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■ Ratings

Conforming to IEC 60947-4-1, EN 60947-4-1, VDE 0660

Contactor Type	Starter Type	Max. motor capacity (kW) 200V | 240V	380V | 440V	500V | 550V	600V | 660V	Rated operational current (A) 200V | 240V	380V | 440V	500V | 550V	600V | 660V	Thermal current (A) *1
SC-03	**SW-03/3H**	2.5	4	4	4	11	9	7	5	20
SC-0	**SW-0/3H**	3.5	5.5	5.5	5.5	13	12	9	7	20
SC-05	**SW-05/3H**	3.5	5.5	5.5	5.5	13	12	9	7	20
SC-4-0	**SW-4-0/3H**	4.5	7.5	7.5	7.5	18	16	13	9	25
SC-4-1	**SW-4-1/3H**	5.5	11	11	7.5	22	22	17	9	32
SC-5-1	**SW-5-1/3H**	5.5	11	11	7.5	22	22	17	9	32
SC-N1	**SW-N1/3H**	7.5	15	15	11	32	32	24	15	50
SC-N2	**SW-N2/3H**	11	18.5	18.5	15	40	40	29	19	60
SC-N2S	**SW-N2S/3H**	15	22	25	22	50	50	38	26	80
SC-N3	**SW-N3/3H**	18.5	30	37	30	65	65	60	38	100
SC-N4	**SW-N4/3H**	22	40	37	37	80	80	60	44	135
SC-N5	**SW-N5/3H**	30	55	55	55	105	105	85	64	150
SC-N6	**SW-N6/3H**	37	60	60	60	125	125	90	72	150
SC-N7	**SW-N7/3H**	45	75	75	90	150	150	120	103	200
SC-N8	**SW-N8/3H**	55	90	130	132	180	180	180	150	260
SC-N10	**SW-N10/3H**	65	110	132	132	220	220	200	150	260
SC-N11	**SW-N11/3H**	90	160	160	200	300	300	230	230	350
SC-N12	**SW-N12/3H**	120	220	250	300	400	400	360	360	450
SC-N14	**SW-N14/3H**	180	315	400	480	600	600	600	600	660
SC-N16	–	220	440	500	500	800	800	720	630	800

Note: *1 The values are applied to contactors.

■ Making and breaking capacities

Utilization category	Typical applications	IEC 60947-4-1, EN 60947-4-1, VDE 0660, JIS C 8201-4-1					
		Making and breaking Ic/Ie	Ur/Ue	cosø or L/R	Making I/Ie	U/Ue	cosø or L/R
AC-1	Non-inductive or slightly inductive loads, resistance furnaces	1.5	1.05	0.8	1.5	1.05	0.8
AC-2	Slip-ring motors: Starting, switching off	4.0	1.05	0.65	4.0	1.05	0.65
AC-3	Squirrel-cage motors: Ie 100A	8.0	1.05	0.45	10	1.05	0.45
	Starting, switching off duling running Ie > 100A	8.0	1.05	0.35	10	1.05	0.35
AC-4	Squirrel-cage motors: Ie 100A	10	1.05	0.45	12	1.05	0.45
	Starting, plugging, inching Ie > 100A	10	1.05	0.35	12	1.05	0.35
AC-5a	Switching of electric discharge lamp controls	3.0	1.05	0.45	3.0	1.05	0.45
AC-5b	Switching of incandescent lamps	1.5	1.05	*	1.5	1.05	*

Note: *Test to be carried out with an incandescent lamp load.
Ie: Rated operational current Ue: Rated operational voltage I: Current made
U: Voltage before make Ur: Recovery voltage Ic: Current broken

■ Auxiliary contact ratings

Conforming to IEC 60947-5-1, EN 60947-5-1, VDE 0660

Type	Continuous currnet (A)	Make and break capacity at AC (A)	Rated operational current (A) AC Voltage (V)	AC-15 (Ind.load)	AC-12 (Res.load)	DC Voltage (V)	DC-13 (Ind.load)	DC-12 (Res.load)	Minimum voltage and current
SC-03 to SC-N12	10	60	100–120	6	10	24	3	5	5V 3mA
		30	200–240	3	8	48	1.5	3	
		15	380–440	1.5	5	110	0.55	2.5	
		12	500–600	1.2	5	220	0.27	1	
SC-N14 to SC-16N	10	60	100–120	6	10	24	5	10	24V 10mA
		60	200–240	6	10	48	1.5	5	
		40	380–440	4	10	110	0.55	2.5	
		25	500–600	2.5	10	220	0.27	1	

■ Inching and plugging operations (Conforming to IEC 60947-4-1)

In applications where inching and plugging operations are included the contact wear will be increased. Therefore, it is necessary to select ones having larger frame sizes than in standard applications so as to minimize the needs of maintenance and replacement.

