SC-E series magnetic contactors/non-reversing

■ Features
- Models SC-E02 to SC-E4 have 3-pole main circuits and come in three sizes with widths of 43mm (up to 25A), 54mm (up to 50A), and 67mm (up to 80A).
- Models SC-E1 to SC-E7 employ a box type terminal that allows wires to be connected directly to the main circuit.
- Equipped with a finger-protection terminal structure (IP20) that prevents accidental finger touch to live parts.
- Models SC-E5 to SC-E7 use a SUPER MAGNET (AC/DC-input/DC-operate) to achieve high operating reliability.


AF01-6

SC-E2S


AF01-1

SC-E7

■ Standards
IEC 60947-4-1, EN 60947-4-1, VDE 0660, JIS C 8201-4-1
UL 508, CSA C22.2

■ Ordering information
Specify the following:
1. Type number
2. Operating coil order voltage (*See page 02/51*)

■ Type number nomenclature

SC-E02P/G

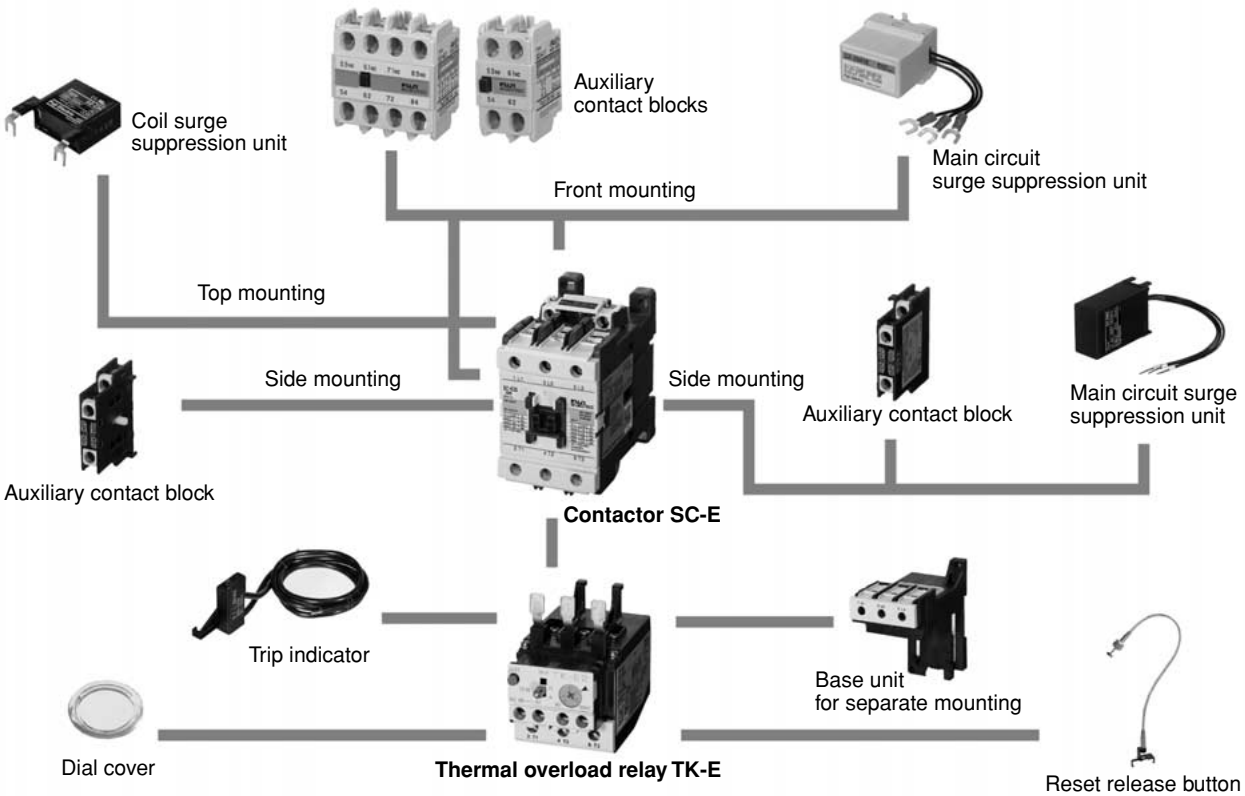
Operating coil voltage
Blank: AC operated (E02 to E4)
AC/DC operated (E5 to E7)
G: DC operated (E02 to E4)

Wiring
Blank: Straight wiring connection
P: Ring terminal connection

Frame size
02 to E7

■ Accessories
A full range of accessories with the emphasis on utility.

Contactors: SC-E series
Thermal overload relays: TK-E series



■ Types and ratings

Operating coil	Max. motor capacity (kW)				Rated operating current (A)						Rated thermal current (A)	Aux. contact arrangement	Contactor type
	3-phase AC-3				3-phase AC-3				Resistive load AC-1				
	200 to 240V	380 to 440V	500 to 550V	600 to 690V	200 to 240V	380 to 440V	500 to 550V	600 to 690V	200 to 240V	380 to 440V			
AC operated	2.2	4	4	4	9	9	7	5	20	20	20	–	**SC-E02**
	3	5.5	5.5	5.5	12	12	9	7	20	20	20	–	**SC-E03**
	4	7.5	7.5	7.5	18	18	13	9	25	25	25	–	**SC-E04**
	5.5	11	11	7.5	25	25	17	9	32	32	32	–	**SC-E05**
	7.5	15	15	11	32	32	24	15	50	50	50	–	**SC-E1**
	11	18.5	18.5	15	40	40	29	19	60	60	60	–	**SC-E2**
	15	22	25	22	50	50	38	26	65	65	65	–	**SC-E2S**
	18.5	30	37	30	68	65	60	38	100	100	100	–	**SC-E3**
	22	40	37	37	80	80	60	44	105	105	105	–	**SC-E4**
AC/DC operated	30	55	55	55	105	105	85	64	150	150	150	2NO+2NC	**SC-E5**
	37	60	60	60	125	125	90	72	150	150	150	2NO+2NC	**SC-E6**
	45	75	75	90	150	150	120	103	200	200	200	2NO+2NC	**SC-E7**
DC operated	2.2	4	4	4	9	9	7	5	20	20	20	–	**SC-E02/G**
	3	5.5	5.5	5.5	12	12	9	7	20	20	20	–	**SC-E03/G**
	4	7.5	7.5	7.5	18	18	13	9	25	25	25	–	**SC-E04/G**
	5.5	11	11	7.5	25	25	17	9	32	32	32	–	**SC-E05/G**
	7.5	15	15	11	32	32	24	15	50	50	50	–	**SC-E1/G**
	11	18.5	18.5	15	40	40	29	19	60	60	60	–	**SC-E2/G**
	15	22	25	22	50	50	38	26	65	65	65	–	**SC-E2S/G**
	18.5	30	37	30	68	65	60	38	100	100	100	–	**SC-E3/G**
	22	40	37	37	80	80	60	44	105	105	105	–	**SC-E4/G**

Note :Ratings conform to IEC 60947-4-1

■ Performance data

Frame size	Making current (A)		Breaking current (A)		Operating cycles per hour	Durability (operations)	
	220V	440V	220V	440V		Electrical	Mechanical
SC-E02	108	108	90	90	1800	2 million	10 million
SC-E03	144	144	120	120	1800	1.5 million	10 million
SC-E04	216	216	180	180	1800	1.5 million	10 million
SC-E05	250	250	200	200	1200	1.5 million	10 million
SC-E1	384	384	320	320	1200	1.5 million	10 million
SC-E2	480	480	400	400	1200	1.5 million	10 million
SC-E2S	500	500	400	400	1200	1.5 million	10 million
SC-E3	816	780	680	650	1200	1.5 million	5 million
SC-E4	816	800	680	650	1200	1 million	5 million
SC-E5	1260	1260	1050	1050	1200	1 million	5 million
SC-E6	1500	1500	1250	1250	1200	1 million	5 million
SC-E7	1800	1800	1500	1500	1200	1 million	5 million

SC-E series magnetic contactors/reversing

■ Features

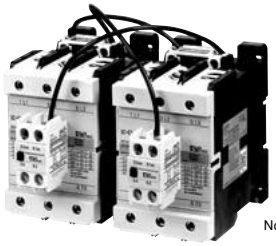
- Ideal for the forward-reverse operation of 3-phase motors or plugging stops.
- Mechanical interlock
- Snap-on mounting to 35mm-wide top hat rail (DIN). (E02 to E4)

■ Type number nomenclature

SC-E2RM/G

Operating coil voltage
Blank: AC operated (E02 to E4)
AC/DC operated (E5 to E7)
G: DC operated (E02 to E4)

Frame size
02 to E7



SC-E3RM

■ Ordering information

Specify the following:
1. Type number
2. Operating coil order voltage (*See page 02/51*)
3. Auxiliary contact arrangement

■ Types and ratings

Operating coil	Max. motor capacity (kW)				Rated operating current (A)						Rated thermal current (A)	Aux. contact arrangement	Contactor type
	3-phase AC-3				3-phase AC-3				Resistive load AC-1				
	200 to 240V	380 to 440V	500 to 550V	600 to 690V	200 to 240V	380 to 440V	500 to 550V	600 to 690V	200 to 240V	380 to 440V			
AC operated	2.2	4	4	4	9	9	7	5	20	20	20	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E02RM**[*1]
	3	5.5	5.5	5.5	12	12	9	7	20	20	20	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E03RM**[*1]
	4	7.5	7.5	7.5	18	18	13	9	25	25	25	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E04RM**[*1]
	5.5	11	11	7.5	25	25	17	9	32	32	32	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E05RM**[*1]
	7.5	15	15	11	32	32	24	15	50	50	50	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E1RM**[*1]
	11	18.5	18.5	15	40	40	29	19	60	60	60	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E2RM**[*1]
	15	22	25	22	50	50	38	26	65	65	65	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E2SRM**[*1]
	18.5	30	37	30	68	65	60	38	100	100	100	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E3RM**[*1]
	22	40	37	37	80	80	60	44	105	105	105	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E4RM**[*1]
AC/DC operated	30	55	55	55	105	105	85	64	150	150	150	(2NO+2NC) × 2	**SC-E5RM**
	37	60	60	60	125	125	90	72	150	150	150	(2NO+2NC) × 2	**SC-E6RM**
	45	75	75	90	150	150	120	103	200	200	200	(2NO+2NC) × 2	**SC-E7RM**

Notes: • Ratings conform to IEC 60947-4-1
[*1] The above types are shipped in a set containing two magnetic contactors, one SZ-RM mechanical interlock unit, two front mounting auxiliary contact blocks, and electrical interlock wiring. The power connection kit for the reversing contactor is sold separately.
• To prevent short-circuit faults when using SC-E02R to SC-E04RM types for high-speed switching, provide a time delay relay or other electrical interlock to ensure that the switching time is 15ms min.
• For combined use with an MMS, instead of ordering a reversing type, order and assemble the individual components (two magnetic contactors, one SZ-RM mechanical interlock unit, two auxiliary contact blocks, and the power connection kit (SZ-ERW□/A, SZ-ERW□/B).
[*1] Equipped with the SZ-A11/T, SZ-A02/T, SZ-A31/T, or SZ-A22/T front mounting auxiliary contact block.

