanced unit	SFC-A322-□-□	35	18.3	
Non-contact door switch unit	SFC-N322-□-□	35	18.3	
Expansion relay unit	SFC-ER412-□	22.5	18.3	
Relay unit	SFC-R212-□	17.5	13.3	
	SFC-R212-R□-□	22.5	18.3	

## Installation

### Mounting with bolts

- Pull each rail locks to up and down. (attach/detach:  $\geq 25N$ )
- Insert bolts and fix it on rail lock. (fixing torque: 1.0 N m to 1.5 N m)

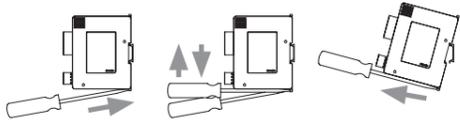


### Mounting on DIN Rail

- Hang the top rail lock to DIN rail.
- Push and press the module to down direction.
- Install END PLATE at both ends of the module to fix the products. (It is the same way when using one unit.)

### Removing on DIN Rail

- Insert a screwdriver into the rail hook of the lower rail lock.
- Lift the screwdriver and pull the lower rail lock downward.
- Lift the module with the lower rail lock pulled down.



### How to connect the expansion relay units (SFC-ER412-□)

In case of advanced unit and non-contact door switch unit, it is possible to increase the number of safety outputs of relay type by connecting expansion relay unit (SFC-ER412-□). (Up to 5 expansion relay units can be connected to each controller)

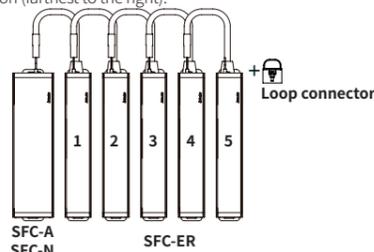
When the safety output of the controller is on, the output of the expansion relay unit also goes to on.

The controller is installed from the end of the left or right side.

Power of expansion relay unit should be supplied individually.

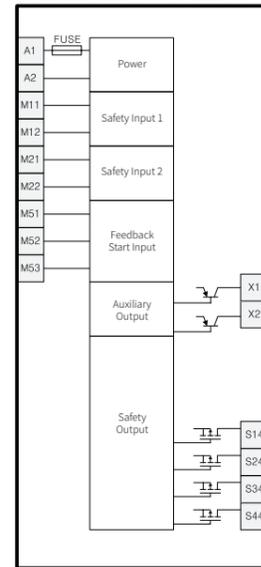
E.g.) Installation from the end of left side

- Install the expansion relay units (max. 5 units) toward the right side based on the controller.
- Remove the loop connector on the top of the controller.
- Connect the expansion connector of each right (expansion relay unit) to the expansion connector of the left unit.
- Insert the loop connector removed in 2 into the loop port of the unit, which located at the end position (farthest to the right).