Voltage	Motor ratings Capacity (kW)	Full load current (A)	50% inching operation Electrical durability 100,000 operations	500,000 operations
200V	0.2	1.8	SC-03	SC-03
|	0.4	3.2	SC-03	SC-03
240V	0.75	4.8	SC-03	SC-0, 05
	1.5	8.0	SC-03	SC-4-1, 5-1
	2.2	11.1	SC-4-0	SC-N1
	3.7	17.4	SC-4-1, 5-1	SC-N2
	5.5	26	SC-N1	SC-N3
	7.5	34	SC-N2	SC-N5
	11	48	SC-N2S	SC-N7
	15	65	SC-N4	SC-N8
	18.5	79	SC-N5	SC-N10
	22	93	SC-N6	SC-N11
	30	124	SC-N7	SC-N14
	37	152	SC-N8	SC-N14
	45	180	SC-N10	–
	55	220	SC-N11	–
	75	300	SC-N14	–
380V	0.75	2.4	SC-03	SC-03
|	1.5	4.0	SC-03	SC-03
440V	2.2	5.6	SC-03	SC-4-0
	3.7	8.7	SC-03	SC-4-1, 5-1
	5.5	13	SC-4-0	SC-N1
	7.5	17	SC-4-1, 5-1	SC-N2S
	11	24	SC-N1	SC-N3
	15	32.5	SC-N2	SC-N5
	18.5	39.5	SC-N2S	SC-N6
	22	46.5	SC-N3	SC-N7
	30	62	SC-N4	SC-N8
	37	76	SC-N5	SC-N10
	45	90	SC-N6	SC-N11
	55	110	SC-N8	SC-N12
	75	150	SC-N10	SC-N14
	90	180	SC-N11	–
	110	220	SC-N12	–
	132	264	SC-N14	–
	150	300	SC-N14	–
	160	320	SC-N14	–

Notes: 1. Inching % = $\frac{\text{No. of inching operations}}{\text{Total No. of switching operations}} \times 100\%$

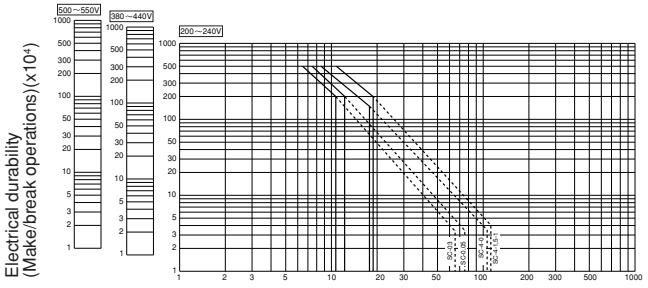
2. Light inching: 50%
Printing machine and similar equipment
Heavy inching: 75 – 100%
Machine tool, hoist and similar equipment (In cases when there are frequent on/off operations involving starting rush current).

■ Standard conditions for operation in service

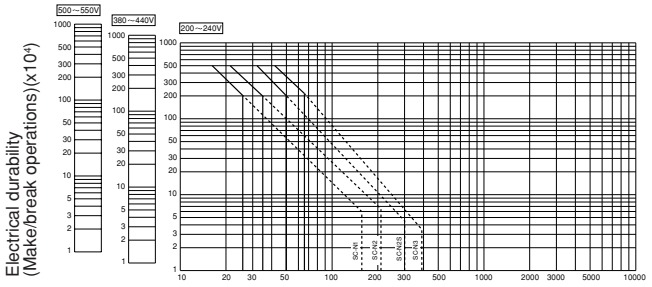
- Temperature range:
  Operating: –5°C to+40°C
  (–5°C to + 55°C inside panel box)
  Storage: –40°C to + 65°C
- Humidity: 45 to 85% RH
- Vibration: 10 to 55Hz, 15m/s^2
- Shock: 50m/s^2
- Altitude: 2000m (6600ft) or lower
- IP40