• For motor starter use, order the power connection kit and thermal overload relay.

Type	TOR
SC-E02RM to SC-E05RM	TK-E02
SC-E1RM to SC-E2SRM	TK-E2
SC-E3RM to SC-E4RM	TK-E3
SC-E5RM to SC-E7RM	TK-E6H

■ Types and ratings

Operating coil	Max. motor capacity (kW)				Rated operating current (A)						Rated thermal current (A)	Aux. contact arrangement	Contactor type
	3-phase AC-3				3-phase AC-3				Resistive load AC-1				
	200 to 240V	380 to 440V	500 to 550V	600 to 690V	200 to 240V	380 to 440V	500 to 550V	600 to 690V	200 to 240V	380 to 440V			
DC operated	2.2	4	4	4	9	9	7	5	20	20	20	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E02RM/G**[*1]
	3	5.5	5.5	5.5	12	12	9	7	20	20	20	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E03RM/G**[*1]
	4	7.5	7.5	7.5	18	18	13	9	25	25	25	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E04RM/G**[*1]
	5.5	11	11	7.5	25	25	17	9	32	32	32	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E05RM/G**[*1]
	7.5	15	15	11	32	32	24	15	50	50	50	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E1RM/G**[*1]
	11	18.5	18.5	15	40	40	29	19	60	60	60	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E2RM/G**[*1]
	15	22	25	22	50	50	38	26	65	65	65	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E2SRM/G**[*1]
	18.5	30	37	30	68	65	60	38	100	100	100	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E3RM/G**[*1]
	22	40	37	37	80	80	60	44	105	105	105	(1NO+1NC) × 2, 2NC × 2 (3NO+1NC) × 2, (2NO+2NC) × 2	**SC-E4RM/G**[*1]

Notes: • Ratings conform to IEC 60947-4-1

*1 The above types are shipped in a set containing two magnetic contactors, one SZ-RM mechanical interlock unit, two front mounting auxiliary contact blocks, and electrical interlock wiring. The power connection kit for the reversing contactor is sold separately.

• To prevent short-circuit faults when using SC-E02R/G to SC-E04RM/G types for high-speed switching, provide a time delay relay or other electrical interlock to ensure that the switching time is 15ms min.

• For combined use with an MMS, instead of ordering a reversing type, order and assemble the individual components (two magnetic contactors, one SZ-RM mechanical interlock unit, two auxiliary contact blocks, and the power connection kit (SZ-ERW□/A, SZ-ERW□/B).

*1 Equipped with the SZ-A11/T, SZ-A02/T, SZ-A31/T, or SZ-A22/T front mounting auxiliary contact block.

• For motor starter use, order the power connection kit and thermal overload relay.

Type	TOR
SC-E02RM/G to SC-E05RM/G	TK-E02
SC-E1RM/G to SC-E2SRM/G	TK-E2
SC-E3RM/G to SC-E4RM/G	TK-E3
SC-E5RM/G to SC-E7RM/G	TK-E6H

■ Performance data

Frame size	Making current (A)		Breaking current (A)		Operating cycles per hour	Durability (operations)	
	220V	440V	220V	440V		Electrical	Mechanical
SC-E02	108	108	90	90	1800	2 million	10 million
SC-E03	144	144	120	120	1800	1.5 million	10 million
SC-E04	216	216	180	180	1800	1.5 million	10 million
SC-E05	250	250	200	200	1200	1.5 million	10 million
SC-E1	384	384	320	320	1200	1.5 million	10 million
SC-E2	480	480	400	400	1200	1.5 million	10 million
SC-E2S	500	500	400	400	1200	1.5 million	10 million
SC-E3	816	780	680	650	1200	1.5 million	5 million
SC-E4	816	800	680	650	1200	1 million	5 million
SC-E5	1260	1260	1050	1050	1200	1 million	5 million
SC-E6	1500	1500	1250	1250	1200	1 million	5 million
SC-E7	1800	1800	1500	1500	1200	1 million	5 million

SC-E series contactors, ring terminal connection types

SC-E2SP

■ Features

- The new type allows wiring with ring crimp terminals in addition to the conventional straight wiring connection. Types SC-E02P to SC-E2SP also enable straight wiring connection.
- A new slide-type terminal cover is easy to mount and remove. Up to two ring crimp terminals can be connected from the upper terminal part.
- Three module designs with widths of 43mm (up to 25A), 54mm (up to 50A), and 67mm (up to 80A) provide an ideal combination with manual motor starters for ring terminal connection.
- UL, CSA (cUL) approval is pending.

■ Types and rings

• Magnetic contactors

Operating coil	Max. motor capacity (kW)		Rated operational current (A)				Rated thermal current (A)	Aux. contact arrangement	Type
	3-phase AC-3		3-phase AC-3		3-phase AC-1				
	200V 240V	380V 440V	200V 240V	380V 440V	200V 240V	380V 440V			
AC operated	2.2	4	9	9	20	20	20	–	**SC-E02P**
	3	5.5	12	12	20	20	20	–	**SC-E03P**
	4	7.5	18	18	25	25	25	–	**SC-E04P**
	5.5	11	25	25	32	32	32	–	**SC-E05P**
	7.5	15	32	32	50	50	50	–	**SC-E1P**
	11	18.5	40	40	60	60	60	–	**SC-E2P**
	15	22	50	50	65	65	65	–	**SC-E2SP**
	18.5	30	68	65	100	100	100	–	**SC-E3P**
	22	40	80	80	105	105	105	–	**SC-E4P**
DC operated	2.2	4	9	9	20	20	20	–	**SC-E02P/G**
	3	5.5	12	12	20	20	20	–	**SC-E03P/G**
	4	7.5	18	18	25	25	25	–	**SC-E04P/G**
	5.5	11	25	25	32	32	32	–	**SC-E05P/G**
	7.5	15	32	32	50	50	50	–	**SC-E1P/G**
	11	18.5	40	40	60	60	60	–	**SC-E2P/G**
	15	22	50	50	65	65	65	–	**SC-E2SP/G**
	18.5	30	68	65	100	100	100	–	**SC-E3P/G**
	22	40	80	80	105	105	105	–	**SC-E4P/G**

• Thermal overload relays

Applicable contactor Non-reversing	Type	Auxiliary contact arrangement	Trip category (JIS) Resistive load AC-1	No. of heater elements
SC-E02P, E02P/G SC-E03P, E03P/G SC-E04P, E04P/G SC-E05P, E05P/G	**TK-E02**	1NO+1NC	10A	3
SC-E1P, E1P/G SC-E2P, E2P/G SC-E2SP, E2SP/G	**TK-N2/T**	1NO+1NC	10A	3
SC-E3P, E3P/G SC-E4P, E4P/G	**TK-N3/T**	1NO+1NC	10A	3

• **Coil characteristics:** *See page 02/53*
• **dimensions:** *See page 02/58*

■ Operating coil

• AC coil, SC-E02 to SC-E4

Order voltage	Coil operating voltage and frequency
AC24V	24V AC 50Hz / 24–26V AC 60Hz
AC48V	48V AC 50Hz / 48–52V AC 60Hz
AC100V	100V AC 50Hz / 100–110V AC 60Hz
AC110V	100–110V AC 50Hz / 110–120V AC 60Hz
AC120V	110–120V AC 50Hz / 120–130V AC 60Hz
AC200V	200V AC 50Hz / 200–220V AC 60Hz
AC220V	200–220V AC 50Hz / 220–240V AC 60Hz
AC240V	220–240V AC 50Hz / 240–260V AC 60Hz
AC380V	346–380V AC 50Hz / 380–420V AC 60Hz
AC400V	380–400V AC 50Hz / 400–440V AC 60Hz
AC440V	415–440V AC 50Hz / 440–480V AC 60Hz
AC500V	480–500V AC 50Hz / 500–550V AC 60Hz

Note: Other voltages are available in 24 to 600V AC on request.

• DC coil, SC-E02/G to SC-E4/G

Order voltage	Coil operating voltage
DC12V	12V DC
DC24V	24V DC
DC48V	48V DC
DC60V	60V DC
DC100V	100V DC
DC110V	110V DC
DC120V	120V DC
DC200V	200V DC
DC210V	210V DC
DC220V	220V DC

Note: Other voltages are available in 12 to 250V DC on request.

• AC/DC coil (SUPER MAGNET), SC-E5 to SC-E7

Order voltage	Coil operating voltage and frequency
24V	24–25V AC 50/60Hz, 24V DC
48V	48–50V AC 50/60Hz, 48V DC
100V	100–127V AC 50/60Hz, 100–120V DC *1
200V	200–250V AC 50/60Hz, 200–240V DC *2
400V	380–450V AC 50/60Hz
500V	460–575V AC 50/60Hz

Notes: • Other voltages are available in 24 to 575V AC (24 to 240V DC) on request.
*1 The coil voltage from DC power supply with single-phase full-wave rectification will be 100–110V.
*2 The coil voltage from DC power supply with single-phase full-wave rectification will be 200–220V.

■ Coil characteristics

• AC operated

Frame size	Power consumption (VA)		Power loss (W)		Pick-up voltage (V)		Drop-out voltage (V)		Operating time (ms)	
	Inrush	Sealed	200V	220V	200V	220V	200V	220V	Coil ON →	Coil OFF →
	200V 50Hz	200V 50Hz	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	Contact ON	Contact OFF
E02 to E05	90	9	2.7	2.8	105–136	116–146	75–106	88–120	9–20	5–16
E1 to E2S	120	12.7	3.6	3.8	110–130	120–140	75–105	85–115	10–17	6–13
E3, E4	180	13.3	4.5	5	115–135	130–150	85–110	100–125	10–18	8–18
E5	80	4	3.2	3.6	140–150	140–150	60–100	60–100	39–45	27–33
E6, E7	190	4.9	3.4	3.7	140–150	140–150	60–100	60–100	31–37	30–36

• DC operated

Frame size	Power consumption (W)		Time constant	Pick-up voltage (V)	Drop-out voltage (V)	Operating time (ms)	
	Inrush	Sealed	(ms)	200V DC	200V DC	Coil ON →	Coil OFF →
	200V	200V	Sealed			Contact ON	Contact OFF
E02/G to E05/G	7	7	50	92–130	30–60	45–49	10–26
E1/G to E2S/G	9	9	60	80–120	30–70	40–50	8–17
E3/G, E4/G	12	12	70	80–120	24–60	60–70	14–21
E5	90	2.8	1	140–160	40–100	35–41	26–32
E6, E7	225	3.2	1	140–160	40–100	28–34	27–33

■ Auxiliary contact ratings

Based on IEC 60974-4-1, EN 60947-4-1, JIS C 8201-4-1

Frame size	Rated insulation voltage (V)	Rated thermal current (A)	Making and breaking capacity at AC (A)		Rated operational current (A) AC Voltage	AC-15 Ind. load	DC Voltage	DC-13 Ind. load	Minimum operating voltage and current
E02 to E4 E02/G to E4/G	–	–	–		–		–		–
E5 to E7	690	10	120V	60	120V	6	24V	3	5V DC, 3mA
			220V	30	220V	3	48V	1.5	
			440V	15	440V	1.5	110V	0.55	
			600V	12	600V	1.2	220V	0.27	

