

Solid-state Contactors

SS series

General use

Solid-state contactors

General use

■ Description

Solid-state contactors (SSC) are required in cases where contacts must have long life because contacts are frequently made and broken, and where contactor noise must be eliminated. Single and 3-pole solid-state contactors incorporate thyristors as making and breaking elements in the main circuit.

■ Features

● Operation indicator provided

An operation indicator LED (red) is provided as a standard feature for all models, so you can easily check whether a control voltage is applied to the SSC.

● Long service life, optimum for highly frequent switching

The solid-state contactor utilizes high-performance semiconductor switch elements to include the functions and features of conventional magnetic contactors. The SSC, featuring long life, low-noise, and high-speed response, is suitable for highly frequent switching of various types of loads, such as motors and heaters.

■ Specifications

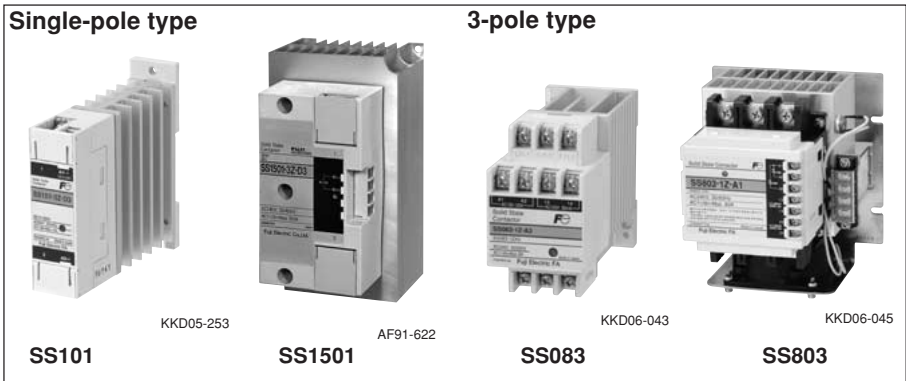
Single-pole types

● Main circuit 240V AC, SS101 to SS501

AC control voltage

Type		SS101-5Z-A3 SS101-5Z-A4	SS201-5Z-A3 SS201-5Z-A4	SS301-5Z-A3 SS301-5Z-A4	SS401-5Z-A3 SS401-5Z-A4	SS501-5Z-A3 SS501-5Z-A4
Ordering code		SS101-5ZA3 SS101-5ZA4	SS201-5ZA3 SS201-5ZA4	SS301-5ZA3 SS301-5ZA4	SS401-5ZA3 SS401-5ZA4	SS501-5ZA3 SS501-5ZA4
Main circuit	Rated voltage	100 — 240V AC 50/60Hz				
	Rated thermal current (A)*	10	20	30	40	50
	Max. heater capacity (kW) Single phase 200V AC	2	4	6	8	10
	Number of elements	Single-pole, 1-element				
Control circuit	Isolation method	Photocoupler				
	Control voltage Vn	A3: 100 — 120V AC, A4: 200 — 240V AC				
	Pick-up voltage Drop-out voltage	85% Vn or less 35% Vn and over				
	Operating time (at 100% Vn) Release time (at 100% Vn)	30ms or less 30ms or less				
Auxiliary circuit		—				

Note: * The values are the maximum ratings of type with cooling fin that apply at an ambient temperature not exceeding 40°C.



● Built-in surge suppressor

Varistors and C-R circuits are included so that surge voltage due to SSC switching and lightning can be suppressed to protect the control and main circuits.

● AC and DC operation

The AC and DC operated type SSCs are available, either of which can be selected as required.

● SSC with zero-cross switching function

The SSC is also available with a zero-cross switching function to enable load current switching at the point where the line voltage is near zero to suppress excessive inrush current in the load circuit.

● Built-in auxiliary contact

An auxiliary contact module using semiconductor switches or relay contacts is included. Therefore an auxiliary output signal can easily be obtained without using a separate auxiliary devices.

■ Standards



■ Specifications

Single-pole types

● Main circuit 240V AC, SS701 to SS2001

AC control voltage

Type	SS701-1Z-A3 SS701-1Z-A4	SS1001-1Z-A3 SS1001-1Z-A4	SS1501-1Z-A3 SS1501-1Z-A4	SS2001-1Z-A3 SS2001-1Z-A4
Ordering code	SS701-1ZA3 SS701-1ZA4	SS1A1-1ZA3 SS1A1-1ZA4	SS1F1-1ZA3 SS1F1-1ZA4	SS2A1-1ZA3 SS2A1-1ZA4
Main circuit	Rated voltage 100 — 240V AC 50/60Hz			
	Rated thermal current (A)*	70	100	150
	Max. heater capacity (kW) Single phase 200V AC	14	20	30
	Number of elements	Single-pole, 1-element		
Control circuit	Isolation method	Photocoupler		
	Control voltage Vn	A3: 100 — 120V AC, A4: 200 — 240V AC		
	Pick-up voltage	85% Vn or less		
	Drop-out voltage	35% Vn and over		
	Operating time (at 100% Vn)	30ms or less		
	Release time (at 100% Vn)	30ms or less		
Auxiliary circuit	Output	Thyristor 1NO		
	Rated current and voltage	A3: 50mA, 120V AC A4: 50mA, 240V AC		

Note: * The values are the maximum ratings of type with cooling fin that apply at an ambient temperature not exceeding 40°C.

● Main circuit 240V AC, SS101 to SS2001

DC control voltage

Type		SS101-3Z-D3	SS201-3Z-D3	SS301-3Z-D3	SS401-3Z-D3	SS501-3Z-D3
Ordering code		SS101-3ZD3	SS201-3ZD3	SS301-3ZD3	SS401-3ZD3	SS501-3ZD3
Main circuit	Rated voltage	100 — 240V AC 50/60Hz				
	Rated thermal current (A)*	10	20	30	40	50
	Max. heater capacity (kW) Single phase 200V AC	2	4	6	8	10
	Number of elements	Single-pole, 1-element				
Control circuit	Isolation method	Photocoupler				
	Control voltage Vn	5 — 24V DC				
	Pick-up voltage Drop-out voltage	3.5V or less 1V and over				
	Operating time (at 100% Vn) Release time (at 100% Vn)	15ms or less 15ms or less				
Auxiliary circuit		—				

Type		SS701-3Z-D3	SS1001-3Z-D3	SS1501-3Z-D3	SS2001-3Z-D3
Ordering code		SS701-3ZD3	SS1A1-3ZD3	SS1F1-3ZD3	SS2A1-3ZD3
Main circuit	Rated voltage	100 — 240V AC 50/60Hz			
	Rated thermal current (A)*	70	100	150	200
	Max. heater capacity (kW) Single phase 200V AC	14	20	30	40
	Number of elements	Single-pole, 1-element			
Control circuit	Isolation method	Photocoupler			
	Control voltage Vn	5 — 24V DC			
	Pick-up voltage Drop-out voltage	3.5V or less 1V and over			
	Operating time (at 100% Vn) Release time (at 100% Vn)	15ms or less 15ms or less			
Auxiliary circuit		—			

Note: * The values are the maximum ratings of type with cooling fin that apply at an ambient temperature not exceeding 40°C.

Solid-state Contactors

SS series

General use

■ Specifications

Single-pole types

● Main circuit 480V AC, SS701H to SS2001H

AC control voltage

Type		SS701H-1Z-A3 SS701H-1Z-A4	SS1001H-1Z-A3 SS1001H-1Z-A4	SS1501H-1Z-A3 SS1501H-1Z-A4	SS2001H-1Z-A3 SS2001H-1Z-A4
Ordering code		SS701H-1ZA3 SS701H-1ZA4	SS1A1H-1ZA3 SS1A1H-1ZA4	SS1F1H-1ZA3 SS1F1H-1ZA4	SS2A1H-1ZA3 SS2A1H-1ZA4
Main circuit	Rated voltage	200 - 480V AC 50/60Hz			
	Rated thermal current (A)*	70	100	150	200
	Max. heater capacity (kW) Single phase 400V AC	28	40	60	80
	Number of elements	Single-pole, 1-element			
Control circuit	Isolation method	Photocoupler			
	Control voltage Vn	A3: 100 – 120V AC, A4: 200 – 240V AC			
	Pick-up voltage Drop-out voltage	85% Vn or less 35% Vn and over			
	Operating time (at 100% Vn) Release time (at 100% Vn)	30ms or less 30ms or less			
Auxiliary circuit	Output	Thyristor 1NO			
	Rated current and voltage	A3: 50mA, 120V AC A4: 50mA, 240V AC			

DC control voltage

Type		SS701H-3Z-D3	SS1001H-3Z-D3	SS1501H-3Z-D3	SS2001H-3Z-D3
Ordering code		SS701H-3ZD3	SS1A1H-3ZD3	SS1F1H-3ZD3	SS2A1H-3ZD3
Main circuit	Rated voltage	200 - 480V AC 50/60Hz			
	Rated thermal current (A)*	70	100	150	200
	Max. heater capacity (kW) Single phase 400V AC	28	40	60	80
	Number of elements	Single-pole, 1-element			
Control circuit	Isolation method	Photocoupler			
	Control voltage Vn	5 — 24V DC			
	Pick-up voltage Drop-out voltage	3.5V or less 1V and over			
	Operating time (at 100% Vn) Release time (at 100% Vn)	15ms or less 15ms or less			
Auxiliary circuit		—			

Note: * The values are the maximum ratings of type with cooling fin that apply at an ambient temperature not exceeding 40°C.