■ Breaking current and electrical durability

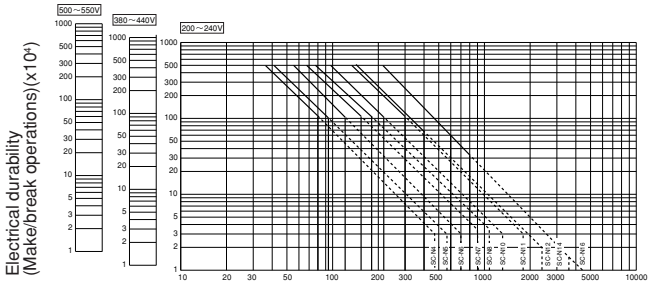
SC-03 to 5-1



SC-N1 to N3

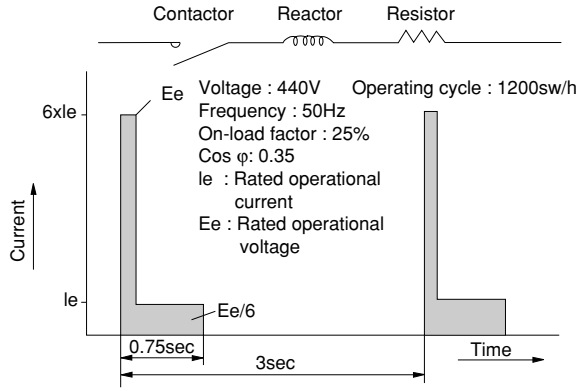


SC-N4 to N16



■ Testing method—Category AC-3

The method of determining the life expectancy and performance is prescribed by IEC as below.



A current equal to six times that of the rated operational current of the starter is applied to the terminals the switch is closed and the current immediately reduced to the rated operational current and then interrupted.

■ Performance data

Frame size	Making capacity I/Ie	Breaking capacity I/Ie	Operating cycles per hour	Voltage	Durability (operations) Electrical *	Mechanical
03, 0, 05	12	10	1,800	200/240V AC 380/440V AC	2 million	10 million
4-0	12	10	1,800	200/240V AC 380/440V AC	1.5 million	10 million
4-1, 5-1	12	10	1,800	200/240V AC 380/440V AC	2 million	10 million
N1 to N3	12	10	1,200	200/240V AC 380/440V AC	2 million	10 million (N1, N2) 5 million (N2S, N3)
N4 to N11	12	10	1,200	200/240V AC 380/440V AC	1 million	5 million
N12, N14	12	10	1,200	200/240V AC 380/440V AC	500,000	5 million
N16	12	10	1,200	200/240V AC 380/440V AC	250,000	2.5 million

Ie: Rated operational currnet. I: Making or breaking current * For delails, refer to page 01/29

■ Coil voltage

● Frame size 03 to N4

Frame size	Coil operating voltage and frequency (AC)	Order voltage	Coil voltage code	Identificaiton by coil color	Wiring
03	24V 50Hz/24–26V 60Hz	AC24V	**E**	White	
0	48V 50Hz/48–52V 60Hz	AC48V	**F**	White	
05	100V 50Hz/100–110V 60Hz	AC100V	**1**	Green (Standard voltage)	
4-0	100–110V 50Hz/110–120V 60Hz	AC110V	**H**	White	
4-1	110–120V 50Hz/120–130V 60Hz	AC120V	**K**	White	
5-1	200V 50Hz/200–220V 60Hz	AC200V	**2**	Yellow (Standard voltage)	A1 A2
N1	200–220V 50Hz/220–240V 60Hz	AC220V	**M**	White	
N2	220–240V 50Hz/240–260V 60Hz	AC240V	**P**	White	
N2S	346–380V 50Hz/380–420V 60Hz	AC380V	**S**	White	
N3	380–400V 50Hz/400–440V 60Hz	AC400V	**4**	Purple (Standard voltage)	
N4	415–440V 50Hz/440–480V 60Hz	AC440V	**T**	White	
	480–500V 50Hz/500–550V 60Hz	AC500V	**5**	White	

Notes: • Other voltages are available in 24 to 600V ranges on request.
• For frame size N1/SE to N4/SE, 24V to 250V AC (24V to 240V DC) is available.
• Use the coil voltage code, not specifying your actual voltage when ordering. Contactors with coil voltage range which corresponds to the voltage code you specified will be shipped from factory.
The above coil operating voltage and frequency (not voltage code) are shown on the products.