■ Types and ratings for UL and CSA

Operating coil	Rated insulation voltage (V)	Max. motor capacity (Hp) 3-phase motor 200V	220–240V	400–480V	550–600V	Rated operating current (A) 3-phase motor 200V	220–240V	400–480V	550–600V	Rated thermal current (A)	Type
AC operated	600	2	2	5	5	7.8	6.8	7.6	6.1	20	**SC-E02**
		3	3	7.5	7.5	11	9.6	11	9	20	**SC-E03**
		5	5	10	10	17.5	15.2	14	11	25	**SC-E04**
		5	7.5	15	15	17.5	22	21	17	32	**SC-E05**
		7.5	10	25	25	25.3	28	34	27	50	**SC-E1**
		10	15	30	30	32.2	42	40	32	60	**SC-E2**
		15	20	30	30	48.3	54	40	32	65	**SC-E2S**
		20	25	50	50	62.1	68	65	52	100	**SC-E3**
		25	30	50	50	78.2	80	65	52	105	**SC-E4**
AC/DC operated	600	30	30	60	75	92	80	77	77	150	**SC-E5**
		40	40	75	100	119.6	104	96	99	150	**SC-E6**
		50	50	100	125	149.5	130	124	125	200	**SC-E7**
DC operated	600	2	2	5	5	7.8	6.8	7.6	6.1	20	**SC-E02/G**
		3	3	7.5	7.5	11	9.6	11	9	20	**SC-E03/G**
		5	5	10	10	17.5	15.2	14	11	25	**SC-E04/G**
		5	7.5	15	15	17.5	22	21	17	32	**SC-E05/G**
		7.5	10	25	25	25.3	28	34	27	50	**SC-E1/G**
		10	15	30	30	32.2	42	40	32	60	**SC-E2/G**
		15	20	30	30	48.3	54	40	32	65	**SC-E2S/G**
		20	25	50	50	62.1	68	65	52	100	**SC-E3/G**
		25	30	50	50	78.2	80	65	52	105	**SC-E4/G**

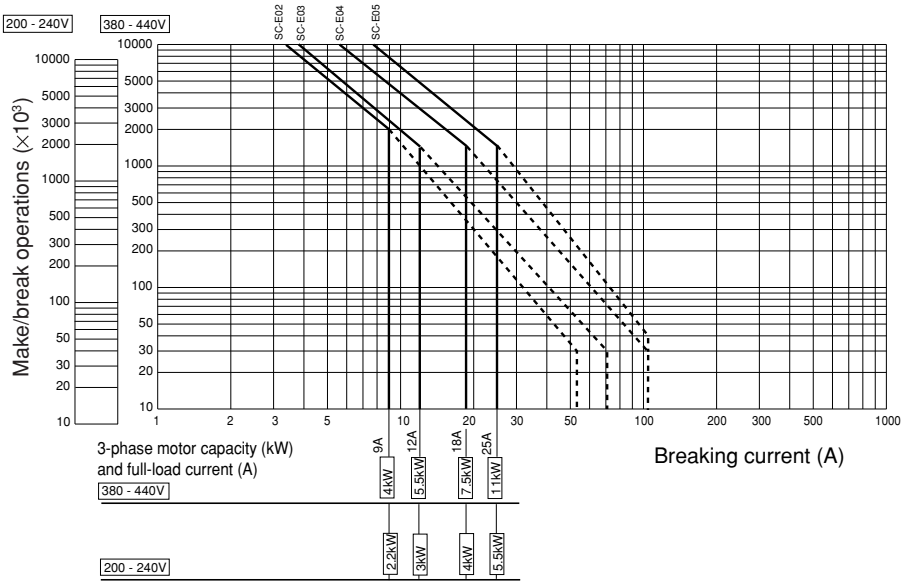
■ Auxiliary contact ratings for UL and CSA

Frame size	Rated insulation voltage (V)	Rated thermal current (A)	Making and breaking current (A) AC (rating code A600) Voltage	Making	Breaking	DC (rating code Q300) Voltage	Making	Breaking
E02 to E4 E02/G to E4/G	–	–	–	–	–	–	–	–
E5 to E7	600	10	120V	60	6	125V	0.55	0.55
			240V	30	3	250V	0.27	0.27
			480V	15	1.5			
			600V	12	1.2			

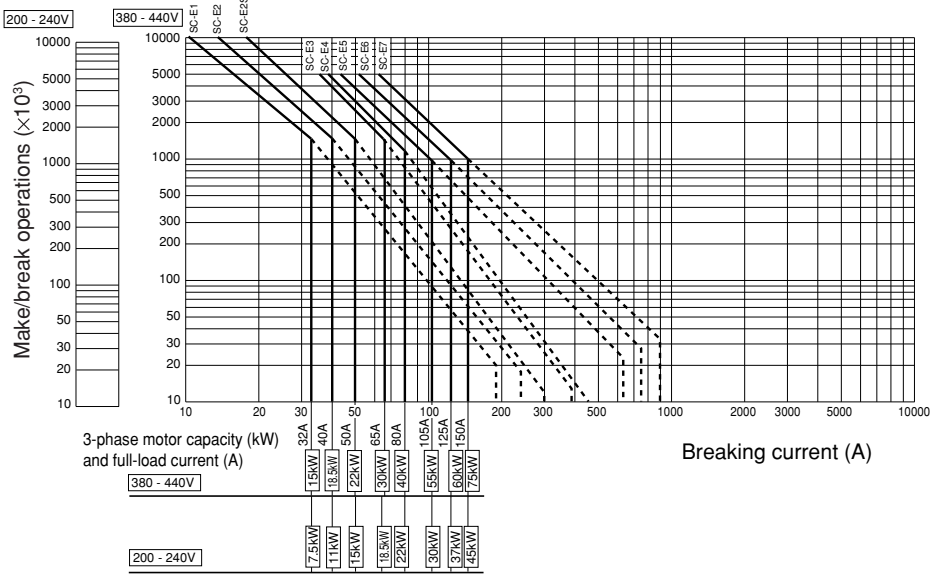
02

■ Electrical durability

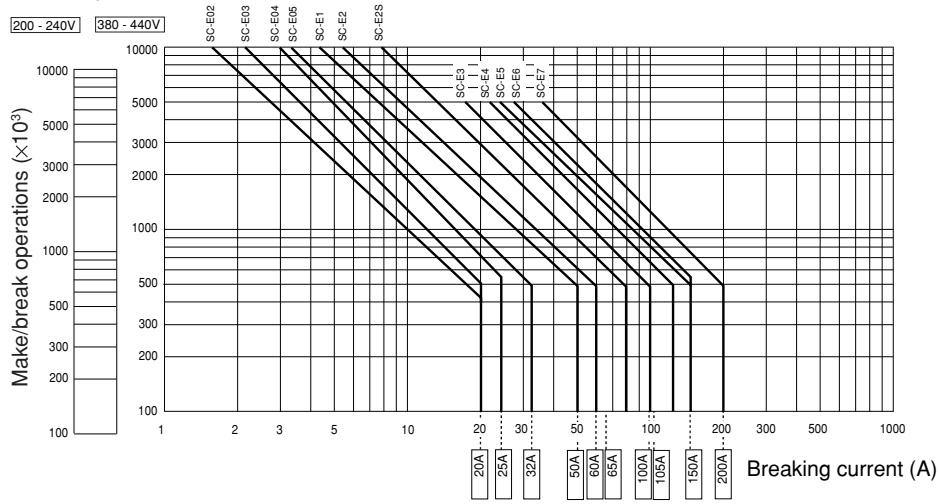
• AC-3 duty / SC-E02 to SC-E05



• AC-3 duty / SC-E1 to SC-E7



• AC-1 duty / SC-E02 to SC-E7



■ Optional accessories

• Auxiliary contact blocks with terminal covers

The front mounting auxiliary contact block allows two or four auxiliary contacts to be added without increasing the mounting area of the magnetic contactors. The side mounting auxiliary contact block allows two auxiliary contacts to be added to the magnetic contactors without increasing the depth.

Applicable contactor	Mounting	No. of contacts	Contact arrangement	Type
SC-E02 to E4	Front mounting	4	4NO	**SZ-A40/T**
			3NO+1NC	**SZ-A31/T**
			2NO+2NC	**SZ-A22/T**
		2	2NO	**SZ-A20/T**
			1NO+1NC	**SZ-A11/T**
			2NC	**SZ-A02/T**
SC-E02 to E4	Side mounting	2	1NO+1NC	**SZ-AS1/T**
SC-E5, E6, E7		2	1NO+1NC	**SZ-AS2/T**

Front mounting


KK02-081


AF88-080

SZ-A22/T **SZ-A11/T**

Side mounting


KK01-090

SZ-AS1/T
SZ-AS2/T

• Main circuit surge suppression units

When contactor is energized or de-energized, a surge voltage is generated from motor circuit. This unit suppresses this surge voltage and protects electronic equipment from malfunction or damage.

Applicable contactor	Mounting	Rated voltage and frequency	CR constant	Applicable 3-phase motor	Type
SC-E02 to E05	Front mounting	250V AC	C=0.22μF	200–240V AC	**SZ-ZM1E**
	Side mounting	50/60Hz	R=100Ω	0.1–5.5kW	**SZ-ZM2E**
SC-E1 to E4	Front mounting	250V AC	C=0.33μF	200–240V AC	**SZ-ZM3E**
	Side mounting	50/60Hz	R=47Ω	0.1–22kW	**SZ-ZM4E**

Main circuit surge suppression units


KK02-077

Front mounting
SZ-ZM1E


KK02-079

Side mounting
SZ-ZM4E

• Coil surge suppression units

This unit suppresses surge voltage due to contactor ON-OFF operations, and can be easily connected to contactor coil terminals.

Applicable contactor AC operated	Applicable contactor DC operated	Operating coil voltage	Device	Operation indicator	Type
SC-E02 to E05	SC-E02/G to E05/G	24–48V AC/DC	Varistor	–	**SZ-Z1**
		100–250V AC/DC		–	**SZ-Z2**
	–	380–440V AC		–	**SZ-Z3**
SC-E02 to E05	SC-E02/G to E05/G	24–48V AC/DC		Red LED	**SZ-Z6**
		100–250V AC/DC		Red LED	**SZ-Z7**
SC-E1 to E4	SC-E1/G to E4/G	24–48V AC/DC		–	**SZ-Z31**
		100–250V AC/DC		–	**SZ-Z32**
	–	380–440V AC		–	**SZ-Z33**
SC-E02 to E05	SC-E02/G to E05/G	24–48V AC/DC	CR	–	**SZ-Z4**
		100–250V AC/DC		–	**SZ-Z5**
SC-E02 to E05	SC-E02/G to E05/G	24–48V AC/DC		Red LED	**SZ-Z8**
		100–250V AC/DC		Red LED	**SZ-Z9**
SC-E1 to E4	–	24–48V AC		–	**SZ-Z34**
		100–250V AC		–	**SZ-Z35**
–	SC-E1/G to E4/G	24–48V DC		–	**SZ-Z36**
		100–250V DC		–	**SZ-Z37**

Coil surge suppression unit


AF88-766

Top mounting
CR
SZ-Z4

• Mechanical interlock unit

The mechanical interlock unit provides a mechanical interlock with assembly parts to convert a magnetic contactor into a reversing magnetic contactor.

