

DC Magnetic Contactors

SB series

2-pole DC magnetic contactors

Up to 55kW 220 Volts DC
Operational current up to 290 Amps
220 Volts DC

■ Description

These highly efficient SB series DC magnetic contactors are improved versions of the SC-N series contactors. The magnetic assembly in these improved units is now the SUPER MAGNET so that these contactors will operate on both AC and DC power supplies and power consumption is minimized.

■ Features

- DC motor control
5.5kW to 55kW (at 220V DC)
- Circuit voltage: Max. 550V DC
Rated thermal current: Max. 360A
- A special magnetic blow-out device ensures improved interrupting performance.
- The main contact arrangement is 2NO. 2NO+1NC types are also available. The 1NC is used for Dynamic Brake circuits.

■ Ordering code system

SB 3 5 B A A — 02 E 2 2
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

① Product category

Description	Code
Contactor and starter	S

② Series category

Description	Code
SB series	B

③④ Frame size

Frame size	Code	
	③	④
2N	3	5
5N	8	5
6N	1	C
10N	2	A
11N	2	K

⑤ Version

Description	Code
<u>Non-reversing, open</u> Standard	B
UL approved	1

⑥ Coil specification

Description	Code	
Standard	AC operating coil	A
	Both AC and DC operating coil	B
With SUPER MAGNET	Both AC and DC operating coil	S



- The SUPER MAGNET system permits these contactors to operate on both AC and DC power supplies*.
- Auxiliary contacts can be supplied up to 4NO+4NC arrangement (2NO+2NC for standard products).

Note: * The SB-2N (2NB) operates only on AC. The SB-2N/SE (2NB/SE) is provided with a SUPER MAGNET and operates on both AC and DC power supplies.

JEM 1038

DC2: For shunt-wound motors:

Starting, switching off during running.

The starting current is less than 2.5 times the rated current.

DC4: For series-wound motors:

Starting, switching off during running.

The starting current is less than 2.5 times the rated current.

⑦ Main contact

Contact arrangement	Code
2NO	A
2NO + 1NC	B

⑧ Special main contact (for SB35□□B-)

Main contact	Code
2NC	02
1NO + 2NC	12

⑩⑪ Auxiliary contact

Contact arrangement	Code	
	⑩	⑪
2NO + 2NC	2	2
3NO + 3NC	3	3
4NO + 4NC	4	4

⑨ Coil voltage

● AC coil/SB-2N

Operating coil voltage		Code
50Hz	60Hz	
24V	24 — 26V	E
48V	48 — 52V	C
100V	100 — 110V	1
100 — 110V	110 — 120V	H
110 — 120V	120 — 130V	K
200V	200 — 220V	2
200 — 220V	220 — 240V	M
220 — 240V	240 — 260V	P
346 — 380V	380 — 420V	S
380 — 400V	400 — 440V	4
415 — 440V	440 — 480V	T
480 — 500V	500 — 550V	5

● AC and DC coil/SB-2N/SE, 5N to 11N

Operating coil voltage		Code
AC 50/60Hz	DC	
24 — 25V	24V	E
48 — 50V	48V	F
100 — 127V	110 — 110V	1
200 — 250V	200 — 220V	2
265 — 347V	—	3
380 — 450V	—	4
460 — 575V	—	5

■ Types and ratings

Max. motor capacity (kW)			Rated operational current (A)			Rated thermal current (A)	Auxiliary contact		With 2NO main contacts		With 2NO+1NC* main contacts	
110V	220V	440V	110V	220V	440V		NO	NC	Type	Ordering code	Type	Ordering code
3.7	5.5	7.5	40	35	25	60	2	2	SB-2N	SB35BAA-■22	SB-2NB	SB35BAB-21■22
3.7	5.5	7.5	40	35	25	60	2	2	SB-2N/SE	SB35BSA-■22	SB-2NB/SE	SB35BSB-21■22
7.5	15	22	85	85	60	120	2	2	SB-5N	SB85BBA-■22	SB-5NB	SB85BBB-■22
11	22	30	125	120	80	160	2	2	SB-6N	SB1CBBA-■22	SB-6NB	SB1CBBB-■22
22	37	45	240	200	120	270	2	2	SB-10N	SB2ABBA-■22	SB-10NB	SB2ABBB-■22
30	55	75	320	290	200	360	2	2	SB-11N	SB2KBBA-■22	SB-11NB	SB2KBBB-■22

Notes: • Conforming to class DC2 and DC4, JEM 1038
 • Auxiliary contact 4NO+4NC is available on request.
 * For SB-2NB and SB-2NB/SE, 2NC or 1NO+2NC main contacts are also available.
 ■: Coil voltage code

■ Auxiliary contact

Type	Rated thermal current (A)	Making and breaking current (AC, A)	Rated operational current (A)					
			AC circuit			DC circuit		
			Volts	AC-15 (ind.)	AC-12 (res.)	Volts	DC-13 (ind.)	DC-12 (res.)
SB-2N to 11N SB-2NB to 11NB	10	60	110V	6	10	24V	10	10
			220V	6	10	48V	3	5
			440V	4	10	110V	1.5	2.5
			550V	2.5	10	220V	0.5	1

Note: For DC-13 (inductive load) time constant is 100ms or less.