● Frame size N5 to N16

Frame size	Coil operating voltage and frequency AC	Coil operating voltage and frequency DC	Order voltage	Coil voltage code	Identificaiton by coil color	Wiring
N5	24–25V 50/60Hz	24V	AC24V *3	**E**	White	
N6	48–50V 50/60Hz	48V	AC48V *3	**F**	White	
N7	100–127V 50/60Hz	100–120V *1	AC100V	**1**	Green (Standard voltage)	A1 A2
N8						
N10	200–250V 50/60Hz	200–240V *2	AC200V	**2**	Yellow (Standard voltage)	
N11	265–347V 50/60Hz	–	AC300V	**3**	White	
N12	380–450V 50/60Hz	–	AC400V	**4**	Purple (Standard voltage)	
N14	460–575V 50/60Hz	–	AC500V	**5**	White	
N16						

Notes: • The coils are AC/DC common use (rated voltage 200V or less)
• Standard rated voltages are 100V, 200V and 400V.
Other voltages are available in 24V to 575V AC (24V to 240V DC) in frame size N5 to N12, also available in 100V to 575V AC (100V to 240V DC) in frame size N14 to N16.
• Use the coil voltage code, not specifying your actual voltage when ordering. Contactors with coil voltage range which corresponds to the voltage code you specified will be shipped from factory.
The above coil operating voltage and frequency (not voltage code) are shown on the products.
*1 The coil voltage from a DC power supply with single phase full-wave rectification will be 100 to 110 V.
*2 The coil voltage from a DC power supply with single phase full-wave rectification will be 200 to 220 V.
*3 The coil voltage 24V and 48V are not available in frame size N14 to N16.

■ Coil characteristics

● Frame size 03 to N4

Frame size	Power consumption Inrush (VA)	Sealed (VA)	Watt loss (W) 200V 50Hz	220V 60Hz	Pick-up voltage (V) 200V 50Hz	220V 60Hz	Drop-out voltage (V) 200V 50Hz	220V 60Hz	Operating time (ms) Coil ON→ Contact ON	Coil OFF→ Contact OFF
03	95	9	2.7	2.8	105–125	116–136	70–98	80–110	9–20	5–16
0	95	9	2.7	2.8	105–125	116–136	70–98	80–110	9–20	5–16
05	95	9	2.7	2.8	105–125	116–136	70–98	80–110	9–20	5–16
4–0	95	9	2.7	2.8	118–136	130–146	75–106	88–120	9–20	5–16
4–1	95	9	2.7	2.8	118–136	130–146	75–106	88–120	9–20	5–16
5–1	95	9	2.7	2.8	118–136	130–146	75–106	88–120	9–20	5–16
N1	135	12.7	3.6	3.8	110–130	120–140	75–105	85–115	10–17	6–17
N2	135	12.7	3.6	3.8	110–130	120–140	75–105	85–115	10–17	6–17
N2S	190	13.4	4.5	5	115–135	130–150	85–110	100–125	10–18	8–18
N3	190	13.4	4.5	5	115–135	130–150	85–110	100–125	10–18	8–18
N4	210	14.4	4.8	5.3	120–140	135–155	70–95	95–120	16–23	7–17

Note: Coil ratings 200V 50Hz, 200 to 220V 60Hz. Operating time is based on 200V 50Hz.

● Frame size N5 to N16, N1/SE to N4/SE (contactor only)

AC operating

Frame size	Power consumption Inrush (VA)	Sealed (VA)	Watt loss (W) 200V 50Hz	220V 60Hz	Pick-up voltage (V) 200V 50/60Hz	Drop-out voltage (V) 200V 50/60Hz	Operating time (ms) Coil ON→ Contact ON	Coil OFF→ Contact OFF
N5	95	4.6	3.2	3.6	140–150	60–100	39–45	27–33
N6	230	5.8	3.4	3.7	140–150	60–100	31–37	30–36
N7	230	5.8	3.4	3.7	140–150	60–100	31–37	30–36
N8	255	6.2	4.7	5.2	140–150	60–100	38–44	31–37
N10	255	6.2	4.7	5.2	140–150	60–100	38–44	31–37
N11	320	6.5	5.6	6	140–150	60–100	43–49	41–47
N12	320	6.5	5.6	6	140–150	60–100	43–49	41–47
N14	460	11	7.8	8.6	140–160	60–100	69–75	56–62
N16	460	11	7.8	8.6	140–160	60–100	69–75	56–62
N1/SE	130	4.2	2.8	3.2	140–150	60–100	21–27	18–24
N2/SE	130	4.2	2.8	3.2	140–150	60–100	21–27	18–24
N2S/SE	160	4.3	2.9	3.3	140–150	60–100	24–30	24–32
N3/SE	160	4.3	2.9	3.3	140–150	60–100	24–30	24–32
N4/SE	95	4.6	3.2	3.6	140–150	60–100	39–45	26–33

Note: Coil ratings 200 to 250V 50/60Hz, 200 to 220V DC. Operating time is based on 200V 50/60Hz.