Applicable contactor	Type
SC-E02 to E4 SC-E02/G to E4/G	**SZ-RM**

• Power connection kit for reversing

This kit includes an electrical interlock circuit to convert a magnetic contactor into a reversing magnetic contactor.

Applicable contactor	Wiring side	Type
SC-E02 to E05 SC-E02/G to E05/G	Line side	**SZ-ERW1/A**
	Load side	**SZ-ERW1/B**
	Load side (For starter)	**SZ-ERW1/D**
SC-E1 to E2S SC-E1/G to E2S/G	Line side	**SZ-ERW2/A**
	Load side	**SZ-ERW2/B**
	Load side (For starter)	**SZ-ERW2/D**
SC-E3, E4 SC-E3/G, E4/G	Line side	**SZ-ERW3/A**
	Load side	**SZ-ERW3/B**
	Load side (For starter)	**SZ-ERW3/D**
SC-E5	Line side	**SZ-ERW4/A**
	Load side	**SZ-ERW4/B**
SC-E6	Line side	**SZ-ERW5/A**
	Load side	**SZ-ERW5/B**
SC-E7	Line side	**SZ-ERW6/A**
	Load side	**SZ-ERW6/B**

Note : • When the SC-E02 to SC-E4 magnetic contactors and mechanical interlock unit are ordered separately, there is no electrical interlock circuit included. In this case, also order the SZ-A□/T auxiliary contact block to provide an electrical interlock.
• The SC-E5 to SC-E7 cannot be assembled as reversing motor starters. Use a separate mounting thermal overload relay (TK-E6H).

AF99-47 KK03-047 KK03-048

SZ-RM | **SZ-ERW1/A + SZ-ERW1/B** | **SZ-ERW3/A + SZ-ERW3/B**

Auxiliary contact blocks

Contact ratings

• Based on IEC and JIS

Rated thermal current (A)	Making and breaking capacity at AC (A)		Rated operational current (A) AC Voltage	AC-15 Ind. load	DC Voltage	DC-13 Ind. load	Minimum operating voltage and current
10	120V	60	120V	6	24V	3	5V DC
	220V	30	220V	3	48V	1.5	3mA
	440V	15	440V	1.5	110V	0.55	
	600V	12	600V	1.2	220V	0.27	

• Based on UL and CSA

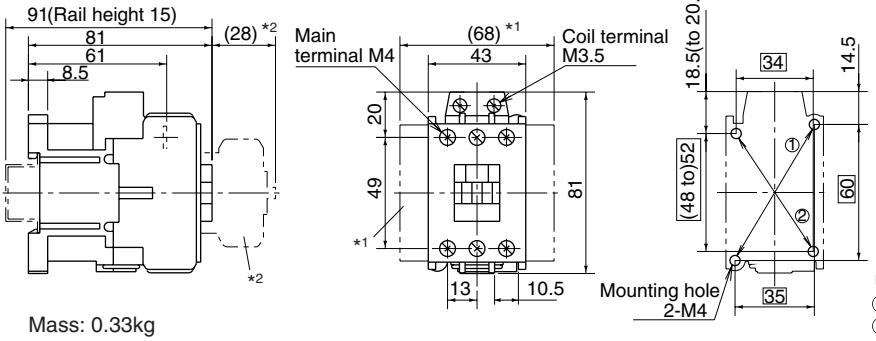
Rated thermal current (A)	Making and breaking current (A) AC (rating code A600) Volts	Making	Breaking	DC (rating code Q300) Volts	Making	Breaking
10	120V	60	6	125V	0.55	0.55
	240V	30	3	250V	0.27	0.27
	480V	15	1.5			
	600V	12	1.2			

SC-E series
Dimensions

■ Dimensions, mm

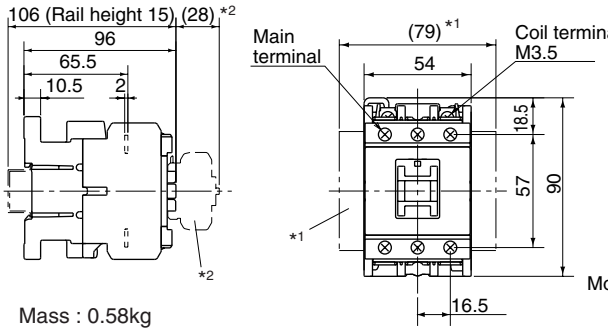
• Non-reversing/AC operated

SC-E02, E03, E04, E05



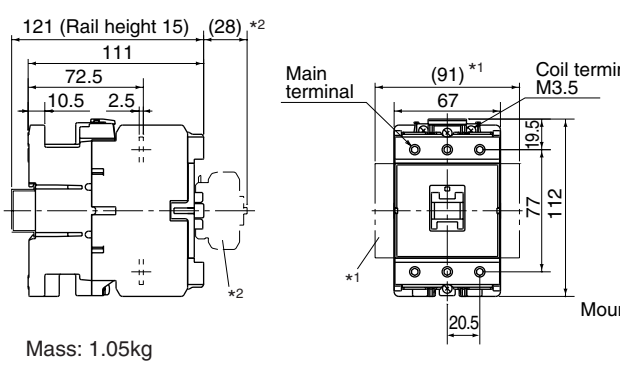
Mass: 0.33kg

SC-E1, E2, E2S



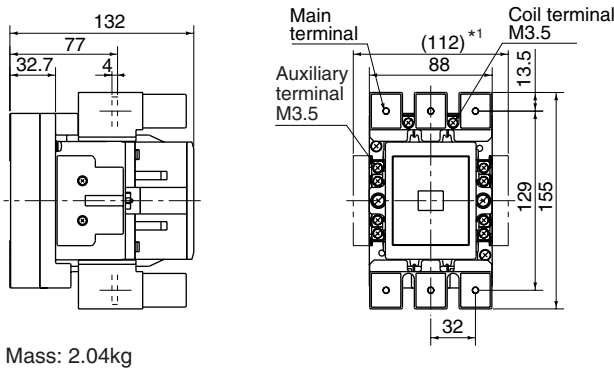
Mass : 0.58kg

SC-E3, E4



Mass: 1.05kg

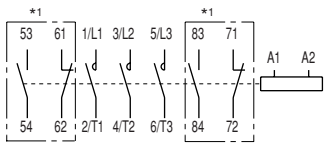
SC-E5



Mass: 2.04kg

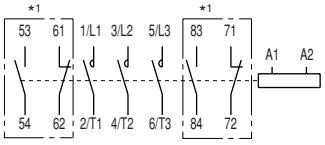
*1 Side mounting aux. contact block
*2 Front mounting aux. contact block

■ Wiring diagrams



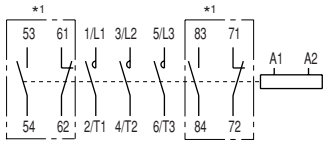
*1 In case of aux. contact 2NO+2NC

Use the two mounting holes on a diagonal line
① or ② to mount contactor
①: 35 × 60 ②: 34 × (48 to) 52



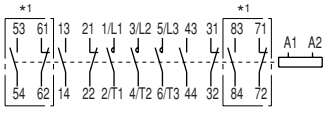
*1 In case of aux. contact 2NO+2NC

Use the two mounting holes on a diagonal line
① or ② to mount contactor
①: 45×75 ②: 45 (38 to 46)×80



*1 In case of aux. contact 2NO+2NC

Use the two mounting holes on a diagonal line
① or ② to mount contactor
①: (55 to) 60 × 90 ②: (54 to) 60 × 90



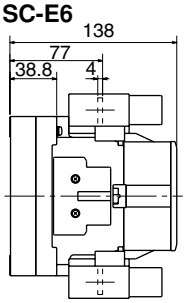
*1 In case of aux. contact 4NO+4NC

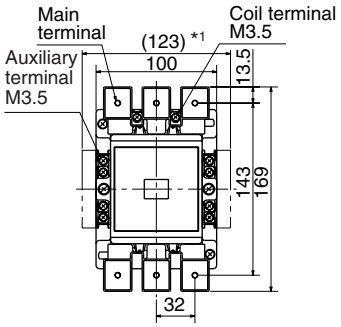
02

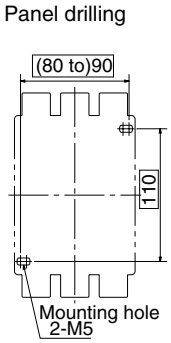
■ Dimensions, mm

• Non-reversing/AC operated

SC-E6

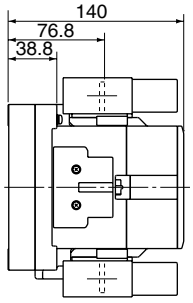


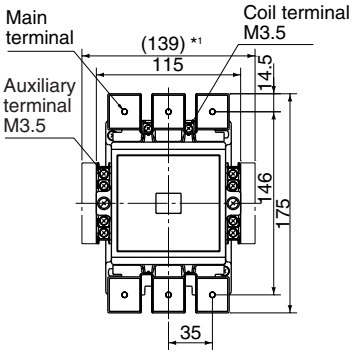


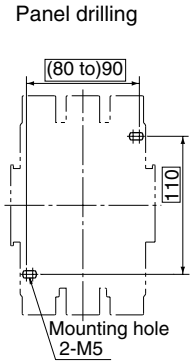


Mass: 2.55kg

SC-E7



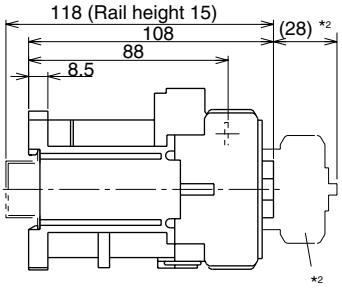


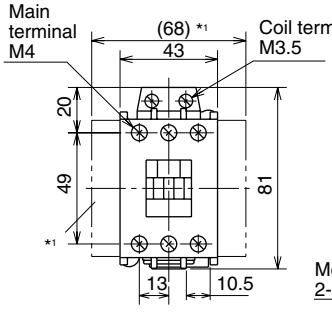


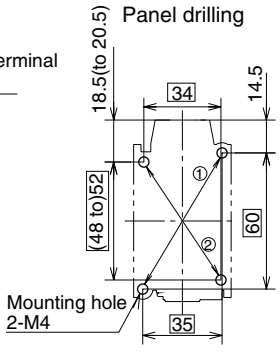
Mass: 2.86kg

• Non-reversing/DC operated

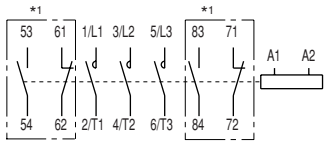
SC-E02/G, E03/G, E04/G, E05/G







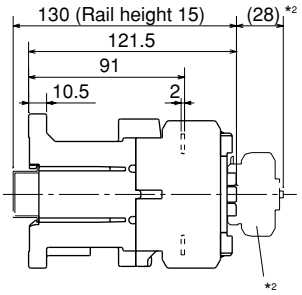
Use the two mounting holes on a diagonal line
① or ② to mount contactor
①: 35 × 60 ②: 34 × (48 to) 52