3-pole unit type

● Main circuit 240V AC, SS03 to SS120

Type *1		SS □■-1(Z)-A3, A4, D5SS □■-1(Z)-A1, D2							
Ordering code *1		SS □■-1M(Z)A3, A4, D5		SS □■-1M(Z)A1, D2					
Main circuit	Rated voltage	100 - 240V AC 50/60Hz		100 - 240V AC 50/60Hz					
	Rated thermal current (A)	3	8	20	30	40	50	80	120
	Max. heater capacity (kW)	1.0	2.5	6.9	10.3	13.8	17.3	27.7	41.5
	Max. motor capacity (kW) *2	0.2	0.4	0.75	1.5	2.2	3.7	7.5	7.5
	Motor full load current (A)	1.8	3.2	4.8	8	11.1	17.4	34	34
	3-phase 200V AC								
Number of elements		3-pole, 2 or 3-element *3							
Control circuit	Isolation method	Photocoupler							
	Control voltage (Vn)	A3: 100–120V AC 50/60Hz A4: 200–240VAC 50/60Hz D5: 12–24V DC			A1: 100–120/200–240V AC 50/60Hz D2: 12/24V DC				
	Pick-up voltage	85% Vn or less 8V or less(D5)			85% Vn or less				
	Drop-out voltage	30% Vn and over 1V and over(D5)			30% Vn and over				
	Operating time (at 100% Vn)	30ms or less							
Auxiliary circuit	Release time (at 100% Vn)	30ms or less							
	Output	AC operated	Thyristor 1NO						Thyristor 2NO
		DC operated	Transistor 1NO						Transistor 2NO
	Rated current and voltage	AC operated	50mA, 240V AC			0.2A, 240V AC			
		DC operated	0.1A, 24V DC			0.2A, 24V DC			

Note: *1, *2, *3 see page 01/113.

■ Specifications

3-pole unit types

● Main circuit 240V AC, SS03 to SS120

Type *1		SS□■-3(Z)-D5, D6		SS□■-3(Z)-D3					
Ordering code *1		SS□■-3M(Z)D5, D6		SS□■-3M(Z)D3					
Main circuit	Rated voltage	100 - 240V AC 50/60Hz							
	Rated thermal current (A)	3	8	20	30	40	50	80	120
	Max. heater capacity (kW)	1.0	2.5	6.9	10.3	13.8	17.3	27.7	41.5
	Max. motor capacity (kW) *2	0.2	0.4	1.5	2.2	3.7	5.5	7.5	7.5
	Motor full load current (A)	1.8	3.2	8	11.1	17.4	26	34	34
	3-phase 200V AC								
Number of elements		3-pole, 2 or 3-element *3							
Control circuit	Isolation method	Photocoupler							
	Control voltage (Vn)	D5: 12-24V DC D6: 5V DC		D3: 5-24V DC					
	Pick-up voltage	D5: 8V or less D6: 4V or less		D3: 3.5V or less					
	Drop-out voltage	D5, D6: 1V and over		D3: 1.5V and over					
	Operating time (at 100% Vn) Release time (at 100% Vn)	5ms or less (SS□-3Z: 15ms or less) 15ms or less							
Auxiliary circuit	AC operated type	—							
	DC operated type	—							

Notes: ^{*1} Replace the □ mark by rated thermal current code (03 to 200), and the ■ mark by the number of elements (2 or 3). See page 01/132,133.

^{*2} Maximum ratings when SSC is used with cooling fin (SX1-□) at temperature of 40°C or less.

Motor starting current: 6 times full-load current, Motor starting time: 0.25s or less.

^{*3} 2-element types are supplied in 3-pole with current carrying parts omitted from center pole.

● Main circuit 480V AC, SS30H to SS120H

Type *1		SS□■H-1(Z)-A1, D2				SS□■H-3(Z)-D3			
Ordering code *1		SS□■H-1M(Z)A1, D2				SS□■H-3M(Z)D3			
Main circuit	Rated voltage	200 - 480V AC 50/60Hz				200 - 480V AC 50/60Hz			
	Rated thermal current (A)	30	50	80	120	30	50	80	120
	Max. heater capacity (kW)	20.7	34.6	55.4	83.0	20.7	34.6	55.4	83.0
	Max. motor capacity (kW)*2	7.5	11	22	22	7.5	11	22	22
	Motor full load current (A)	17	24	48	48	17	24	48	48
	3-phase 400V AC								
Number of elements		3-pole, 2 or 3-element *3				3-pole, 2 or 3-element *3			
Control circuit	Isolation method	Photocoupler				Photocoupler			
	Control voltage (Vn)	A1: 100–120/200–240V AC 50/60Hz D2: 12/24V DC				5–24V DC			
	Pick-up voltage	85% Vn or less				3.5V or less			
	Drop-out voltage	30% Vn and over				1.5V and over			
	Operating time (at 100% Vn) Release time (at 100% Vn)	30ms or less 30ms or less				5ms or less (SS□H-3Z: 15ms or less) 15ms or less			
Auxiliary circuit	Output	AC operated DC operated	Thyristor 2NO Transistor 2NO			—			
	Rated current and voltage	AC operated DC operated	0.2A, 240V AC 0.2A, 24V DC			—			

Notes: ^{*1} Replace the □ mark by rated thermal current code (03 to 200), and the ■ mark by the number of elements (2 or 3). See page 01/132,133.

^{*2} Maximum ratings when SSC is used with cooling fin (SX1-□) at temperature of 40°C or less.

Motor starting current: 6 times full-load current, Motor starting time: 0.25s or less.

^{*3} 2-element types are supplied in 3-pole with current carrying parts omitted from center pole.

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SS series

General use

■ Specifications

3-pole independent type

● Main circuit 240V AC, SS03-4 to SS120-4

Type ^{*1}	SS□■-4(Z)-A3	SS□■-4(Z)-A4	SS□■-4(Z)-D3	SS□■-4(Z)-D5	SS□■-4(Z)-D6
Ordering code ^{*1}	SS□■-4M(Z)A3	SS□■-4M(Z)A4	SS□■-4M(Z)D3	SS□■-4M(Z)D5	SS□■-4M(Z)D6
Main circuit	Rated voltage		100 - 240V AC 50/60Hz		100 - 240V AC 50/60Hz
	Rated thermal current (A)		20 30 40 50 80 120	3 8	3 8
	Max. heater capacity (kW) Single phase 200V AC		4 6 8 10 16 24	0.6 1.6	0.6 1.6
	Number of elements		3-pole, 2 or 3-element ^{*3}		
Control circuit	Isolation method		Photocoupler		
	Control voltage (Vn)		100–120V AC 200–240V AC	5–24V DC	12–24V DC 5V DC
	Pick-up voltage		85% Vn or less	3.5V or less	8V or less
	Drop-out voltage		30%Vn and over	1.5V and over	1V and over 4V or less 1V and over
Auxiliary circuit	Operating time (at 100% Vn)		30ms or less	5ms or less (D3: SS□■-4Z: 15ms or less)	
	Release time (at 100% Vn)		30ms or less	15ms or less	

● Main circuit 480V AC, SS30H-4 to SS120H-4

Type ^{*1}	SS□■H-4(Z)-A3	SS□■H-4(Z)-A4	SS□■H-4(Z)-D3
Ordering code ^{*1}	SS□■H-4M(Z)A3	SS□■H-4M(Z)A4	SS□■H-4M(Z)D3
Main circuit	Rated voltage		200 - 480V AC 50/60Hz
	Rated thermal current (A)		30 50 80 120
	Max. heater capacity (kW) Single phase 400V AC		12 20 32 48
	Number of elements		3-pole, 2 or 3-element ^{*3}
Control circuit	Isolation method		Photocoupler
	Control voltage (Vn)		100–120V AC 200–240V AC 5–24V DC
	Pick-up voltage		85% Vn or less
	Drop-out voltage		30% Vn and over 3.5V or less 1.5V and over
Auxiliary circuit	Operating time (at 100% Vn)		30ms or less
	Release time (at 100% Vn)		30ms or less 5ms or less (SS□■H-4Z: 15ms or less) 15ms or less

Notes: ^{*1} Replace the □ mark by rated thermal current code (03 to 200) and the ■ mark by the number of elements (2 or 3). See page 01/132, 133.

^{*2} Maximum ratings when SSC is used with cooling fin (SX1-□) at temperature of 40°C or less.

^{*3} 2-element types are supplied in 3-pole with current carrying parts omitted from center pole.

● 3-pole AC operated

Type Main circuit 240V AC: Blank 480V AC: H 3-pole 2-element		3-pole 3-element		Control circuit									
				3-pole unit type: 1						3-pole independent type: 4			
				Zero-cross function						Zero-cross function			
				Provided: Z			Not provided: Blank			Provided: Z		Not provided: Blank	
				Control voltage: 100-120V AC/200-220V AC: A1 , 100-120V AC: A3 , 200-240V AC: A4									
				A1	A3	A4	A1	A3	A4			A3	A4
				With cooling fin: F						With cooling fin: F			
SS032	SS033			●	●			●	●				
SS082	SS083			●	●			●	●				
SS202	SS203	●				●				●	●	●	●
SS302	SS303	●				●				●	●	●	●
SS302H	SS303H	●				●				●	●	●	●
SS402	SS403	●				●				●	●	●	●
SS502	SS503	●				●				●	●	●	●
SS502H	SS503H	●				●				●	●	●	●
SS802	SS803	●				●				●	●	●	●
SS802H	SS803H	●				●				●	●	●	●
SS1202	SS1203	●				●				●	●	●	●
SS1202H	SS1203H	●				●				●	●	●	●

Note: ● Available

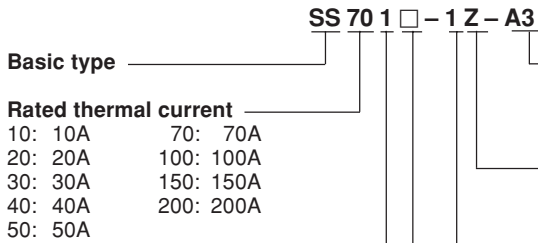
● 3-pole DC operated

Type Main circuit 240V AC: Blank 480V AC: H 3-pole 2-element		3-pole 3-element		Control circuit												
				3-pole unit type: 1				3-pole unit type: 3				3-pole independent type: 4				
				Zero-cross function				Provided: Z				Not provided: Blank				
				Z		Blank		Z		Blank		Z		Blank		
Control voltage: 12/24V DC: D2 , 5-24V DC: D3 , 12-24V DC: D5 , 5V DC: D6																
				D2	D5	D2	D5	D3	D5	D6	D3	D5	D6	D3	D5	D6
With cooling fin: F																
SS032	SS033			●			●		●	●			●	●		●
SS082	SS083			●			●		●	●			●	●		●
SS202	SS203			●			●		●				●			
SS302	SS303			●			●		●				●			
SS302H	SS303H			●			●		●				●			
SS402	SS403			●			●		●				●			
SS502	SS503			●			●		●				●			
SS502H	SS503H			●			●		●				●			
SS802	SS803			●			●		●				●			
SS802H	SS803H			●			●		●				●			
SS1202	SS1203			●			●		●				●			
SS1202H	SS1203H			●			●		●				●			