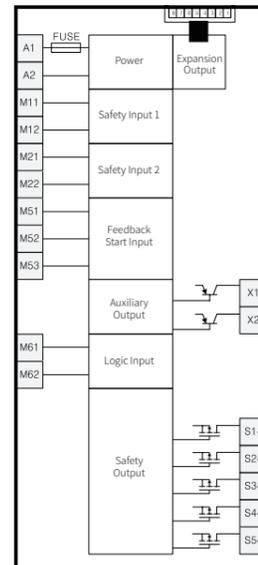


## Connections

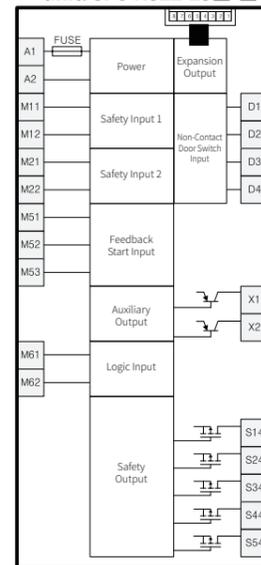
### Basic unit: SFC-422-□



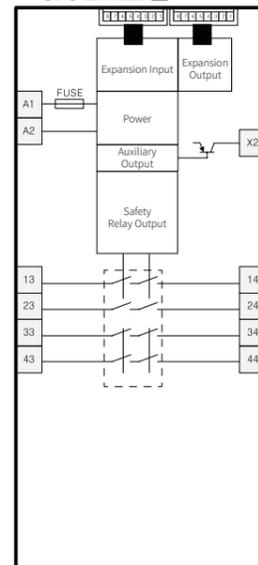
### Advanced unit: SFC-A322-23□-□



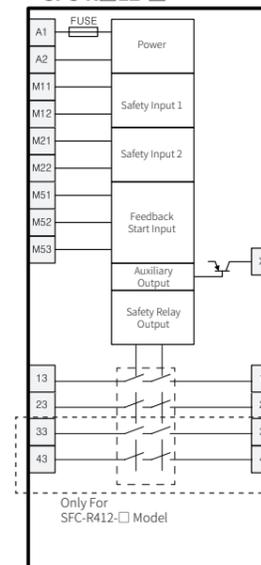
### Non-contact door switch unit: SFC-N322-23□-□



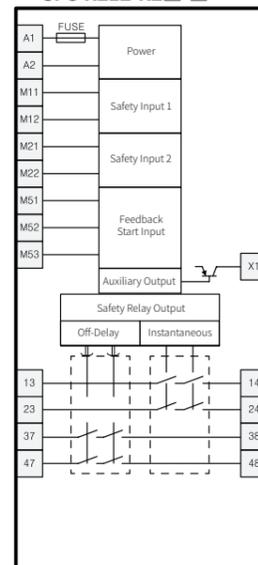
### Expansion relay unit: SFC-ER412-□



### Relay unit: SFC-R□12-□



### Relay unit: SFC-R212-R2□-□



## Wiring of Input

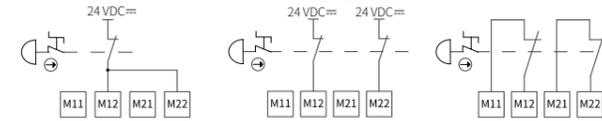
### A1, A2: Power supply input

The input terminals for power supply. Connect the positive side (24 VDC $\equiv$ ) of the external power supply to the A1 terminal and connect the negative side (GND) of the external power supply to the A2 terminal.

### M11, M12: Safety input 1, M21, M22: Safety input 2

To turn ON the safety outputs, ON state signals must be input to both safety input 1 and safety input 2.

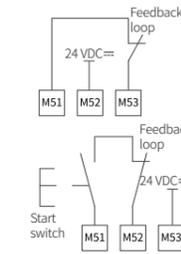
- 1-channel safety input
- 2-channel safety input



### M51, M52, M53: Feedback start input

- Auto start

To turn ON the safety outputs, the feedback loop must remain ON state.



- Manual start

To turn ON the safety outputs, the feedback loop must remain ON state and the signal input to M52 must be changed from OFF state to ON state, and then to OFF state.

(The duration that the start switch is in the ON state: min. 100 ms)

### M61, M62: Logic input

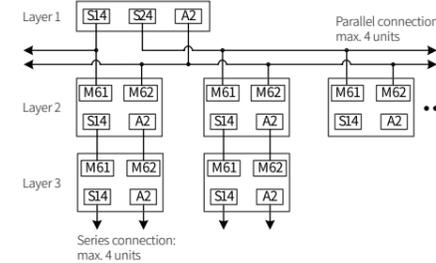
Connect the safety outputs of the upper unit to the logic (AND) input of the lower unit. To use the logic input function, SW1 and SW2 of switch for setting function must be set to ON state.

Up to four units (advanced / non-contact door switch unit) can be connected as logic (AND) connections in parallel per safety output.

Up to four units can be connected in serial logic (AND) connection.

Up to 20 units can be connected to the entire unit via logic connection.

Basic unit can only be used in layer 1.



- Logical AND Connections

Unit	Basic / Advanced / Non-contact door switch unit
No. of units connected to logical AND connections	Max. 4 units
Total no. of units connected to logical AND connections	Max. 20 units
No. of layers for logical AND connections	Max. 5 layers
Cable length for logical AND connections	Max. 100 m

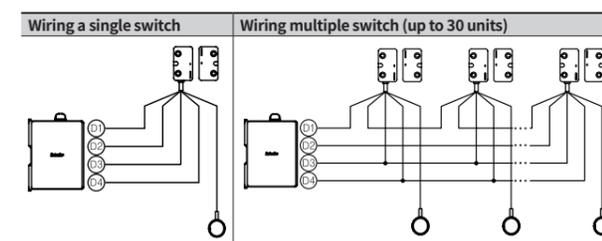
- Response time and Operating time

Layer	Item	Configuration	Max. response time (ON $\rightarrow$ OFF)		Max. operating time (OFF $\rightarrow$ ON)	
			Excepts	Includes	Excepts	Includes
Layer 1		Basic / Advanced / Non-contact door switch unit	15 ms	25 ms	50 ms	80 ms
Layer 2			30 ms	40 ms	250 ms	280 ms
Layer 3			45 ms	55 ms	450 ms	480 ms
Layer 4			60 ms	70 ms	650 ms	680 ms
Layer 5			75 ms	85 ms	850 ms	880 ms