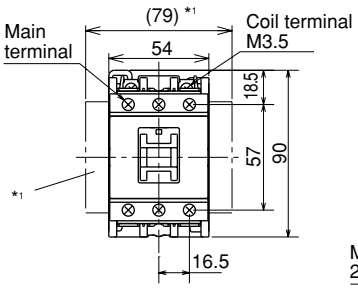


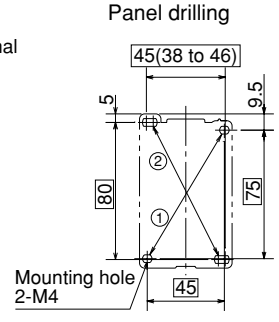
*1 In case of aux. contact 2NO+2NC

Mass: 0.59kg

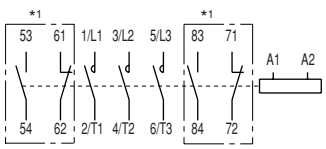
SC-E1/G, E2/G, E2S/G







Use the two mounting holes on a diagonal line
① or ② to mount contactor
①: 45×75 ②: 45 (38 to 46)×80

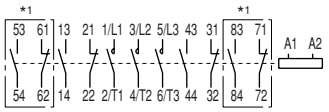


*1 In case of aux. contact 2NO+2NC

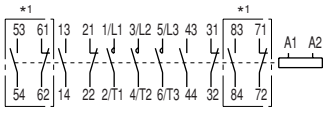
Mass: 0.79kg

*1 Side mounting aux. contact block
*2 Front mounting aux. contact block

■ Wiring diagrams



*1 In case of aux. contact 4NO+4NC

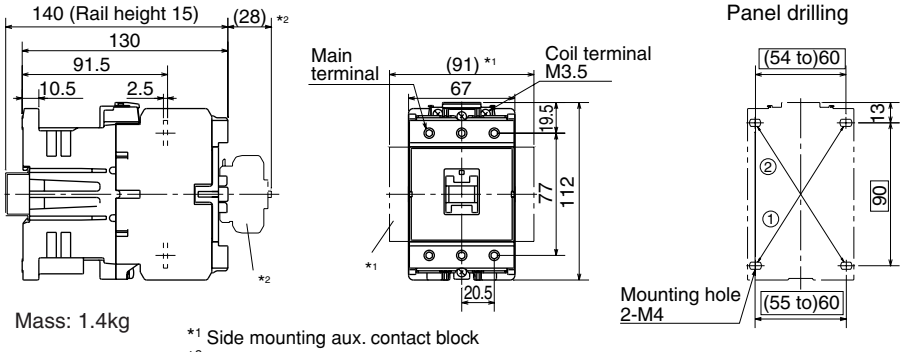


*1 In case of aux. contact 4NO+4NC

SC-E series
Dimensions

■ Dimensions, mm

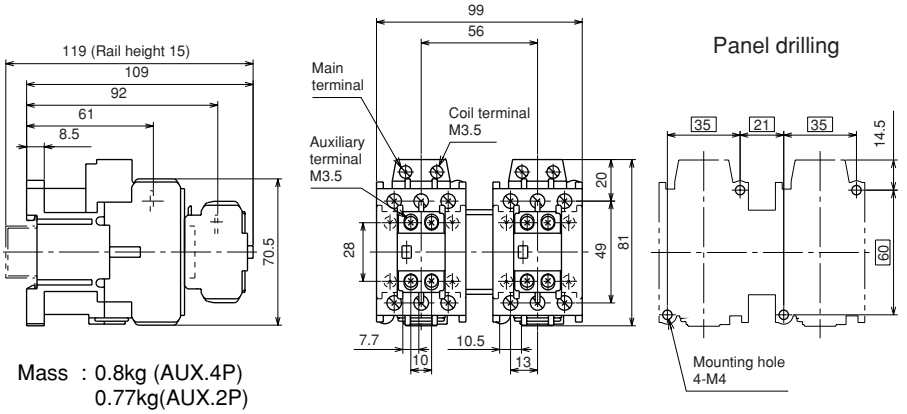
• Non-reversing/DC operated
SC-E3/G, E4/G



Mass: 1.4kg

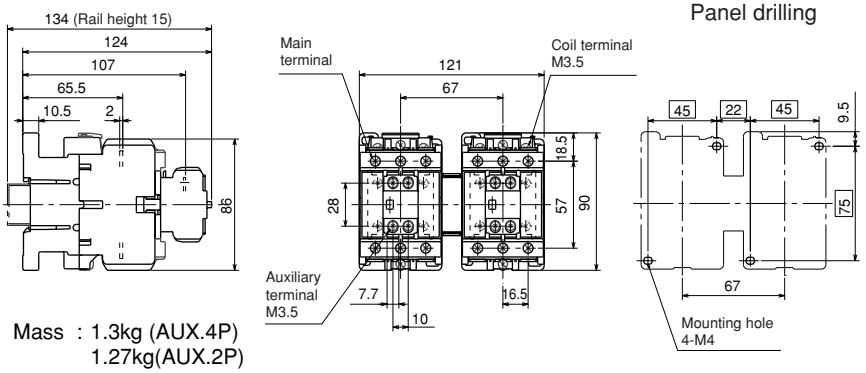
*1 Side mounting aux. contact block
*2 Front mounting aux. contact block

• Reversing/AC operated
SC-E02RM, E03RM, E04RM, E05RM



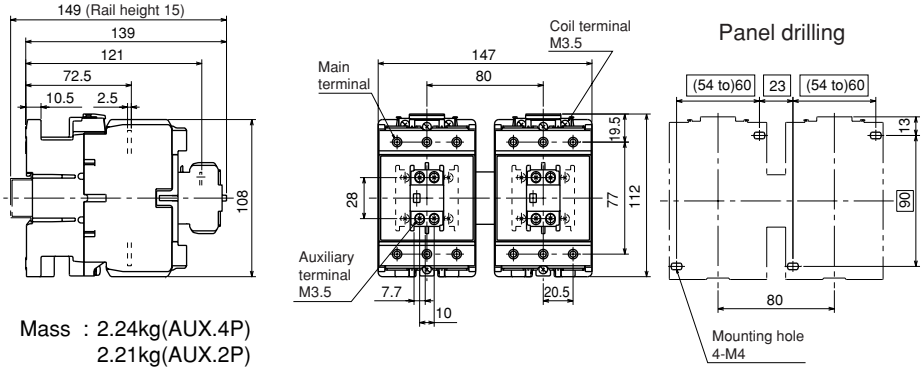
Mass : 0.8kg (AUX.4P)
0.77kg(AUX.2P)

SC-E1RM, E2RM, E2SRM



Mass : 1.3kg (AUX.4P)
1.27kg(AUX.2P)

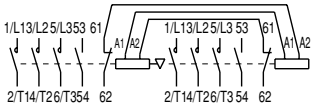
SC-E3RM, E4RM



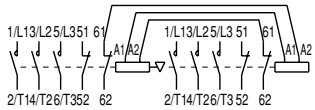
Mass : 2.24kg(AUX.4P)
2.21kg(AUX.2P)

■ Wiring diagrams
SC-E02RM to E4RM

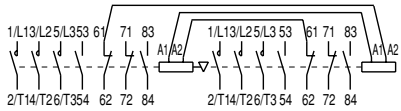
(1NO+1NC) × 2



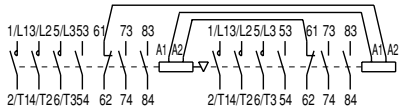
2NC × 2

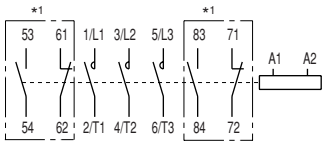


(2NO+2NC) × 2



(3NO+NC) × 2





*1 In case of aux. contact 2NO+2NC

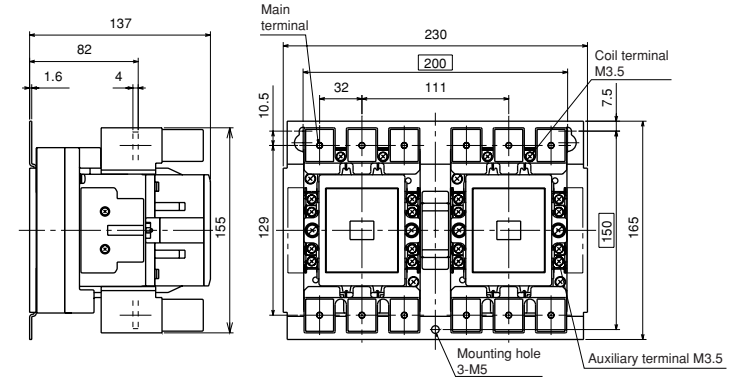
Use the two mounting holes on a diagonal line
① or ② to mount contactor
①: (55 to) 60 × 90 ②: (54 to) 60 × 90