Note: ● Available

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General use

■ Type number nomenclature
● Single-pole type



No. of main circuit elements
1: Single pole 1-element

Rated voltage of main circuit
Blank: 100–240V AC
H: 200–480V AC

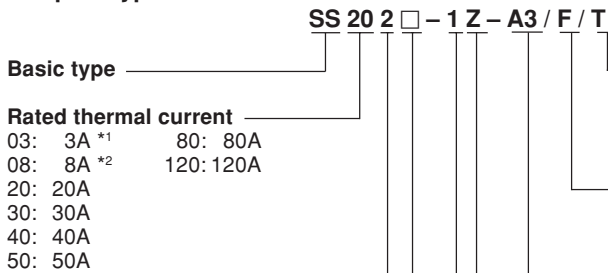
Control voltage
A3: 100–120V AC
A4: 200–240V AC
D3: 5–24V DC

Zero-cross function
Z: Provided

Control circuit

	Isolation method	Voltage detector	Auxiliary contact	Applicable contactor	
1	Photocoupler	Provided	Provided	SS701 to 2001	240V AC
				SS701H to 2001H	480V AC
3	Photocoupler	Not provided	Not provided	SS101 to 2001	240V AC
				SS701H to 2001H	480V AC
5	Photocoupler	Not provided	Not provided	SS101 to 501	240V AC

● 3-pole type



No. of main circuit elements
2: 3-pole 2-element
3: 3-pole 3-element

Rated voltage of main circuit
Blank: 100–240V AC
H: 200–480V AC

Terminal cover

Blank: Not provided
T: Provided (only for SS202 to SS502, SS203 to SS503 of main circuit voltage 200V)

Shipping form

F: Contactor and cooling fin set
F-A3: Contactor and cooling fin set *3
F-A4: Contactor and cooling fin set *4
F-D5: Contactor and cooling fin set *5
Blank: Contactor only
(Cooling fin sold separately)

Control voltage

A1: 100–120/200–220V AC D2: 12/24V DC
A3: 100–120V AC D3: 5–24V DC
A4: 200–240V AC D5: 12–24V DC
D6: 5V DC

Zero-cross function

Blank: Not provided
Z: Provided

Control circuit

	Control method		Isolation method	Voltage detector	Auxiliary contact
	3-pole unit	3-pole independent			
1	○		Photocoupler	Provided	Provided
3	○		Photocoupler	Not provided	Not provided
4		○	Photocoupler	Not provided	Not provided

Notes: *1 Type SS03□ can carry the rated thermal current even if no cooling fin is fitted.

*2 Type SS08□ is shipped with a cooling fin fitted to the main body even if /F is not suffixed to the type number.

*3 Suffix code applicable only to type SS80□ and type SS120□. Fan rated operating voltage: 100–120V AC, 50/60Hz.

*4 Suffix code applicable only to type SS80□ and type SS120□. Fan rated operating voltage: 200–240V AC, 50/60Hz.

*5 Suffix code applicable only to type SS80□ and type SS120□. Fan rated operating voltage: 24V DC.

■ Ordering code system

S	S	8	0	3	H	—	1	Z	A	1	F	A	3
①	②	③	④	⑤	⑥		⑦	⑧	⑨	⑩	⑪	⑫	⑬

① Product category

Description	Code
Contactors	S

② Series category

Description	Code
Solid-state contactor	S

③④ Framesize

Frame size	Code	
	③	④
03	0	3
08	0	8
10	1	0
20	2	0
30	3	0
40	4	0
50	5	0
70	7	0
80	8	0
100	1	A
120	1	C
150	1	F
200	2	A

⑤ No. of main circuit elements

No. of elements	Code
Single pole, 1-element	1
3-pole, 2-element	2
3-pole, 3-element	3

⑥ Rated voltage of main circuit

Rated voltage	Code
100 - 240V AC	Blank
200 - 480V AC	H

⑦ Control circuit

● 3-pole type

Control method	Insolation method	Voltage detector	Auxiliary contact	Code
3-pole unit	Photocoupler	Provided	Provided	1
3-pole unit	Photocoupler	Not provided	Not provided	3
3-pole independent	Photocoupler	Not provided	Not provided	4

● Single-pole type

Control method	Insolation method	Voltage detector	Auxiliary contact	Code
Single-pole	Photocoupler	Provided	Provided	1
	Photocoupler	Not provided	Not provided	3
	Photocoupler	Not provided	Not provided	5

⑧ Zero-cross function

Zero-cross function	Code	
	Single-pole	3-pole
Not provided	Blank	M
Provided	Z	Z

⑪ Shipping form

Description	Code	
	Single-pole	3-pole
Cooling fin set	Blank	F
Contactors only	Not provided	Blank

⑨⑩ Control voltage

Description	Code	
	⑨	⑩
100-120V/200-240V AC	A	1
100-120V AC	A	3
200-240V AC	A	4
12/24V DC	D	2
5-24 V DC	D	3
12-24V DC	D	5
5V DC	D	6

⑫⑬ Cooling fan voltage

Cooling fin control voltage	Code	
	⑫	⑬
100-120V AC	A	3
200-240V AC	A	4
12-24V DC	D	5

■ Versions

Single-pole type

● Main circuit 240V AC

Control voltage	Voltage detector	Auxiliary contact	Zero-cross function	Rated thermal current				
				10A	20A	30A	40A	50A
100 - 120V AC	—	—	●	SS101-5Z-A3	SS201-5Z-A3	SS301-5Z-A3	SS401-5Z-A3	SS501-5Z-A3
200 - 240V AC	—	—	●	SS101-5Z-A4	SS201-5Z-A4	SS301-5Z-A4	SS401-5Z-A4	SS501-5Z-A4
5 - 24V DC	—	—	●	SS101-3Z-D3	SS201-3Z-D3	SS301-3Z-D3	SS401-3Z-D3	SS501-3Z-D3

Control voltage	Voltage detector	Auxiliary contact	Zero-cross function	Rated thermal current			
				70A	100A	150A	200A
100 - 120V AC	●	●	●	SS701-1Z-A3	SS1A1-1Z-A3	SS1F1-1Z-A3	SS2A1-1Z-A3
200 - 240V AC	●	●	●	SS701-1Z-A4	SS1A1-1Z-A4	SS1F1-1Z-A4	SS2A1-1Z-A4
5 - 24V DC	—	—	●	SS701-3Z-D3	SS1A1-3Z-D3	SS1F1-3Z-D3	SS2A1-3Z-D3

● Main circuit 480V AC

Control voltage	Voltage detector	Auxiliary contact	Zero-cross function	Rated thermal current			
				70A	100A	150A	200A
100 - 120V AC	●	●	●	SS701H-1Z-A3	SS1A1H-1Z-A3	SS1F1H-1Z-A3	SS2A1H-1Z-A3
200 - 240V AC	●	●	●	SS701H-1Z-A4	SS1A1H-1Z-A4	SS1F1H-1Z-A4	SS2A1H-1Z-A4
5 - 24V DC	—	—	●	SS701H-3Z-D3	SS1A1H-3Z-D3	SS1F1H-3Z-D3	SS2A1H-3Z-D3

Note: ● Provided — Not provided

Solid-state Contactors

SS series

General use

■ **Versions**
3-pole type
 ● **Main circuit 240V AC**

Rated thermal current		3A	8A	20A	30A	40A	50A	80A	120A
AC control voltage ^{*1}	2-element	SS032-1M□	SS082-1M□	SS202-1M□F SS202-4M□F	SS302-1M□F SS302-4M□F	SS402-1M□F SS402-4M□F	SS502-1M□F SS502-4M□F	SS802-1M□F■ SS802-4M□F■	SS1C2-1M□F■ SS1C2-4M□F■
	(With zero-cross function)	SS032-1Z□	SS082-1Z□	SS202-1Z□F SS202-4Z□F	SS302-1Z□F SS302-4Z□F	SS402-1Z□F SS402-4Z□F	SS502-1Z□F SS502-4Z□F	SS802-1Z□F■ SS802-4Z□F■	SS1C2-1Z□F■ SS1C2-4Z□F■
	3-element	SS033-1M□	SS083-1M□	SS203-1M□F SS203-4M□F	SS303-1M□F SS303-4M□F	SS403-1M□F SS403-4M□F	SS503-1M□F SS503-4M□F	SS803-1M□F■ SS803-4M□F■	SS1C3-1M□F■ SS1C3-4M□F■
	(With zero-cross function)	SS033-1Z□	SS083-1Z□	SS203-1Z□F SS203-4Z□F	SS303-1Z□F SS303-4Z□F	SS403-1Z□F SS403-4Z□F	SS503-1Z□F SS503-4Z□F	SS803-1Z□F■ SS803-4Z□F■	SS1C3-1Z□F■ SS1C3-4Z□F■
DC control voltage ^{*2}	2-element	SS032-1M□ SS032-3M□ SS032-4M□	SS082-1M□ SS082-3M□ SS082-4M□	SS202-1M□F SS202-3M□F SS202-4M□F	SS302-1M□F SS302-3M□F SS302-4M□F	SS402-1M□F SS402-3M□F SS402-4M□F	SS502-1M□F SS502-3M□F SS502-4M□F	SS802-1M□F■ SS802-3M□F■ SS802-4M□F■	SS1C2-1M□F■ SS1C2-3M□F■ SS1C2-4M□F■
	(With zero-cross function)	SS032-1Z□ SS032-3Z□ SS032-4Z□	SS082-1Z□ SS082-3Z□ SS082-4Z□	SS202-1Z□F SS202-3Z□F SS202-4Z□F	SS302-1Z□F SS302-3Z□F SS302-4Z□F	SS402-1Z□F SS402-3Z□F SS402-4Z□F	SS502-1Z□F SS502-3Z□F SS502-4Z□F	SS802-1Z□F■ SS802-3Z□F■ SS802-4Z□F■	SS1C2-1Z□F■ SS1C2-3Z□F■ SS1C2-4Z□F■
	3-element	SS033-1M□ SS033-3M□ SS033-4M□	SS083-1M□ SS083-3M□ SS083-4M□	SS203-1M□F SS203-3M□F SS203-4M□F	SS303-1M□F SS303-3M□F SS303-4M□F	SS403-1M□F SS403-3M□F SS403-4M□F	SS503-1M□F SS503-3M□F SS503-4M□F	SS803-1M□F■ SS803-3M□F■ SS803-4M□F■	SS1C3-1M□F■ SS1C3-3M□F■ SS1C3-4M□F■
	(With zero-cross function)	SS033-1Z□ SS033-3Z□ SS033-4Z□	SS083-1Z□ SS083-3Z□ SS083-4Z□	SS203-1Z□F SS203-3Z□F SS203-4Z□F	SS303-1Z□F SS303-3Z□F SS303-4Z□F	SS403-1Z□F SS403-3Z□F SS403-4Z□F	SS503-1Z□F SS503-3Z□F SS503-4Z□F	SS803-1Z□F■ SS803-3Z□F■ SS803-4Z□F■	SS1C3-1Z□F■ SS1C3-3Z□F■ SS1C3-4Z□F■

