

Specifications of AC Electromagnetic Contactor



Type : SC-N11

1. Application scope

These specifications apply to AC electromagnetic contactor Type SC-N11.

The conformable standards are IEC 60947-4-1 (Electromechanical contactors and motor-starters) and JIS C 8201-4-1 (Electromechanical contactors and motor-starters).

2. Normal service conditions

The electromagnetic contactor shall operate normally without malfunction under the following standard conditions.

Ambient air temperature (near the product in use)	- 5 to +55°C	The average temperature in a day shall not exceed 35°C.
Relative humidity	45 to 85%	There shall be no condensation or freezing due to a sudden temperature change.
Altitude	2000m or less	
Vibration condition	10 to 55Hz, 15m/s ²	
Shock condition	50 m/s ²	The contacts shall not have malfunction.
Atmospheric conditions	There shall not be excessive dust, smoke, inflammable gases, vapor, oil vapor, salinity and corrosive materials in the atmosphere.	
Mounting	Vertical	If necessary, permissive angle is within 30 degrees in front/back or right/left directions.
Storage air temperature	- 40°C to +65°C	There shall be no condensation or freezing due to a sudden temperature change.
Control supply voltage tolerance	80 to 110% of rated control supply voltage Us	

3. Main circuit ratings

3-1. IEC ratings (IEC 60947-4-1)

Rated insulation voltage Ui [V]	Three-phase squirrel-cage induction motor (AC-3)								Conventional free air thermal current Ith [A]
	Rated capacity [kW]				Rated operational current Ie [A]				
	200 to 240V	380 to 440V	500 to 550V	600 to 690V	200 to 240V	380 to 440V	500 to 550V	600 to 690V	
1000	90	160	160	200	300	300	230	230	350

3-2. JIS ratings (JIS C 8201-4-1)

Rated insulation voltage Ui [V]	Three-phase squirrel-cage induction motor (AC-3)						Conventional free air thermal current Ith [A]
	Rated capacity [kW]			Rated operational current Ie [A]			
	200 to 240V	380 to 440V	500 to 550V	200 to 240V	380 to 440V	500 to 550V	
1000	75	150	160	300	300	230	350

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4. Auxiliary circuit ratings

Rated insulation voltage Ui [V]	Conventional free air thermal current Ith [A]	Making and breaking current (AC) [A]	Rated operational voltage(AC) Ue [V]	Rated operational current Ie [A]		Rated operational voltage(DC) Ue [V]	Rated operational current Ie [A]		Minimum voltage/current *
				AC-15 (Inductive load)	AC-12 (Resistive load)		DC-13 (Inductive load)	DC-12 (Resistive load)	
690	10	60	100 to 120	6	10	24	3	5	DC5V, 3mA
		30	200 to 240	3	8	48	1.5	3	
		15	380 to 440	1.5	5	110	0.55	2.5	
		12	500 to 600	1.2	5	220	0.27	1	

Note: * The failure rate is 10^{-7} level in the usual atmosphere where neither dirt nor corrosive gas exists.

5. Performance

5-1. IEC ratings (IEC 60947-4-1)

Rated operational voltage Ue [V]	Rated operational current Ie [A]	Operating frequency [1/h]	Durability [Mill.]	
			Mechanical	Electrical AC-3
220	300	1200	5*	1
440	300			

5-2. JIS ratings (JIS C 8201-4-1)

Rated operational voltage Ue [V]	Rated operational current Ie [A]	Operating frequency [1/h]	Durability [Mill.]		Performance
			Mechanical	Electrical AC-3	
220	300	1200	5*	1	JIS AC-3·1·1-0
440	300				

5-3. Making and breaking current (IEC 60947-4-1, JIS C 8201-4-1)

Rated operational voltage Ue [V]	Making and breaking current [A]	
	Making	Breaking
220	3600	3000
440	3600	3000

Note *: The applied voltage to the coil is 1.1 times of min. rated coil voltage.

(example: The applied voltage is 220V when the range is 200V to 250V.)

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6. Operating characteristics

- 6-1. Closing voltage : Closing operation shall be possible at 80% or less of rated control supply voltage under ambient temperature at 55°C and coil-hot condition.
- 6-2. Drop-out voltage : Opening operation shall be possible between 10% and 65% of rated control supply voltage under ambient temperature at -5°C and coil-cold condition.
- 6-3. Power consumption of operating electromagnetic coil (example)

Power consumption [VA]				Watt loss [W]	
Inrush		Sealed		200V 50Hz	220V 60Hz
200V 50Hz	220V 60Hz	200V 50Hz	220V 60Hz		
240	320	5.7	6.5	5.6	6

Note: The values in above table show the characteristics of the coil which rated coil voltage is AC200-250V 50/60 Hz, DC200-240V under ambient temperature at 20°C and coil-cold condition.

7. Temperature rise

The temperature rise of the parts shall not exceed the values in the following table when applied the conventional free air thermal current to the main circuit and the rated control supply voltage to the coil respectively.

(At the ambient air temperature of 55°C)

Measuring point	Contacts	Terminals	Coil (Resistance method)
Temperature rise [K]	85	50	85

8. Insulation resistance and withstand voltage

- 8-1. Insulation resistance : It measures with a 1000V megger and shall exceed the values in the following table.
- 8-2. Withstand voltage : Withstanding the voltage of the following table at 50 and 60Hz for 5 second.
- 8-3. Rated impulse withstand voltage : Withstanding the voltage of the following table.

Measuring position	Between all circuits and earth (Contact:open/close)	Between main poles (Contact:open/close)	Between main circuits and control/ auxiliary circuit	Between main/ auxiliary circuit and control circuit	Between control circuit and auxiliary circuit (Contact:open/close)
Insulation resistance [MΩ]	100	100	100	100	100
Withstand voltage [V]	2200	2200	2200	2200	1890
Rated impulse withstand voltage Uimp [kV]	8	8	8	8	6

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