02

■ Dimensions, mm

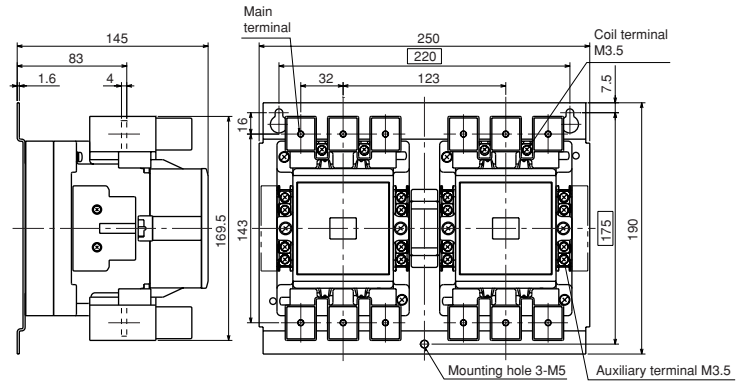
• Reversing/AC operated

SC-E5RM



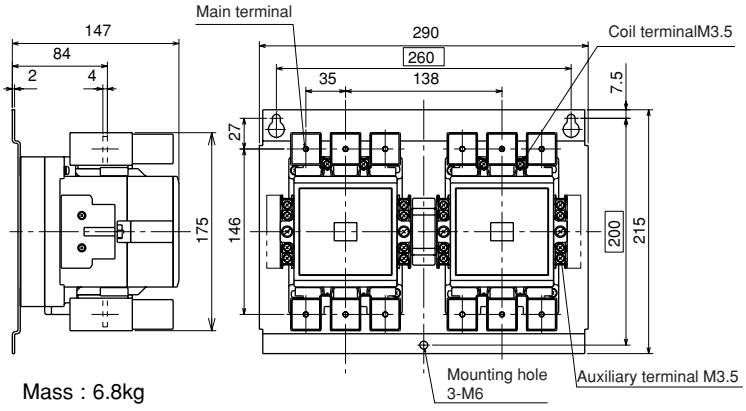
Mass : 4.64kg

SC-E6RM



Mass : 5.8kg

SC-E7RM

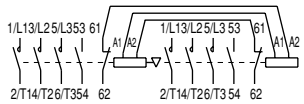


Mass : 6.8kg

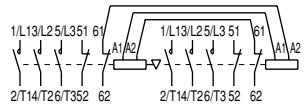
■ Wiring diagrams

SC-E5RM to E7RM

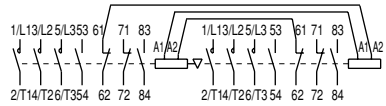
(1NO+1NC) × 2



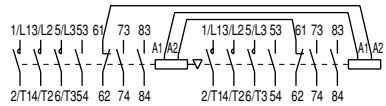
2NC × 2



(2NO+2NC) × 2



(3NO+NC) × 2

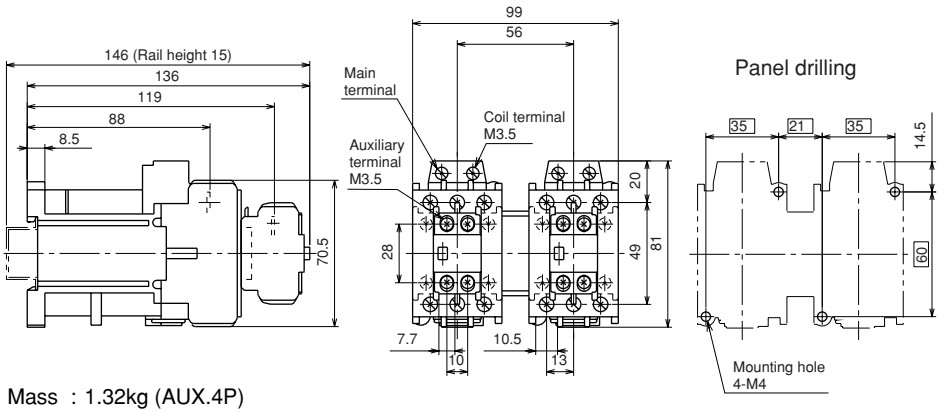


SC-E series
Dimensions

■ Dimensions, mm

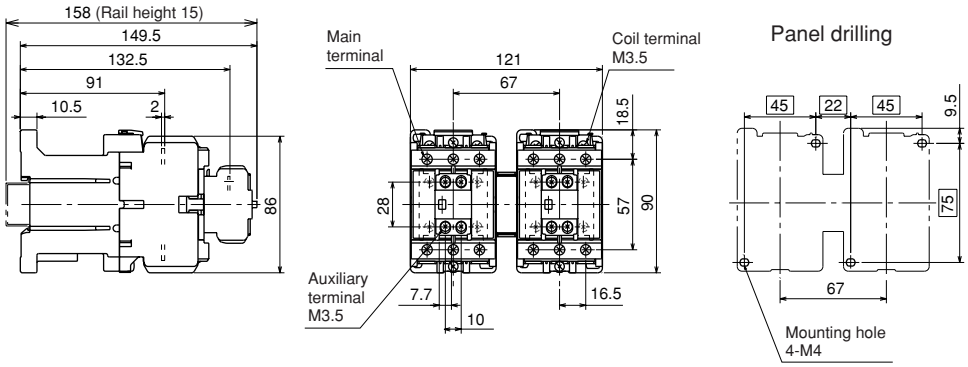
• Reversing/DC operated

SC-02RM/G, 03RM/G, 04RM/G, 05RM/G



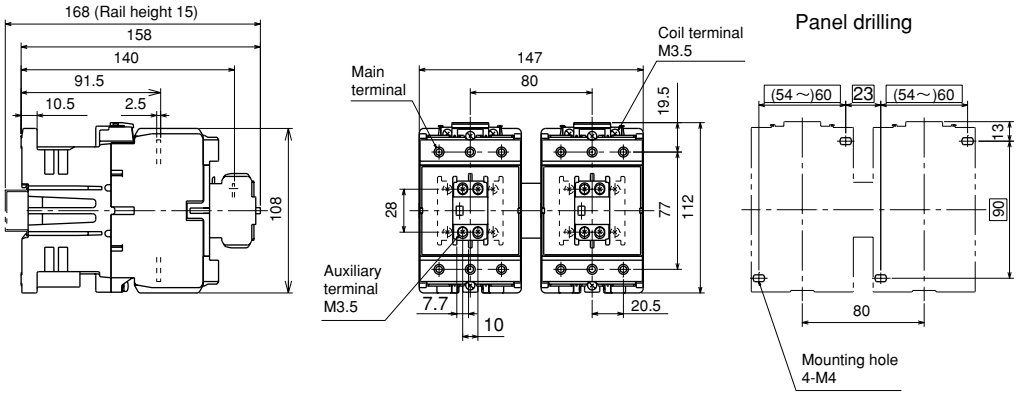
Mass : 1.32kg (AUX.4P)
1.29kg(AUX.2P)

SC-E1RM/G, E2RM/G, E2SRM/G



Mass : 1.72kg (AUX.4P)
1.69kg(AUX.2P)

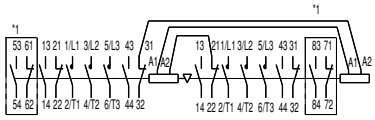
SC-E3RM/G, E4RM/G



Mass : 2.84kg (AUX.4P)
2.81kg(AUX.2P)

■ Wiring diagrams

SC-E5RM to E7RM



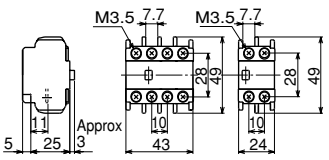
*1 In case of aux. contact (3NO+3NC) × 2

02

■ Dimensions, mm

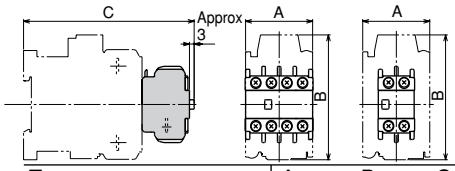
• Auxiliary contact blocks/Front mounting

SZ-A40/T, A31/T, A22/T, A20/T, A11/T, A02/T for SC-E02 to E4



SZ-A40/T, A31/T, A22/T Mass: 36g
SZ-A20/T, A11/T, A02/T Mass: 20g

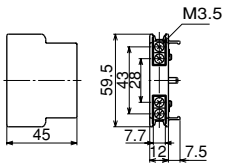
Contactor with aux. contact block



Type	A	B	C
SC-E02, E03, E04, E05	43	81	109
SC-E1, E2, E2S	54	90	124
SC-E3, E4	67	112	139

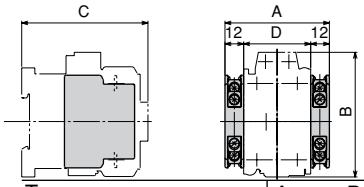
• Auxiliary contact blocks/Side mounting

SZ-AS1/T, for SC-E02 to E4



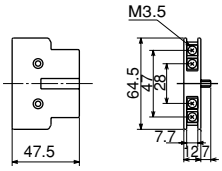
Mass: 28g

Contactor with aux. contact block



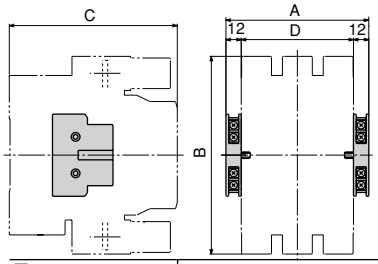
Type	A	B	C	D
SC-E02, E03, E04, E05	68	81	81	43
SC-E1, E2, E2S	79	90	96	54
SC-E3, E4	91	112	111	67

SZ-AS2/T, for SC-E5 to E7



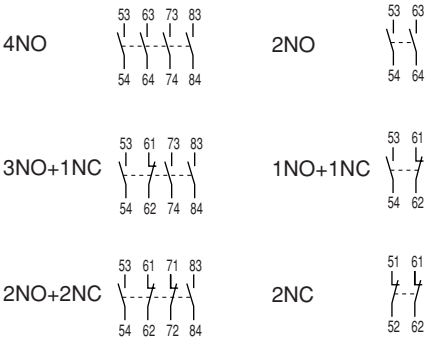
Mass: 33g

Contactor with aux. contact block



Type	A	B	C	D
SC-E5	112	155	132	88
SC-E6	123	169	138	100
SC-E7	139	175	140	115

■ Wiring diagrams



1NO+1NC

Mounted on right side

Mounted on left side

1NO+1NC

Mounted on right side

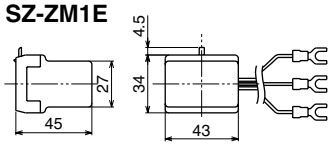
Mounted on left side

SC-E series
Dimensions

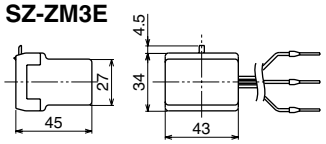
■ Dimensions, mm

• Main circuit surge suppression units

SZ-ZM1E

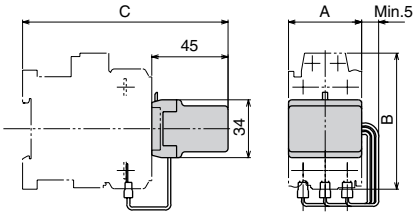


SZ-ZM3E



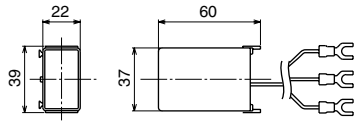
Mass: 60g

Contactor with surge suppression unit

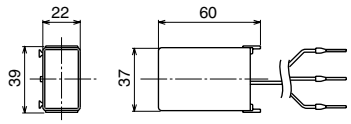


Type	A	B	C
SC-E02+SZ-ZM1E SC-E03+SZ-ZM1E SC-E04+SZ-ZM1E SC-E05+SZ-ZM1E	43	81	121
SC-E1+SZ-ZM3E SC-E2+SZ-ZM3E SC-E2S+SZ-ZM3E	54	90	136
SC-E3+SZ-ZM3E SC-E4+SZ-ZM3E	67	112	151