Note: Enter the cooling fan voltage code in the ■ mark, see page 01/133.

● **Main circuit 480V AC**

Rated thermal current		30A	50A	80A	120A
AC control voltage ^{*1}	2-element	SS302H-1M□F SS302H-4M□F	SS502H-1M□F SS502H-4M□F	SS802H-1M□F■ SS802H-4M□F■	SS1C2H-1M□F■ SS1C2H-4M□F■
	(With zero-cross function)	SS302H-1Z□F SS302H-4Z□F	SS502H-1Z□F SS502H-4Z□F	SS802H-1Z□F■ SS802H-4Z□F■	SS1C2H-1Z□F■ SS1C2H-4Z□F■
	3-element	SS303H-1M□F SS303H-4M□F	SS503H-1M□F SS503H-4M□F	SS803H-1M□F■ SS803H-4M□F■	SS1C3H-1M□F■ SS1C3H-4M□F■
	(With zero-cross function)	SS303H-1Z□F SS303H-4Z□F	SS503H-1Z□F SS503H-4Z□F	SS803H-1Z□F■ SS803H-4Z□F■	SS1C3H-1Z□F■ SS1C3H-4Z□F■
DC control voltage ^{*2}	2-element	SS302H-1M□F SS302H-3M□F SS302H-4M□F	SS502H-1M□F SS502H-3M□F SS502H-4M□F	SS802H-1M□F■ SS802H-3M□F■ SS802H-4M□F■	SS1C2H-1M□F■ SS1C2H-3M□F■ SS1C2H-4M□F■
	(With zero-cross function)	SS302H-1Z□F SS302H-3Z□F SS302H-4Z□F	SS502H-1Z□F SS502H-3Z□F SS502H-4Z□F	SS802H-1Z□F■ SS802H-3Z□F■ SS802H-4Z□F■	SS1C2H-1Z□F■ SS1C2H-3Z□F■ SS1C2H-4Z□F■
	3-element	SS303H-1M□F SS303H-3M□F SS303H-4M□F	SS503H-1M□F SS503H-3M□F SS503H-4M□F	SS803H-1M□F■ SS803H-3M□F■ SS803H-4M□F■	SS1C3H-1M□F■ SS1C3H-3M□F■ SS1C3H-4M□F■
	(With zero-cross function)	SS303H-1Z□F SS303H-3Z□F SS303H-4Z□F	SS503H-1Z□F SS503H-3Z□F SS503H-4Z□F	SS803H-1Z□F■ SS803H-3Z□F■ SS803H-4Z□F■	SS1C3H-1Z□F■ SS1C3H-3Z□F■ SS1C3H-4Z□F■

Notes:

Control voltage (Refer to page 01/133, 134.)

*1 Replace the □ mark in the order number by the control voltage codes shown below.

A1	100–120/200–240V AC
A3	100–120V AC
A4	200–240V AC

*2 Replace the □ mark in the order number by the control voltage codes shown below.

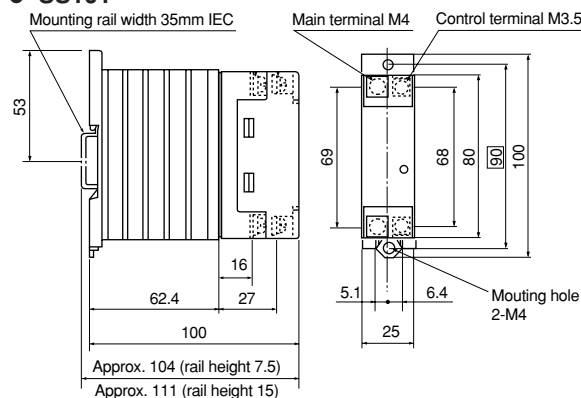
D2	12/24V DC
D3	5–24V DC
D5	12–24V DC
D6	5V DC

Note: Enter the cooling fan voltage code in the ■ mark, see page 01/133.

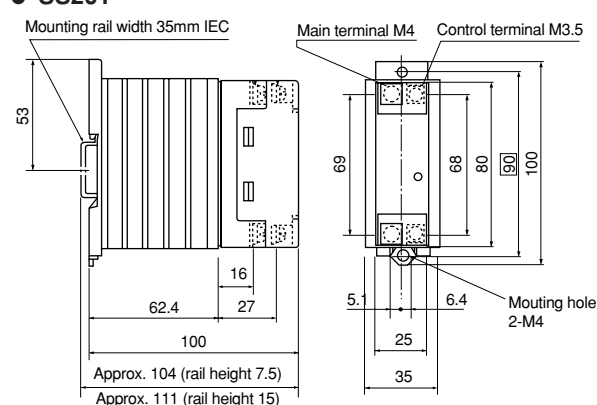
■ Dimensions, mm

Single-pole type

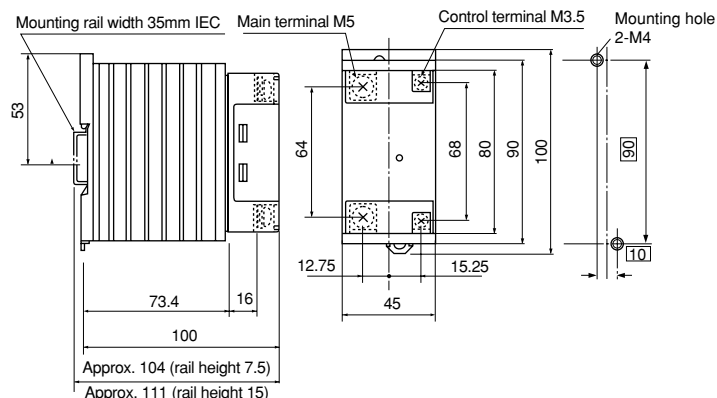
● SS101



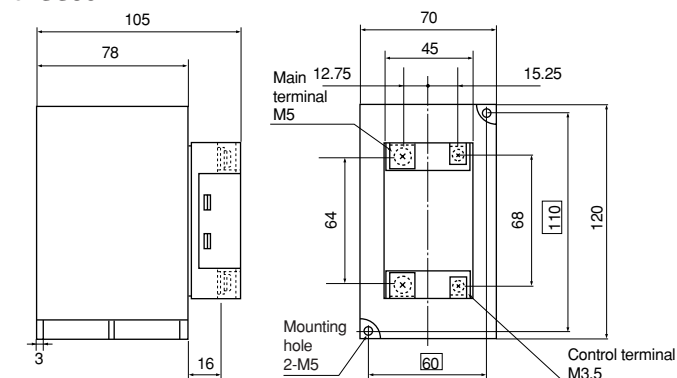
● SS201



● SS301, 401



● SS501



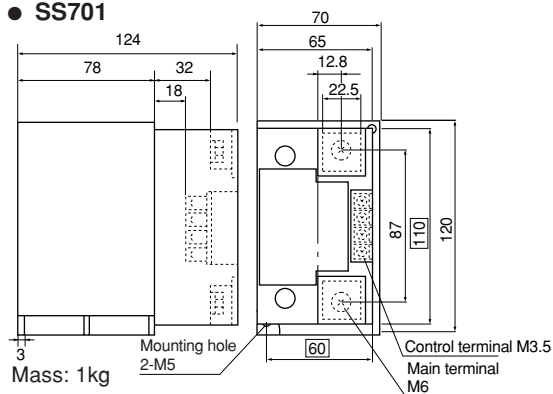
Mass:

SS101: 0.22kg SS401: 0.36kg

SS201: 0.24kg SS501: 0.66kg

SS301: 0.36kg

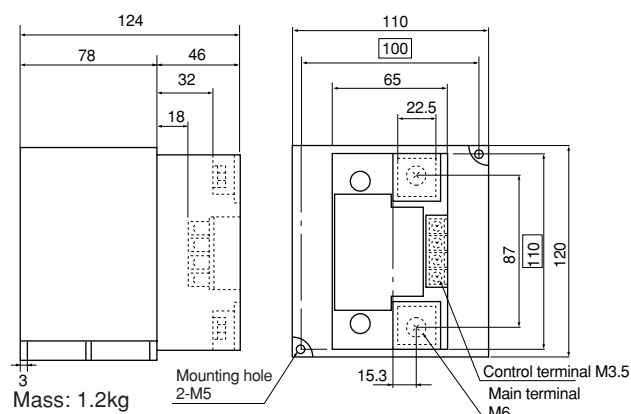
● SS701



Mass: 1kg

□ Mounting hole dimensions

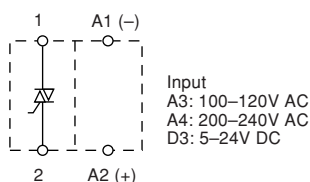
● SS1001



Mass: 1.2kg

■ Wiring diagram

● SS101 to SS501



Solid-state Contactors

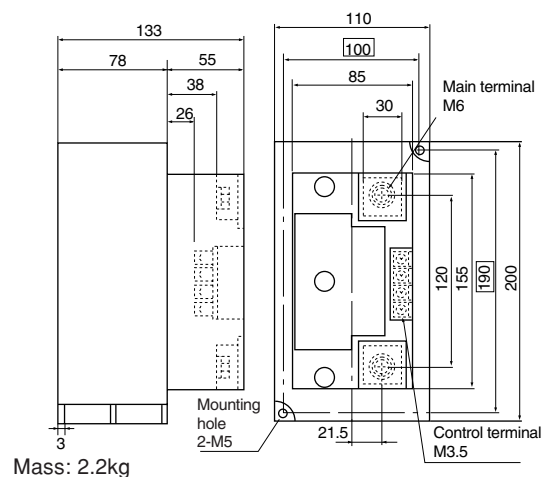
SS series

General use

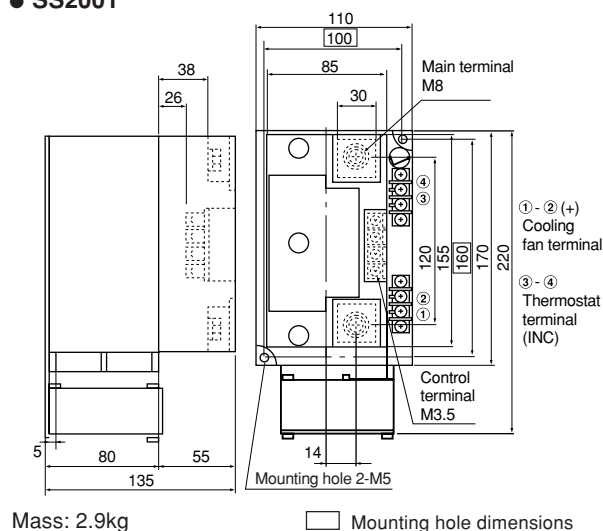
■ Dimensions, mm

Single-pole type

● SS1501



● SS2001

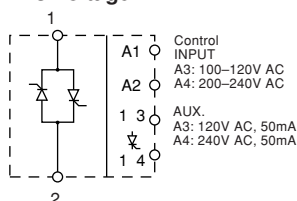


■ Wiring diagrams

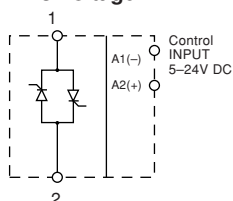
● SS701 to SS1501

SS701H to SS1501H

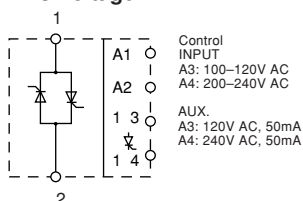
Control input AC voltage



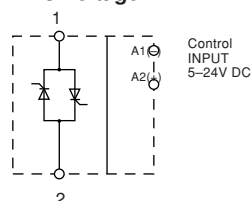
DC voltage



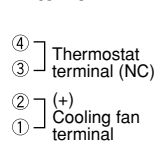
Control input AC voltage



DC voltage



Internal

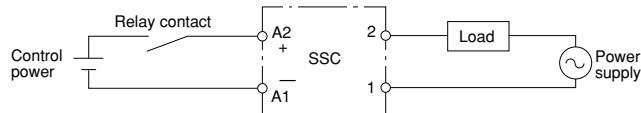


Single pole type solid-state contactor

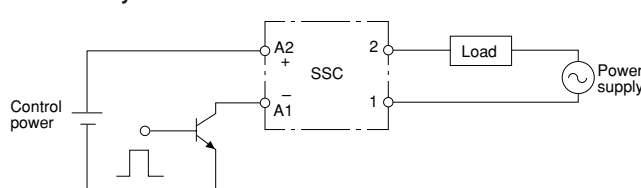
Application example

● Drive system

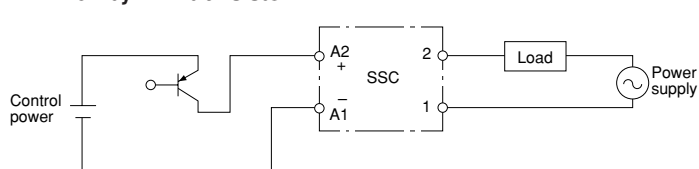
● Driven by relay contact



● Driven by NPN transistor

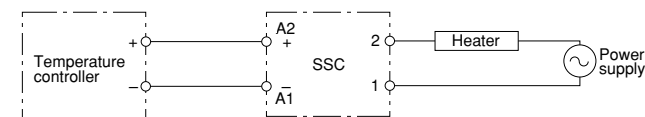


● Driven by PNP transistor

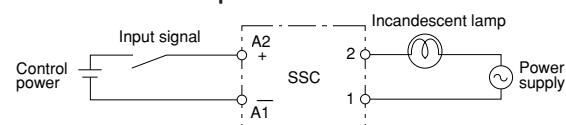


● Connection to load

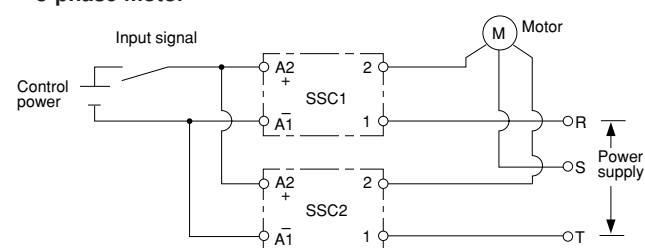
● Heater control



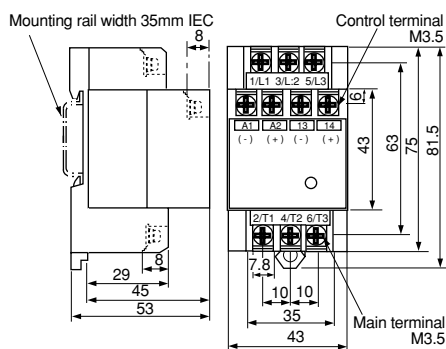
● Incandescent lamp



● 3-phase motor

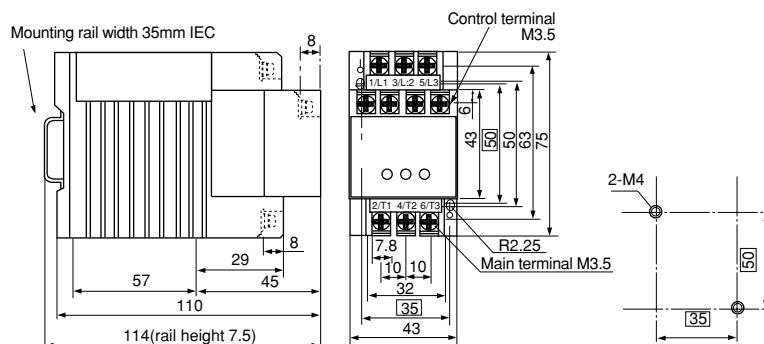


■ Dimensions, mm
3-pole unit type
● SS03 (Rail mounting only)