■ NC contact ratings

Type	Rated thermal current (A)	Dynamic brake*		
		Making current (A)	Operating cycles per hour	Time rating (sec)
SB-2NB	50	60	600	3
SB-2NB/SE	50	60		
SB-5NB	100	130		
SB-6NB	100	190		
SB-10NB	160	360		
SB-11NB	200	480		

Note: * Braking condition: No voltage

■ Performance data
NO contacts (2-pole in series)

Frame size	Making and braking capacity	Operating cycles per hour	Life expectancy (operations)	
			Electrical	Mechanical
SB-2N to 11N SB-2N/SE SB-2NB to 11NB SB-2NB/SE	4 × Ie	1200	500,000	2.5 million

Ie: Rated operational current

■ Coil ratings

Type	Coil voltage and frequency	Code
2N	100V 50Hz/100 to 110V 60Hz	1
	200V 50Hz/200 to 220V 60Hz	2
	380 to 400V 50Hz/400 to 440V 60Hz	4

Notes: • The standard voltages are 100V, 200V, and 400V.
 • Voltage ranging from 24V to 550V are also available on request.

Type	Coil voltage and frequency		Code
	AC	DC	
2N/SE	24 to 25V 50/60Hz	24V	E
5N	48 to 50V 50/60Hz	48V	F
6N	100 to 127V 50/60Hz	100 to 110V	1
	200 to 250V 50/60Hz	200 to 220V	2
11N	265 to 347V 50/60Hz	—	3
	380 to 450V 50/60Hz	—	4
	460 to 575V 50/60Hz	—	5

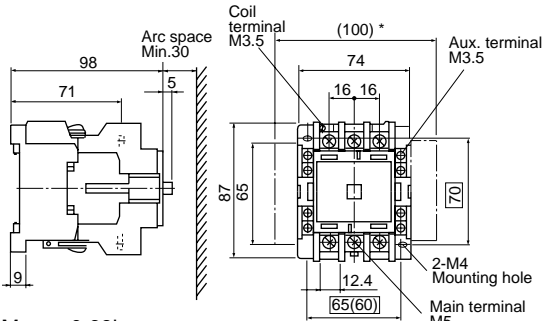
Notes: • The coils can be used for both AC and DC input.
 • The standard voltages are 100V, 200V, and 400V.
 Other voltages are available on request in following range.
 Frame size 2N/SE: 24 to 250V 5N to 10N: 24V to 575V
 11N: 100 to 575V

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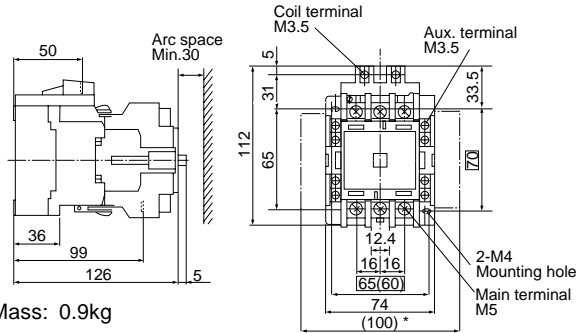
■ Dimensions, mm

SB-2N, SB-2NB



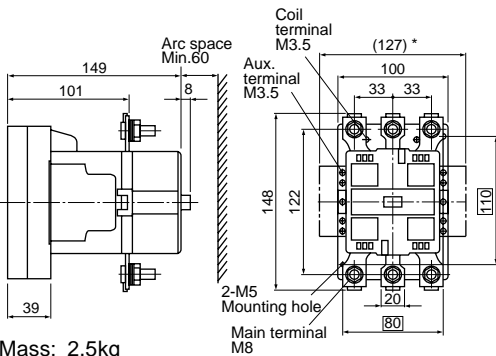
Mass: 0.68kg

SB-2N/SE, SB-2NB/SE



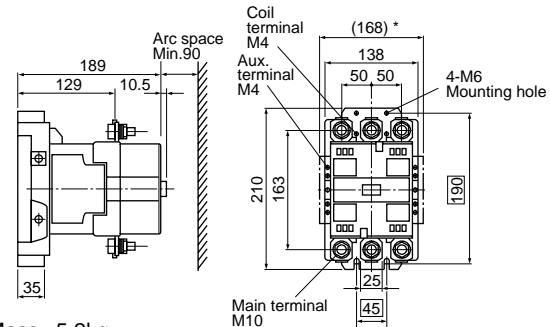
Mass: 0.9kg

SB-5N, SB-5NB, SB-8N, SB-6NB



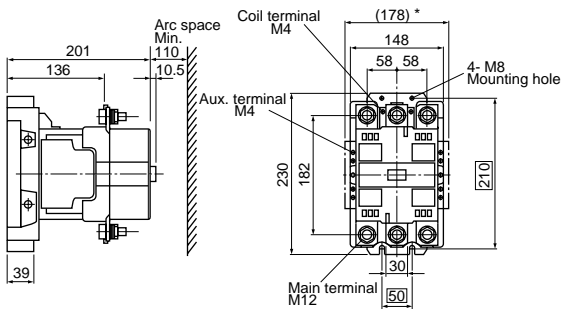
Mass: 2.5kg

SB-10N, SB-10NB



Mass: 5.2kg

SB-11N, SB-11NB



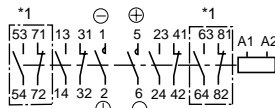
Mass: 6.7kg

Note: * For two side-mounted aux.contact blocks

■ Wiring diagrams

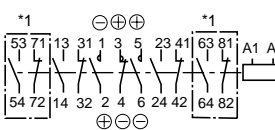
Main contact

2NO



Main contact

2NO+1NC



*1 In case of auxiliary contact 4NO+4NC

■ Ordering information

Specify the following:

1. Type number or ordering code

■ Handling notes

1. The main contacts are marked for positive and negative polarities. Do not confuse the polarities when connecting.
2. Be sure to install the contactors upright.
3. Allow adequate arcing space.