### D1, D2, D3, D4: Non-contact door switch input

All the non-contact door switch inputs connected to the non-contact door switch SFN Series must be ON as a required condition for the safety outputs to be ON. Up to 30 non-contact door switches can be connected.

For more information, refer to the non-contact door switch SFN Series instruction manual.

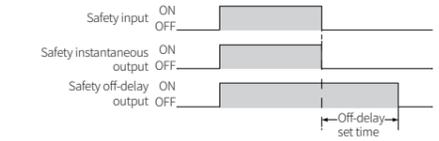


## Wiring of Output

### S14, S24, S34, S44, S54 : P channel safety outputs

The instantaneous or off-delay safety outputs go to ON or OFF based on the safety inputs, feedback start input, logic input, and input signals of non-contact door switch.

- Leave unused safety outputs in the OPEN state.
- Configure a protection circuit against the counter electromotive force when connecting inductive loads.
- To expand the number of safety outputs in the form of contacts, connect the expansion cable of the expansion relay unit to advanced unit or the expansion connector of non-contact door switch unit, and connect the loop connector to the expansion relay unit located at the end of position.
- Operation of safety output and safety off-delay output based on the safety input signal



### 13/14, 23/24, 33/34 (37/38), 43/44 (47/48) : Safety outputs of relay unit

The instantaneous or off-delay safety outputs go to ON or OFF based on the safety inputs, feedback start input.

- Leave unused safety outputs in the OPEN state.

### X1: Auxiliary output 1

When the instantaneous safety outputs are ON, the X1 auxiliary output goes to ON. When the instantaneous safety outputs are OFF, the X1 also goes to OFF.

- Leave unused auxiliary output in the OPEN state.

### X2: Auxiliary output 2

X2 auxiliary output goes to ON when the ERR indicator turns on or flashes.

- Leave unused auxiliary output in the OPEN state.

## Error Indication

When an error occurs, the ERR indicator and other indicators turn on or flash to notice the cause of error.

Be sure to check and take measures according to the table below, and turn the power on again. If the measures are not valid, Please contact customer service center.

Indicator	Others	Cause	Check and measures
ERR	PWR flashes	The power voltage is out of the allowable range.	Check the supplied power voltage.
	M1 flashes	Wiring error of safety input 1 Failure of internal circuit of safety input 1	Check the wiring to M11, M12 terminal. Please contact customer service center.
	M2 flashes	Wiring error of safety input 2 Failure of internal circuit of safety input 2	Check the wiring to M21, M22 terminal. Please contact customer service center.
	FB flashes	Wiring error of feedback start input Internal circuit error of feedback start input Error at the power of expansion relay unit Feedback error of the relay unit Safety output error of the relay unit	Check the wiring to M51, M52 and M53 terminal. Please contact customer service center. Check the supplied power voltage to the expansion relay unit. Please contact customer service center.
ON	NS flashes	Wiring error of input and output of the non-contact door switch Wiring error of series connection of the non-contact door switches Failure of internal circuit of the non-contact door switch	Check the wiring to the D1 and D2 terminal of non-contact door switch. Check the wiring to between the non-contact door switches. Replace the non-contact door switch (SFN series).
	AND flashes	Wiring error of logic input Setting error of logic input Failure of internal circuit of logic input	Check the wiring to M61 and M62 terminal. Check the setting values of SW1 and SW2 at switch for logic (AND) input. Please contact customer service center.
	OUT1 flashes	Wiring error of instantaneous safety output Failure of internal circuit instantaneous safety output	Check the wiring to instantaneous safety output terminal. Please contact customer service center.
	OUT2 flashes	Wiring error of the off-delay safety output Failure of internal circuit of the off-delay safety output Setting error of the off-delay time	Check the wiring to the off-delay safety output terminal. Please contact customer service center. Check the setting value of the switch for off-delay time.
	Flash	Error at internal circuit and output relay of the expansion relay unit	Please contact customer service center.
	OFF	M1 M2 flashes	The different input signal between safety input 1 and safety input 2