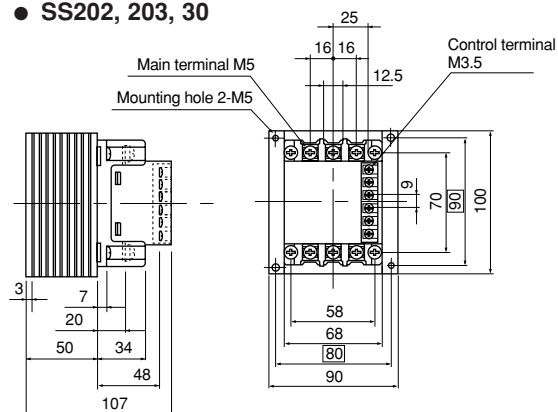
Mass: Approx. 0.18kg

● SS08



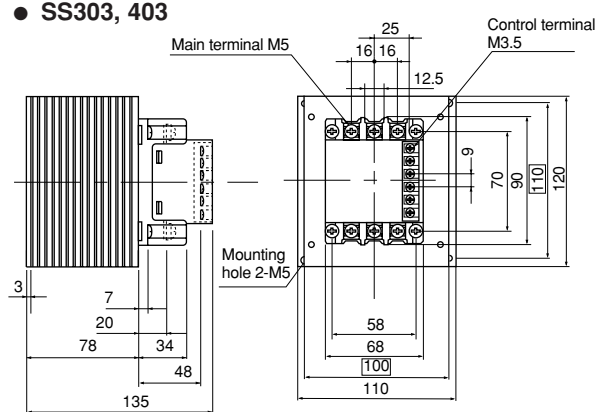
Mass: Approx. 0.3kg

● SS202, 203, 30



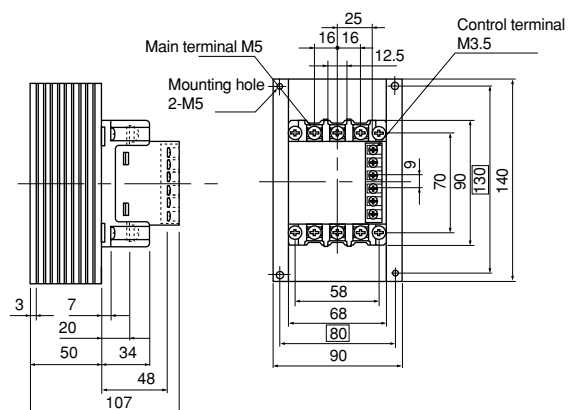
Mass: Approx. 0.77kg

● SS303, 403



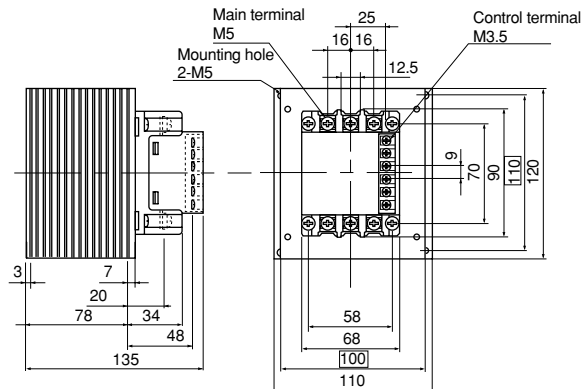
Mass: Approx. 1.1kg

● SS402



Mass: Approx. 0.99kg

● SS502



Mass: Approx. 1.1kg

□ Mounting hole dimensions

- Dimensions, mm
- SS503

- SS503



● SS802, 803, 802H, 803H



- SS1202, 1203, 1202H, 1203H



- SS302H, 303H



- **SS502H**



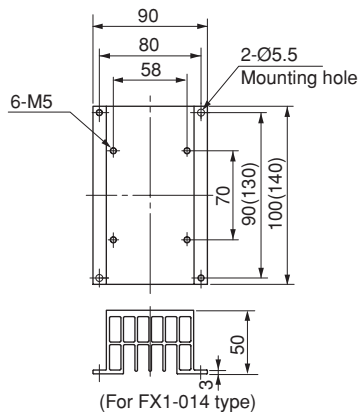
- **SS503H**



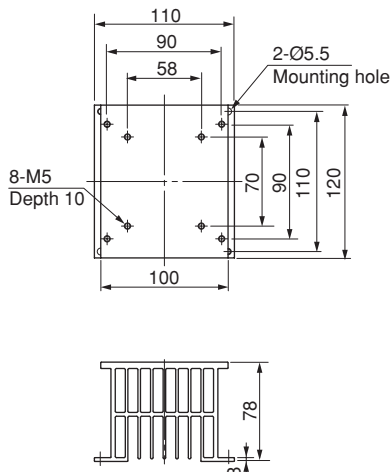
 Mounting hole dimensions

■ Dimensions, mm/Cooling fins

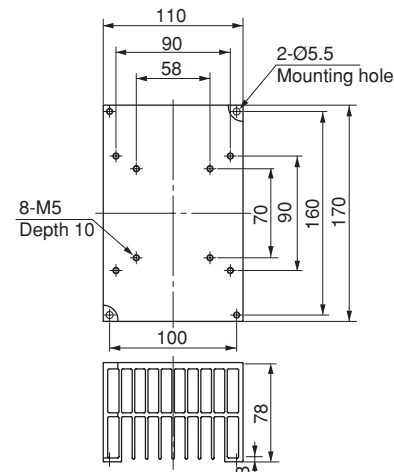
● SX1-D10, SX1-D14



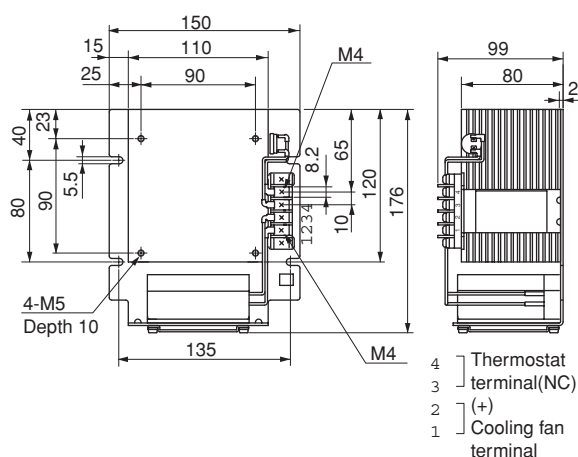
● SX1-E12



● SX1-E17



● SX1-C12

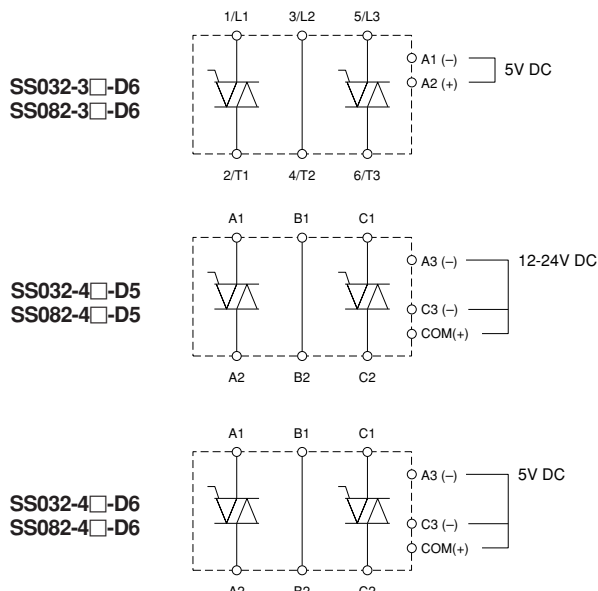
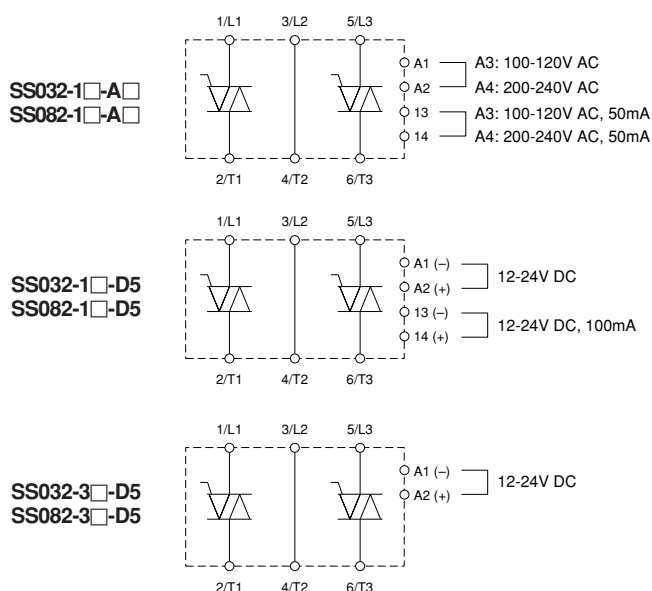


Type		Used with	Mass (kg)
SX1-D10		SS202, SS203, SS302	Approx. 0.36
SX1-D14		SS402	Approx. 0.53
SX1-E12		SS302H, SS303, SS303H SS403, SS502, SS502H	Approx. 0.82
SX1-E17		SS503, SS503H	Approx. 1.16
SX1-C12-A3	100–110V AC 50/60Hz	SS802, SS802H, SS803	Approx. 2.2
SX1-C12-A4	200–220V DC 50/60Hz	SS803H, SS1202, SS1202H	
SX1-C12-D5	24V DC	SS1203, SS1203H	