DC operating

Frame size	Power consumption Inrush (W)	Sealed (W)	Time constant (ms) Sealed	Pick-up voltage (V) 200V DC	Drop-out voltage (V) 200V DC	Operating time (ms) Coil ON→ Contact ON	Coil OFF→ Contact OFF
N5	110	3	1	140–160	40–100	35–41	26–32
N6	275	4	1	140–160	40–100	28–34	27–33
N7	275	4	1	140–160	40–100	28–34	27–33
N8	300	4.5	1	140–160	40–100	33–39	31–37
N10	300	4.5	1	140–160	40–100	33–39	31–37
N11	410	4.6	1	140–160	40–100	38–44	41–47
N12	410	4.6	1	140–160	40–100	38–44	41–47
N14	500	8.8	1	140–160	40–100	64–70	52–57
N16	500	8.8	1	140–160	40–100	64–70	52–57

Note: Coil ratings 200 to 250V 50/60Hz, 200 to 220V DC. Operating time is based on 200V DC.

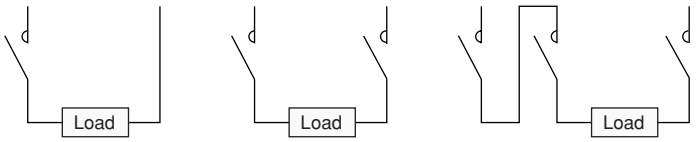
DC applications of magnetic contactors

■ Description

FUJI magnetic contactors in the SC series are normally used in AC circuit applications. However, they may also be used in DC circuits, and in this case their contacts must be connected in series as shown in the diagram.
When used in this manner they will be found to be more economical than using contactors exclusively designed for DC applications. Coils are available for both AC and DC.
If the following ratings are observed the equipment will have an electrical durability of approx. 500,000 operations.

■ Wiring connection

Contacts must be connected in series when the contactors are used in DC applications.



Series contact 1 Series contact 2 Series contact 3

■ Ratings

Type	No. of contacts connected in series	Rated operational current (A)							
		Class DC-1(JEM1038) (Resistive, L/R ≦ 1ms.)				Class DC2, 4,(JEM1038) (DC motor, L/R ≦ 15ms.)			
		24V	48V	110V	220V	24V	48V	110V	220V
SC-03	1	13	13	10	1.2	6	3	2	0.35
	2	13	13	10	6	12	6	4	1.2
	3	15	15	15	15	15	10	8	4
SC-0	1	13	13	10	1.2	6	3	2	0.35
	2	13	13	10	6	12	6	4	1.2
	3	15	15	15	15	15	10	8	4
SC-05	1	13	13	10	1.2	6	3	2	0.35
	2	13	13	10	6	12	6	4	1.2
	3	15	15	15	15	15	10	8	4
SC-4-0	1	16	13	10	1.5	8	6	2	0.35
	2	16	16	12	8	16	12	6	1.5
	3	18	18	18	15	18	18	12	6
SC-4-1	1	20	15	12	2	10	8	3	0.35
	2	20	20	15	10	20	15	8	2
	3	22	22	20	15	22	22	15	8
SC-5-1	1	20	15	12	2	10	8	3	0.35
	2	20	20	15	10	20	15	8	2
	3	22	22	20	15	22	22	15	8
SC-N1	1	25	25	15	2	15	8	3	0.35
	2	25	25	25	20	25	15	8	2
	3	35	35	30	25	35	25	20	8
SC-N2	1	30	30	20	2	20	15	4	0.35
	2	30	30	30	20	30	20	15	3
	3	45	45	40	35	35	30	30	8
SC-N2S	2	60	60	40	20	60	30	20	3.5
	3	60	60	60	40	60	60	60	13
SC-N3	2	80	80	50	20	80	40	20	4
	3	80	80	80	60	80	80	80	20
SC-N4	2	80	80	50	20	80	40	20	4
	3	80	80	80	60	80	80	80	20
SC-N5	2	120	120	80	40	120	80	40	15
	3	120	120	120	120	120	120	120	80
SC-N6	2	120	120	80	40	120	80	40	15
	3	120	120	120	120	120	120	120	80
SC-N7	2	160	160	100	80	160	120	80	40
	3	160	160	160	160	160	160	160	160
SC-N8	2	200	200	160	160	200	160	120	60
	3	200	200	200	200	200	200	200	200
SC-N10	2	200	200	160	160	200	160	120	60
	3	200	200	200	200	200	200	200	200
SC-N11	2	300	300	200	200	300	200	160	80
	3	300	300	300	300	300	300	300	300
SC-N12	2	400	400	330	300	400	300	200	100
	3	400	400	400	400	400	400	400	400
SC-N14	2	600	500	420	300	–	–	–	–
	3	600	600	600	420	–	–	–	–

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