SZ-ZM2E

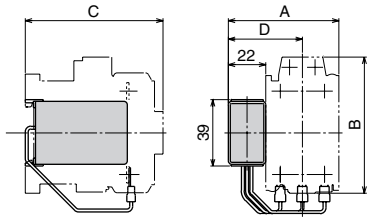


SZ-ZM4E



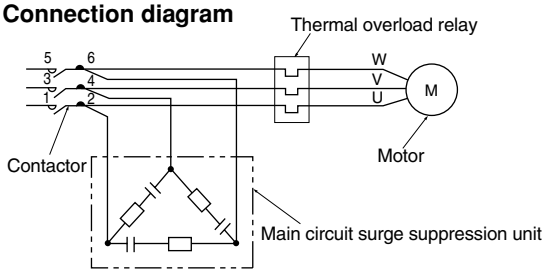
Mass: 60g

Contactor with surge suppression unit



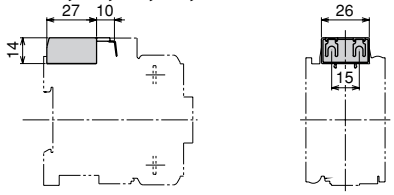
Type	A	B	C	D
SC-E02+SZ-ZM2E SC-E03+SZ-ZM2E SC-E04+SZ-ZM2E SC-E05+SZ-ZM2E SC-E1+SZ-ZM2E	65	81	81	43.5
SC-E2+SZ-ZM4E SC-E2S+SZ-ZM4E	76	90	96	49
SC-E3+SZ-ZM4E SC-E4+SZ-ZM4E	89	112	111	55.5

Connection diagram



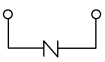
• Coil surge suppression units

SZ-Z1, Z2, Z3, Z4, Z5

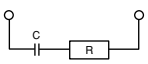


Mass: 14g

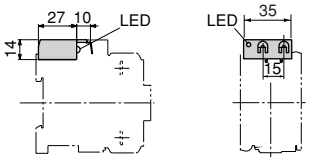
SC-E02 to E05 + SZ-Z1 to Z3
(Built-in varistor)



SC-E02 to E05 + SZ-Z4, Z5
(Built-in CR)

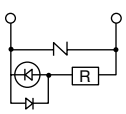


SZ-Z6, Z7, Z8, Z9

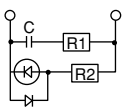


Mass: 16g

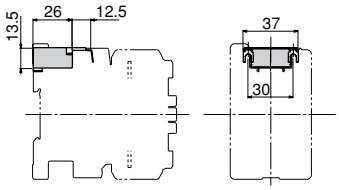
SC-E02 to E05 + SZ-Z6, Z7
(Built-in varistor with operating indicator)



SC-E02 to E05 + SZ-Z8, Z9
(Built-in CR with operating indicator)

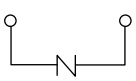


SZ-Z31, Z32, Z33, Z34, Z35, Z36, Z37

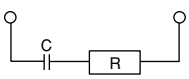


Mass: 15g

SC-E1 to E4 + SZ-Z31 to Z33
(Built-in varistor)



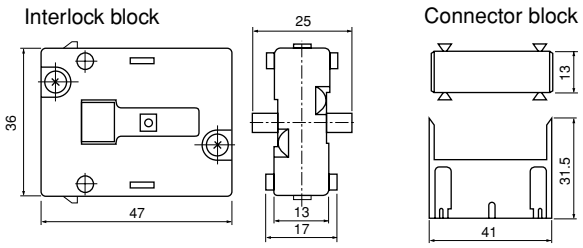
SC-E1 to E4 + SZ-Z34, Z35
(Built-in CR)
SC-E1/G to E4/G + SZ-Z36, Z37
(Built-in CR)



02

■ Dimensions, mm

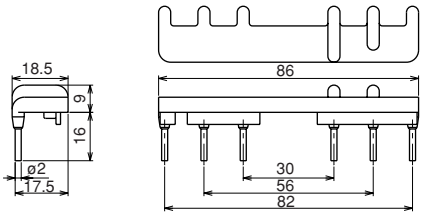
• Mechanical interlock unit
SZ-RM



Mass : 18g

Mass : 4.2g

• Power connection kit for reversing
For crossover wiring/SZ-ERW1/A

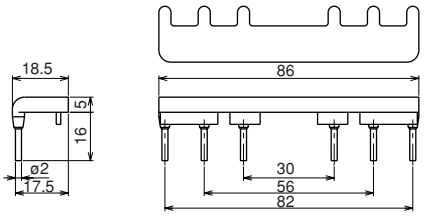


Mass : 19g

Used with	Wiring side	Wiring
SC-E02RM, E03RM, E04RM, E05RM SC-E02RM/G, E03RM/G, E04RM/G, E05RM/G	Line side	

Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor. If the attachment tab is used for assembly to the magnetic contactor, interference by components will make assembly impossible. To assemble using the attachment tab, use the SZ-ERW1/D type power connection kit.

For phase replaceing wiring/SZ-ERW1/B

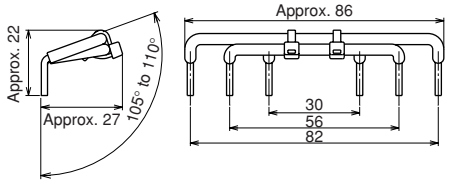


Mass : 17g

Used with	Wiring side	Wiring
SC-E02RM, E03RM, E04RM, E05RM SC-E02RM/G, E03RM/G, E04RM/G, E05RM/G	Load side	

Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor. If the attachment tab is used for assembly to the magnetic contactor, interference by components will make assembly impossible. To assemble using the attachment tab, use the SZ-ERW1/D type power connection kit.

For phase replaceing wiring/SZ-ERW1/D

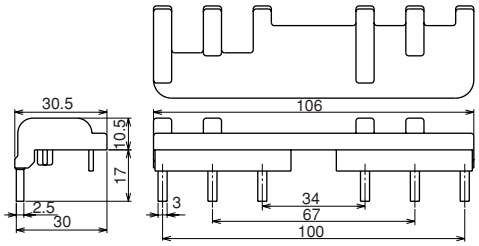


Mass : 13g

Used with	Wiring side	Wiring	Cable
SC-E02RM, E03RM, E04RM, E05RM SC-E02RM/G, E03RM/G, E04RM/G, E05RM/G	Load side		UL No3271 AWG12(Dia. Ø2) Color : Black

Note : Use this connection kit for assembly using the attachment tab of the thermal overload relay.

For crossover wiring/SZ-ERW2/A



Mass : 48g

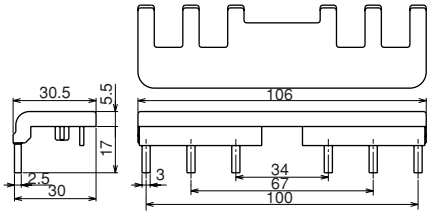
Used with	Wiring side	Wiring
SC-E1RM, E2RM, E2SRM SC-E1RM/G, E2RM/G, E2SRM/G	Line side	

Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor. If the attachment tab is used for assembly to the magnetic contactor, interference by components will make assembly impossible. To assemble using the attachment tab, use the SZ-ERW2/D type power connection kit.

SC-E series
Dimensions

■ Dimensions, mm

For phase replaceing wiring/SZ-ERW2/B

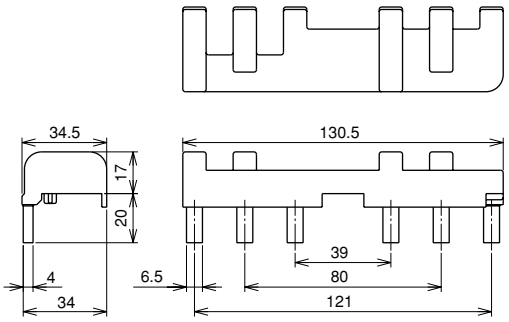


Mass : 42g

Used with	Wiring side	Wiring
SC-E1RM, E2RM, E2SRM SC-E1RM/G, E2RM/G, E2SRM/G	Load side	

Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor. If the attachment tab is used for assembly to the magnetic contactor, interference by components will make assembly impossible. To assemble using the attachment tab, use the SZ-ERW2/D type power connection kit.

For crossover wiring/SZ-ERW3/A

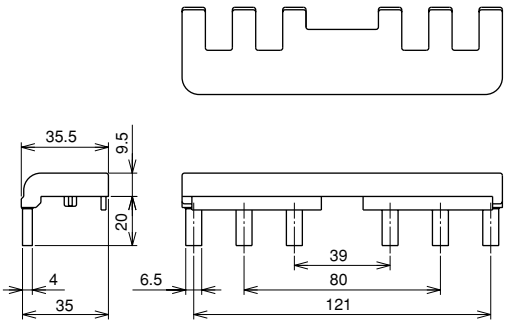


Mass : 162g

Used with	Wiring side	Wiring
SC-E3RM, E4RM SC-E3RM/G, E4RM/G	Line side	

Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor. If the attachment tab is used for assembly to the magnetic contactor, interference by components will make assembly impossible. To assemble using the attachment tab, use the SZ-ERW3/D type power connection kit.

For phase replaceing wiring/SZ-ERW3/B



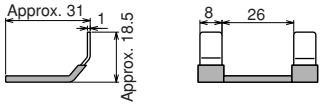
Mass : 138g

Used with	Wiring side	Wiring
SC-E3RM, E4RM SC-E3RM/G, E4RM/G	Load side	

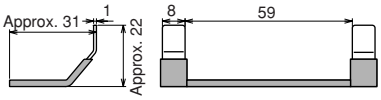
Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor. If the attachment tab is used for assembly to the magnetic contactor, interference by components will make assembly impossible. To assemble using the attachment tab, use the SZ-ERW3/D type power connection kit.

For phase replaceing wiring/SZ-ERW2/D

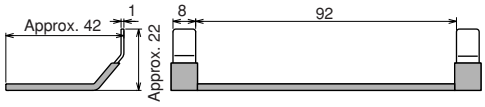
Terminal No. : 6/T3 – 2/T1



Terminal No. : 4/T2 – 4/T2



Terminal No. : 2/T1 – 6/T3



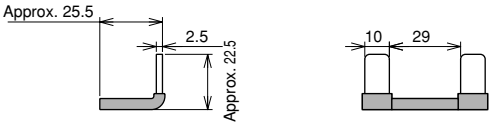
Mass : 31g

Used with	Wiring side	Wiring
SC-E1RM, E2RM, E2SRM SC-E1RM/G, E2RM/G, E2SRM/G	Load side	

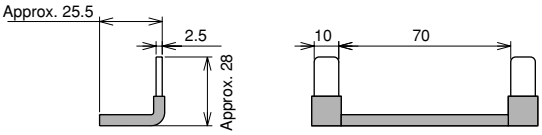
Note : Use this connection kit for assembly using the attachment tab of the thermal overload relay.