■ Wiring diagrams

● SS03, SS08/2-element

A1, A2, A3, C3, COM: Control terminals
13, 14: Aux.terminals



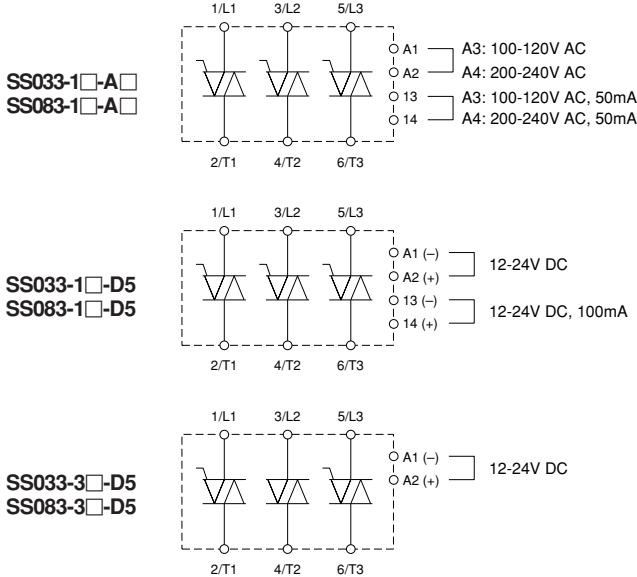
Solid-state Contactors

SS series

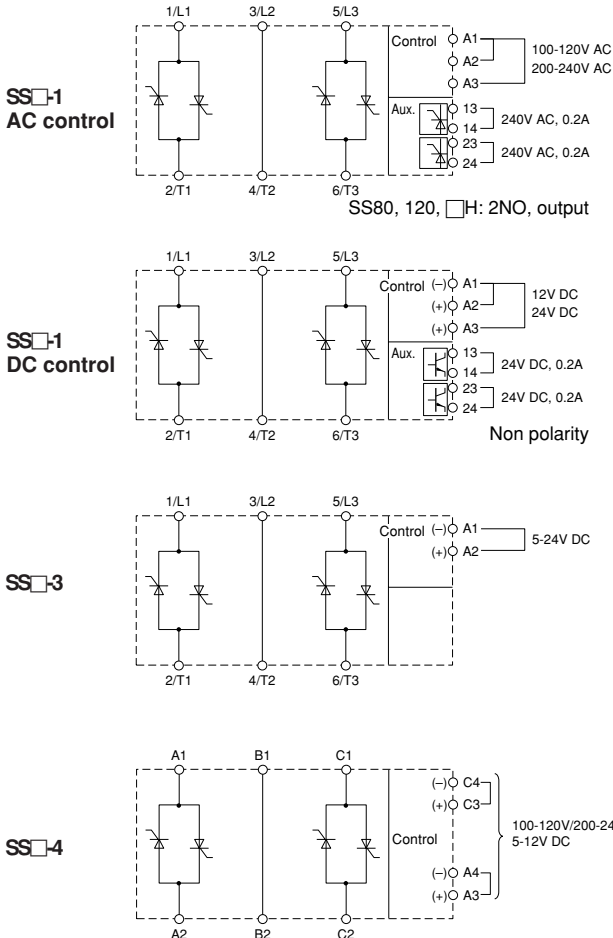
General use

■ Wiring diagrams

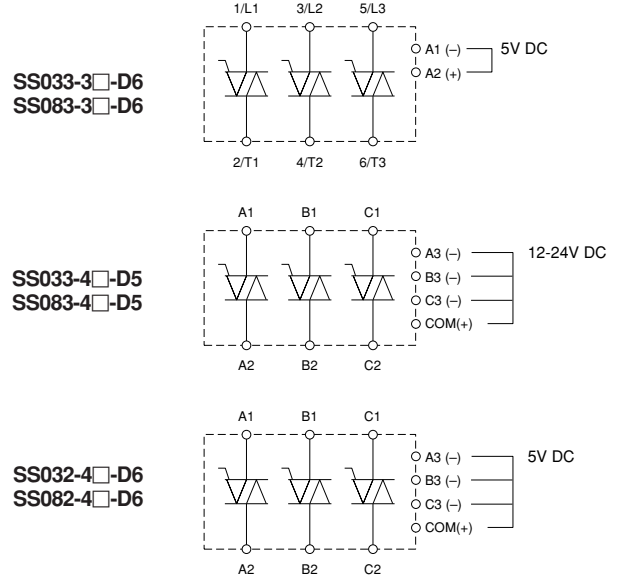
● SS03, SS08/3-element



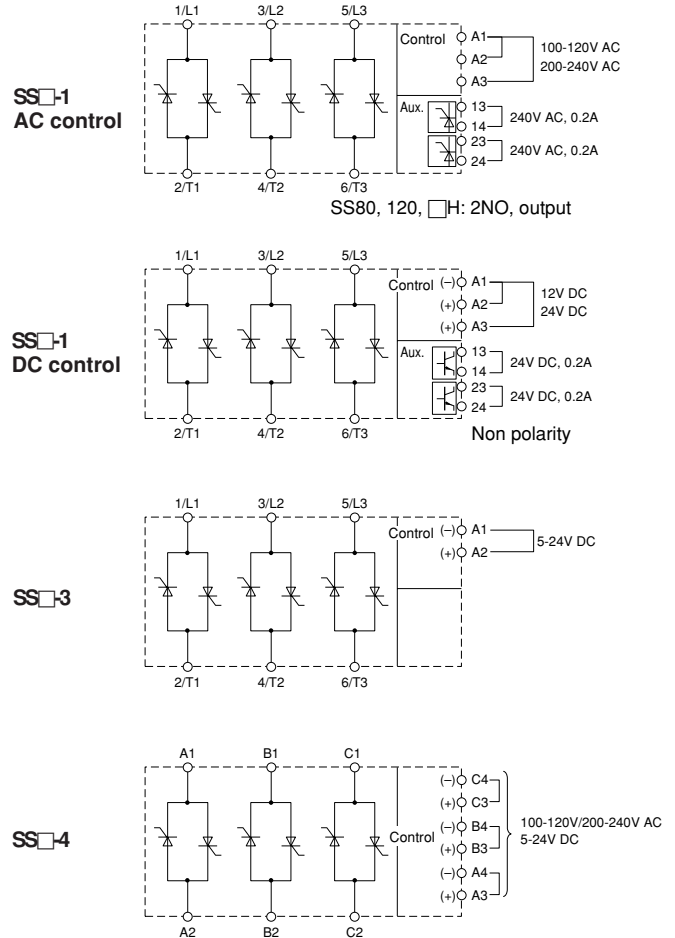
● SS20, SS30, SS40, SS50, SS80, SS120 2-element



A1, A2, A3, B3, B4, C3, C4: Control terminals
13, 14, 23, 24: Aux.terminals



3-element



■ Precautions for use

Be sure to read an Instruction Manual enclosed with the solid state relays before using in order to ensure proper operation.

Solid-state contactors, Exclusively heater load use

■ Description

These SSCs are compact and low in price, and applicable for heater switching.

■ Features

- Single-pole type
- Powerful line-up covering the output range of 10 to 30A, 240V AC
- Built-in surge suppressor (varistor) between output terminals
- Operation indication LED (red) equipped as standard for checking the input status of control voltage
- Terminal cover to prevent exposure of active terminals (optional)
- Dedicated cooling fin (optional)
- Standard models with UL and CSA approval.



■ Type number nomenclature

	SS	10	1	C	-	3	Z	-	D3	
Basic type SS: SS series										
Frame size (Rated thermal current) 10: 10A 20: 20A 30: 30A										
No. of main circuit elements 1: Single pole										
Rated voltage of main circuit C: 100-240V AC (Single-pole type dedicated to heater load)										
										Control voltage D3: 5 - 24V DC A2: 100 - 240V AC
										Zero-cross function Z: Zero-cross function
										Control circuit (Isolation method and function)

Code	Isolation method	Voltage detector	Auxiliary contact
3	Photocoupler	Not provided	Not provided

■ Types and ratings

Rated thermal current *	Rated voltage of main circuit	Type	Ordering code	Voltage detection	Zero-cross function	Control circuit voltage	Impedance
10A	100 – 240V AC	SS101C-3Z-D3	SS101C-3ZD3	–	Provided	5 – 24V DC	4.8kΩ (at 24V)
		SS101C-3Z-A2	SS101C-3ZA2	–	Provided	100 – 240V AC	70kΩ (at 200V)
20A	100 – 240V AC	SS201C-3Z-D3	SS201C-3ZD3	–	Provided	5 – 24V DC	4.8kΩ (at 24V)
		SS201C-3Z-A2	SS201C-3ZA2	–	Provided	100 – 240V AC	70kΩ (at 200V)
30A	100 – 240V AC	SS301C-3Z-D3	SS301C-3ZD3	–	Provided	5 – 24V DC	4.8kΩ (at 24V)
		SS301C-3Z-A2	SS301C-3ZA2	–	Provided	100 – 240V AC	70kΩ (at 200V)

Note: * The maximum rating when SSC is used with cooling fin.

Solid-state Contactors

SS series

Heater load use

■ Specifications

Type		SS□1C-3Z-D3			SS□1C-3Z-A2		
Main circuit	Rated operational voltage	100 to 240V AC					
	Operational voltage range	85 to 264V AC					
	Rated thermal current (I _{th})(AC-1) *	10A	20A	30A	10A	20A	30A
	Rated frequency	50/60Hz					
	Applicable heater capacity (1ϕ 200V)	2kW	4kW	6kW	2kW	4kW	6kW
	Minimum load current	100mA					
	Voltage drop (ON state) (max.)	1.6V					
	Leakage current (OFF state) (max.)	15mA					
	Non-repetitive surge on current (I _{TSM}) (Under 60Hz, sine wave, 1 cycle, rated load condition)	150A	225A	300A	150A	225A	300A
	Zero-cross function	Provided					
Surge suppressor (varistor)	Provided (between output terminals)						
Applicable cooling fin (Optional)	Fin type : SX1-H9B/X, I9B/X (rail-mounting/screw-mounting), SX1-100S, 200S (screw-mounting)						
Control circuit	Isolation method	Photocoupler					
		DC operated type (2 terminals, with polarity)			AC operated type (2 terminals, non polarity)		
	Rated operational voltage	5, 12, 24V DC			100 – 120/200 – 240V AC		
	Operational voltage range	4 to 30V DC					
	Operational voltage	4V DC or less			85V AC or less		
	Reset voltage	1.5V DC and over			30V AC and over		
	Operation time (at 100%V _n)	15ms or less			30ms or less		
	Reset time (at 100%V _n)	15ms or less			30ms or less		
	Current consumption	7mA or less (at 30V DC)			5mA or less (at 264V AC)		
	Operation indicator	LED (Red)					
Mass		Approx. 55g					
Approved by		c  us					

Note: * The maximum rating when SSC is used with cooling fin.

■ General specifications

Type	SS□1C-3Z-D3,-A2
Temperature range	-20 to +80°C (no icing)
Relative humidity	45 to 85% (no condensation)
Altitude	2,000m or less
Temperature-rise (100%I _n , 100%V _n)	Main circuit terminal, Control circuit terminal, Base...65°C or less
Dielectric strength	2,000V AC, 1 minute. : Between main circuits, between control circuit and base, between main circuit and control circuit.
Insulation resistance	100MΩ or more (500V DC megger) : Between main circuits, between control circuit and base, between main circuit and control circuit.
Vibration resistance	Mechanical durability: 10 to 55Hz, double amplitude 0.75mm
Shock resistance	Mechanical durability: 300m/s ²

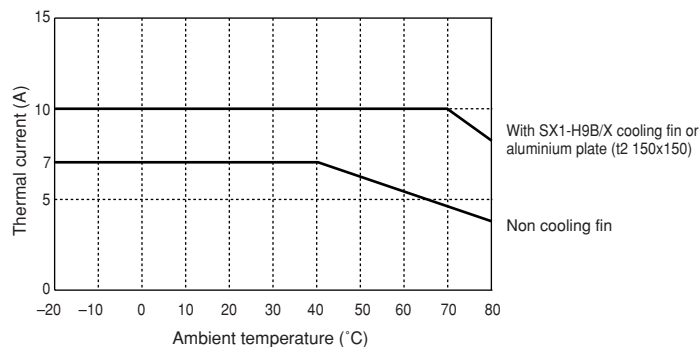
■ Wiring

Terminal type	Terminal screw	Connectable wire size (maximum size of conductor)	Maximum width of crimp-type terminal (nominal size) *1 *2	Recommended tightening torque
Main circuit terminal	M4 cross-recessed slotted machine screw with square washer	1.25 to 5.5mm ² φ2 to 3.2	9.7mm (R5.5-4)	1.2 to 1.5N·m
Control circuit terminal	M4 cross-recessed slotted machine screw with square washer	1.25 to 5.5mm ² φ2 to 3.2	9.7mm (R5.5-4)	1.2 to 1.5N·m

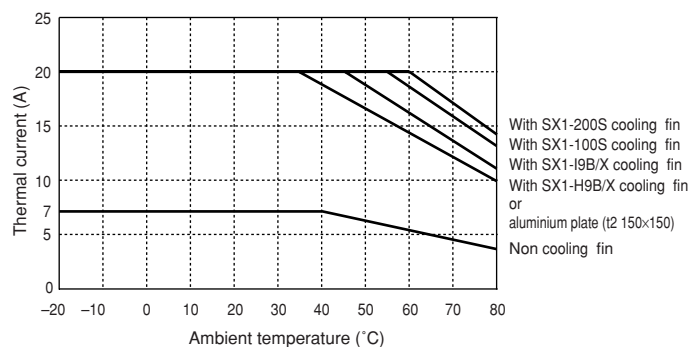
Note: *1 JIS C 2805 round crimp-type terminal

*2 Prepare crimp-type terminals smaller than the specified maximum width.

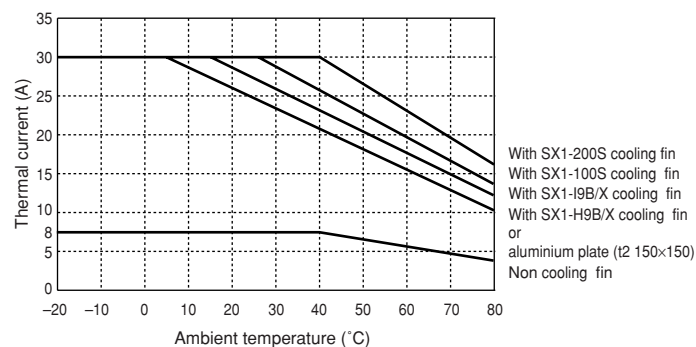
■ Ambient temperature - Thermal current characteristics
SS101C-3Z-□



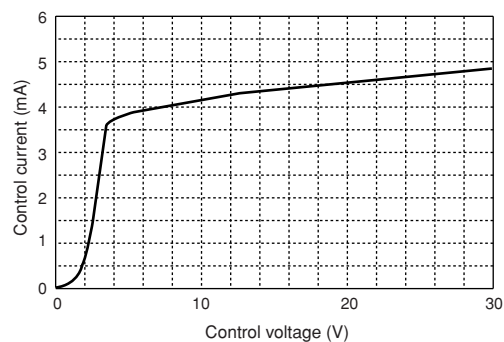
SS201C-3Z-□



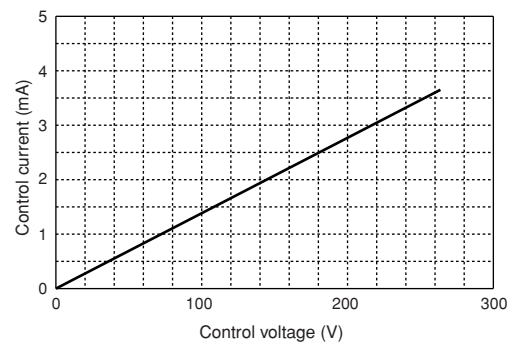
SS301C-3Z-□



■ Control voltage - Current characteristic (Example)
DC input (SS□1C-3Z-D3 type)

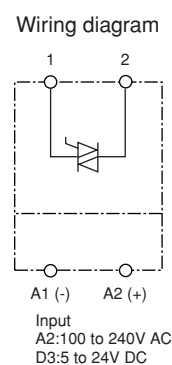
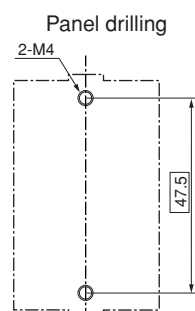
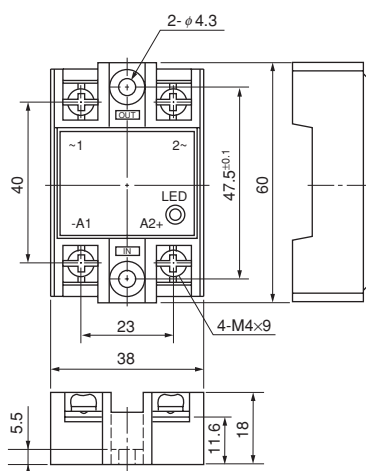


AC input (SS□1C-3Z-A2 type)



■ Dimensions, mm

SS101C-3Z-D3, -A2
SS201C-3Z-D3, -A2
SS301C-3Z-D3, -A2



Solid-state Contactors

SS series

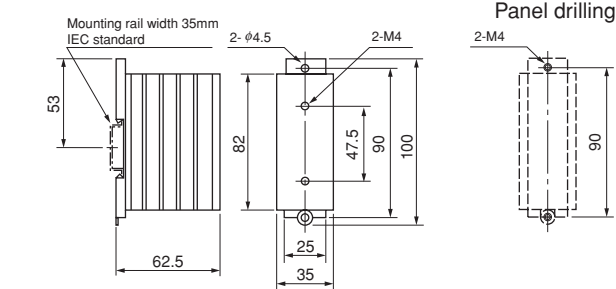
Heater load use

■ Cooling fin (Optional)

Type	Ordering code	Mounting	Application SSC
SX1-H9B/X	SY1H9BX	Rail-mounting, screw-mounting	SS101C, SS201C, SS301 C
SX1-I9B/X	SY1I9BX	Rail-mounting, screw-mounting	SS201C, SS301C
SX1-100S	SY1100S	screw-mounting	SS201C, SS301C
SX1-200S	SY1200S	screw-mounting	SS201C, SS301C

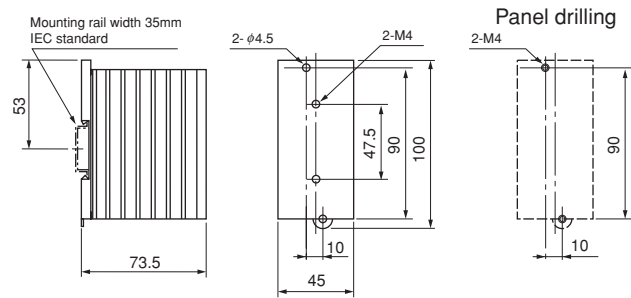
Dimensions, mm

SX1-H9B/X (SS101C, 201C, 301C)



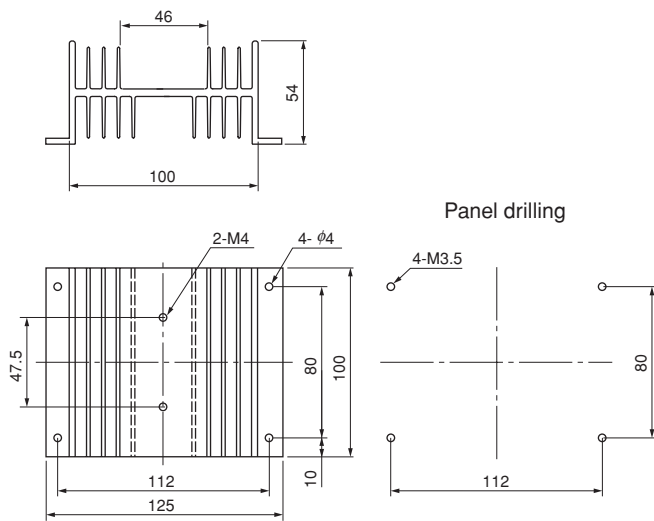
Mass: Approx. 150g

SX1-I9B/X (SS201C, SS301C)



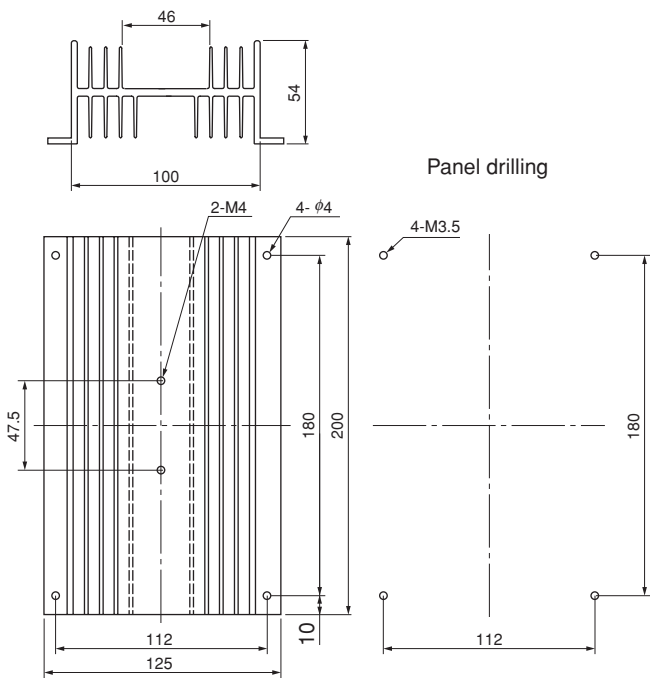
Mass: Approx. 200g

SX1-100S (SS201C, SS301C)



Mass: Approx. 350g

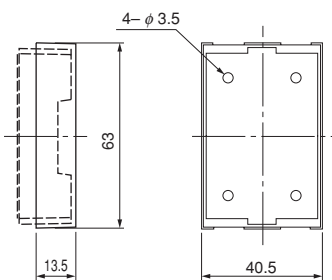
SX1-200S (SS201C, 301C)



Mass: Approx. 700g

■ Terminal cover (Optional) SX2-C11

Dimensions, mm



Mass: Approx. 6g

■ Precautions for use

Be sure to read an Instruction Manual enclosed with the solid state relays before using in order to ensure proper operation.