For phase replaceing wiring/SZ-ERW3/D

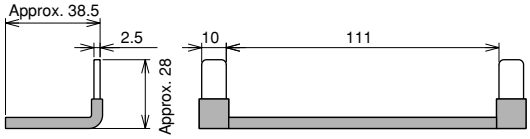
Terminal No. : 6/T3 – 2/T1



Terminal No. : 4/T2 – 4/T2



Terminal No. : 2/T1 – 6/T3



Mass : 110g

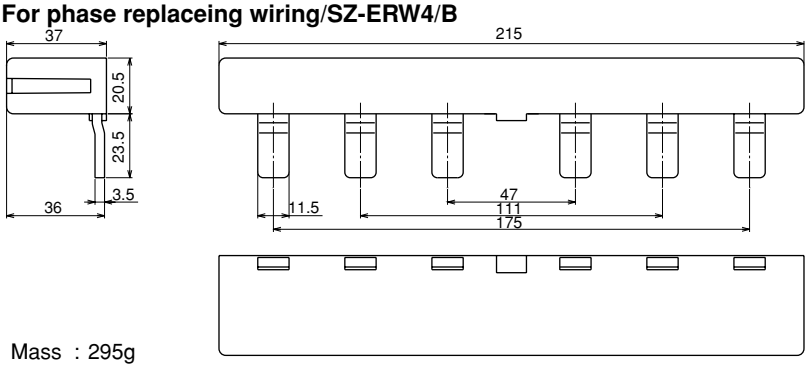
Used with	Wiring side	Wiring
SC-E3RM, E4RM SC-E3RM/G, E4RM/G	Load side	

Note : Use this connection kit for assembly using the attachment tab of the thermal overload relay.

02

■ Dimensions, mm

For crossover wiring/SZ-ERW4/A
For phase replaceing wiring/SZ-ERW4/B

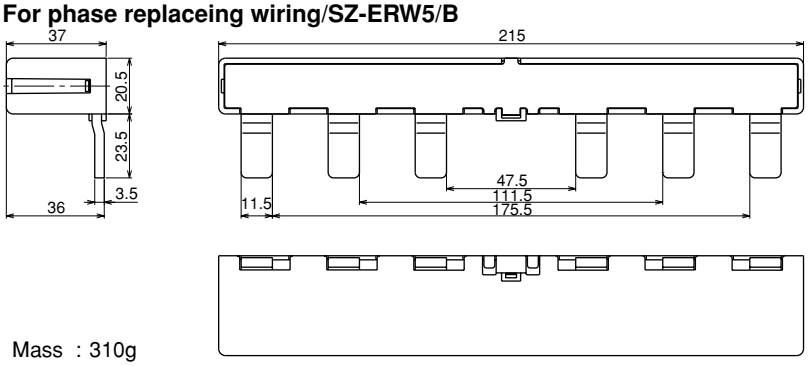


Mass : 295g

Used with	Type	Wiring side	Wiring
SC-E5RM	**SZ-ERW4/A**	Line side	
	SZ-ERW4/B	Load side	

Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor.

For crossover wiring/SZ-ERW5/A
For phase replaceing wiring/SZ-ERW5/B

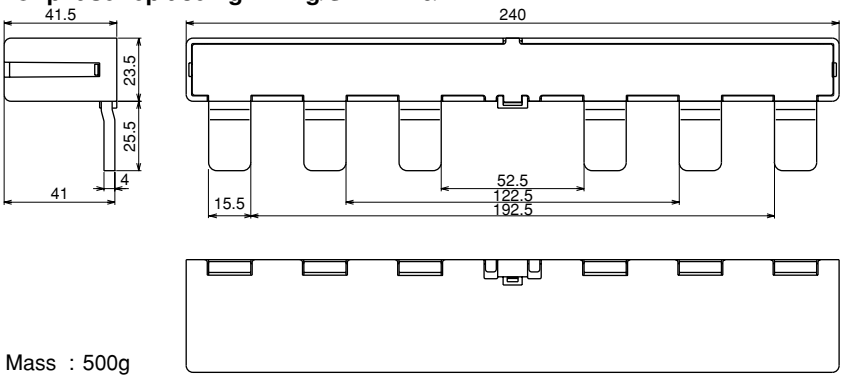


Mass : 310g

Used with	Type	Wiring side	Wiring
SC-E6RM	**SZ-ERW5/A**	Line side	
	SZ-ERW5/B	Load side	

Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor.

For crossover wiring/SZ-ERW6/A
For phase replaceing wiring/SZ-ERW6/B



Mass : 500g

Used with	Type	Wiring side	Wiring
SC-E7RM	**SZ-ERW6/A**	Line side	
	SZ-ERW6/B	Load side	

Note : When using this connection kit, use a separate mounting thermal overload relay to connect to the magnetic contactor.

SC-E series
Operation conditions

■ Standard operating conditions

The magnetic contactors are manufactured for use in the standard operating conditions given in the table at the right. Consult FUJI before using the magnetic contactors in different conditions.

Ambient temperature	Operating: –5 to 55˚C No sudden temperature changes resulting in condensation or icing (The average temperature over a 24-hour period must not exceed 35˚C) Storage: –40 to 65˚C
Humidity	45 to 85%RH
Altitude	2000m or lower
Atmosphere	No excessive dust, smoke, corrosive gases, flammable gases, steam, or salt
Vibration	10 to 55Hz 15m/s^2
Shock	50m/s^2
Mounting	Screw mounting, 35mm IEC top hat rail mounting (SC-E02 to SC-E4)
Mounting angle	
Standard	IEC 60947-4-1, EN 60947-4-1, VDE 0660 JIS C 8201-4-1, UL 508, CSA C22.2 TÜV (EN60947-4-1)

■ Wirings

• Connection wires and terminal processing

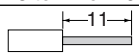
Be sure to perform wiring correctly with reference to the connections diagram. Main terminals for models SC-E02 to SC-E7 are wired using solid wires or stranded wires. Stranded wires or flexible stranded wires can be connected by twisting them together, crimping a sleeve (ferrule) onto them before connecting.

• Tightening torque

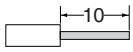
If wires are not tightened sufficiently, they may become hot or come loose and result in a fire, short-circuit, electric shock, or some other potentially dangerous situation. Be sure to tighten the wires to the torques specified in the tables below.

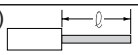
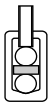
• Connectable wire sizes, tightening tools, tightening torques

Main circuit

Contactor type		SC-E02, SC-E03, SC-E04, SC-E05
Solid wire (mm^2)	One	0.75 to 6
	Two	1 to 4 or 1.5 to 6
Stranded wire (mm^2) *1	One	0.75 to 6
	Two	1 to 4 or 1.5 to 6
AWG	One	18 to 10
	Two	18 to 12 or 16 to 10
Sheath stripping length (mm)		
Terminal screw size		M4
Tool		⊕Phillips screwdriver, H-type, No. 2 (ISO 8764) ⊖Flat-blade screwdriver, 1×5.5×L-type, B (ISO 2830)
Tightening torque (N·m)		1.2 to 1.5

Control circuit

Solid or stranded wire (mm^2)	One	0.75 to 2.5 (ø1 to 1.6)
	Two	0.75 to 1.5 or 1.5 to 2.5
AWG	One	18 to 14
	Two	18 to 14
Sheath stripping length (mm)		
Fork terminal		Max. 7.7mm wide
Terminal screw size		M3.5
Tool		⊕Phillips screwdriver, H-type, No. 2 (ISO 8764) ⊖Flat-blade screwdriver, 1×5.5×L-type, B (ISO 2830)
Tightening torque (N·m)		0.8 to 1

Contactor type			SC-E1, E2, E2S	SC-E3, E4	SC-E5, E6	SC-E7
Top-only connection 	Solid or stranded wire (mm^2) *1		0.75 to 35	1 to 70	2.5 to 70	4 to 120
	Flexible stranded wire with sleeve (mm^2)		0.75 to 25	1 to 50	2.5 to 50	2.5 to 95
	Flexible stranded wire without sleeve (mm^2)		0.75 to 25	1 to 50	2.5 to 50	4 to 95
	AWG		18 to 2	16 to 2/0	12 to 2/0	12 to 250MCM
	Sheath stripping length (mm) 		15	19.5	26.5	28.5
Bottom-only connection 	Solid or stranded wire (mm^2) *1		0.75 to 25	1 to 50	2.5 to 70	4 to 120
	Flexible stranded wire with sleeve (mm^2)		0.75 to 16	1 to 35	2.5 to 50	2.5 to 95
	Flexible stranded wire without sleeve (mm^2)		0.75 to 16	1 to 35	2.5 to 50	4 to 95
	AWG		18 to 3	16 to 1/0	12 to 2/0	12 to 250MCM
	Sheath stripping length (mm) 		12.5	16	26.5	28.5
Top/bottom connection 	Solid or stranded wire (mm^2) *1	Top/bottom	0.75 to 25	1 to 50	2.5 to 70	4 to 120
	Flexible stranded wire with sleeve (mm^2)	Top/bottom	0.75 to 16	1 to 35	2.5 to 50	2.5 to 95
	Flexible stranded wire without sleeve (mm^2)	Top/bottom	0.75 to 16	1 to 35	2.5 to 50	4 to 95
	AWG	Top/bottom	18 to 3	16 to 1/0	12 to 2/0	12 to 250MCM
Tool			⊕Phillips screwdriver, H-type, No. 2 (ISO 8764) ⊖Flat-blade screwdriver, 1×5.5×L-type, B (ISO 2830)	◎Hex. wrench 4 (ISO 2936)		
Tightening torque (N·m)			2.5	8		10
Self-locking torque (N·m) *2			1	2		

Notes: *1 Stranded wire (0 to 35mm^2) consists of 7 wires or less.
Stranded wire (38 to 120mm^2) consists of 19 wires or less.
Flexible stranded wire consists of more number wires than the above.

*2 The tightening bolt must be loosened in order to insert the wire. However, stop loosening the bolt when the anti-drop attachment on the bottom of the bolt reaches the top edge of the terminal. If a torque exceeding that given in the table is applied in this state, the retaining plate may come loose.

• **Connectable wire size and tightening torque (Ring terminal connection type)**

Main circuit

Contactor type	Terminal screw *1	Connectable wire size (mm^2)	Applicable ring terminal max. width (mm) *2 *4	Tightening torque (N·m)
SC-E02P to E05P	M4 ⊕ ◯	1.25 to 6	9.7 (R1.25-4 to R5.5-4)	1.2 to 1.5
SC-E1P to E2SP	M5 ⊕ ◯	2 to 22	12.4 *3 (R2-5 to R22-5)	2.0 to 2.5
SC-E3P, E4P	M6 ⊕ −	2 to 38	16.7 *3 (R2-6 to R38-6)	4.0 to 5.0

Control circuit

Contactor type	Terminal screw *1	Connectable wire size (mm^2)	Applicable ring terminal max. width (mm) *2	Tightening torque (N·m)
	Coil terminal (Contactor)	Coil terminal (Contactor)	Coil terminal (Contactor)	Coil terminal (Contactor)
SC-E02P to E4P	M3.5 ⊕ ◯	1.25 to 2 (1.2 to 2mm dia.)	7.7 (R1.25-3.5 to R2-3.5)	0.8 to 1.0

Note 1 The motor starter has plus-minus shaped terminal screws of ⊕ ◯ (M4, M5).
Note 2 Two wires or two crimp terminals can be connected to each terminal.
Note 3 Use insulation caps to use ring crimp terminals.

*1 ⊕ : Cross-recessed pan-head screw ◯: Non-oriented square washer, turtleback washer
− : Circular bright plain washer ⊕: Cross-recessed hexagonal head bolt

*2 Round crimp terminal JIS C 2805

*3 Use crimp terminals of max. width or less. (Use narrow-width terminals made by crimp terminal manufacturers.)

*4 Use crimp terminal manufacturers' standard models.