



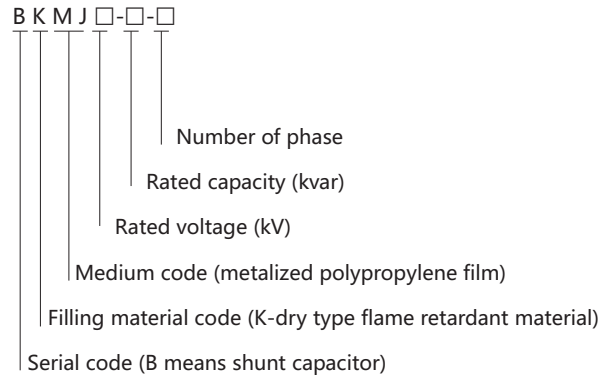
BKMJ Dry Type Low-voltage Shunt Capacitor

1. Scope of Application

BKMJ dry type low-voltage shunt capacitor is applied in nominal voltage 1000V and below power frequency AC power system for the purpose of raising the power factor, reducing the line loss and improving the voltage quality. Filled with dry type flame retardant material; it is safe and reliable with small product size and convenient installation.

Executed standard: IEC/EN 60831-1:2014 IEC/EN 60831-2:2014.

2. Type designation



Note: The split phase compensation capacitor model is the product with suffix YN. For example, BKMJ 0.4-15-3YN means the line voltage is 400V, three-phase aggregate capacity is 15kvar, and the product inside is of star connection, zero conductor N is led out.

3. Operating conditions

- 3.1 Ambient air temperature: -25°C~+50°C (-25/°C), -40°C~+55°C customizable;
- 3.2 Relative humidity: ≤50% at 40°C; ≤90% at 20°C;
- 3.3 Altitude: ≤2000m. When it is higher than 2000m, please increase the capacitor's rated voltage for derating use, and increase the mounting spacing and do well ventilation and heat emission;
- 3.4 Ambient conditions: no harmful gas and steam, no conductive or explosive dust, no violent mechanical vibration.

4. Main Technical Parameters and Technical Performance

- 4.1 Main technical parameters

Main product models and data sheet

Serial number	Type and Specification	Rated voltage (kV)	Rated capacity (kvar)	Rated frequency (Hz)	Rated capacitor (μF)	Rated current (A)	Enclosure height (mm)	Figure
1	BKMJ 0.4-3-3	0.4	3	50	60	4.3	95	Fig.1
2	BKMJ 0.4-5-3	0.4	5	50	99	7.2	95	Fig.1
3	BKMJ 0.4-7.5-3	0.4	7.5	50	149	10.8	120	Fig.1
4	BKMJ 0.4-10-3	0.4	10	50	199	14.4	140	Fig.1
5	BKMJ 0.4-15-3	0.4	15	50	298	21.7	190	Fig.1
6	BKMJ 0.4-16-3	0.4	16	50	318	23.1	190	Fig.1
7	BKMJ 0.4-20-3	0.4	20	50	398	28.9	220	Fig.1
8	BKMJ 0.4-25-3	0.4	25	50	497	36.1	220	Fig.2
9	BKMJ 0.4-30-3	0.4	30	50	597	43.3	250	Fig.2
10	BKMJ 0.4-40-3	0.4	40	50	796	57.7	250	Fig.3
11	BKMJ 0.4-50-3	0.4	50	50	995	72.7	315	Fig.3
12	BKMJ 0.4-60-3	0.4	60	50	1194	86.6	315	Fig.3
13	BKMJ 0.45-3-3	0.45	3	50	47	3.8	95	Fig.1
14	BKMJ 0.45-5-3	0.45	5	50	79	6.4	95	Fig.1
15	BKMJ 0.45-7.5-3	0.45	7.5	50	118	9.6	120	Fig.1
16	BKMJ 0.45-10-3	0.45	10	50	157	12.8	140	Fig.1
17	BKMJ 0.45-15-3	0.45	15	50	236	19.2	190	Fig.1
18	BKMJ 0.45-16-3	0.45	16	50	252	20.5	190	Fig.1
19	BKMJ 0.45-20-3	0.45	20	50	314	25.7	220	Fig.1
20	BKMJ 0.45-25-3	0.45	25	50	393	32.1	220	Fig.2
21	BKMJ 0.45-30-3	0.45	30	50	472	38.5	250	Fig.2
22	BKMJ 0.45-40-3	0.45	40	50	629	51.3	250	Fig.3
23	BKMJ 0.45-50-3	0.45	50	50	786	64.2	315	Fig.3
24	BKMJ 0.45-60-3	0.45	60	50	943	77.0	315	Fig.3
25	BKMJ 0.525-3-3	0.525	3	50	35	3.3	95	Fig.1
26	BKMJ 0.525-5-3	0.525	5	50	58	5.5	95	Fig.1
27	BKMJ 0.525-7.5-3	0.525	7.5	50	87	8.2	120	Fig.1
28	BKMJ 0.525-10-3	0.525	10	50	115	11.0	140	Fig.1
29	BKMJ 0.525-15-3	0.525	15	50	173	16.5	190	Fig.1
30	BKMJ 0.525-16-3	0.525	16	50	185	17.6	190	Fig.1
31	BKMJ 0.525-20-3	0.525	20	50	231	22.0	220	Fig.1
32	BKMJ 0.525-25-3	0.525	25	50	289	27.5	220	Fig.2
33	BKMJ 0.525-30-3	0.525	30	50	346	33.0	250	Fig.2
34	BKMJ 0.525-40-3	0.525	40	50	462	44.0	250	Fig.3
35	BKMJ 0.525-50-3	0.525	50	50	577	55.0	315	Fig.3
36	BKMJ 0.525-60-3	0.525	60	50	693	66.0	315	Fig.3
37	BKMJ 0.69-5-3	0.69	5	50	33	4.2	95	Fig.1
38	BKMJ 0.69-7.5-3	0.69	7.5	50	50	6.3	120	Fig.1
39	BKMJ 0.69-10-3	0.69	10	50	67	8.4	140	Fig.1
40	BKMJ 0.69-15-3	0.69	15	50	100	12.6	190	Fig.1
41	BKMJ 0.69-20-3	0.69	20	50	134	16.7	220	Fig.1
42	BKMJ 0.69-25-3	0.69	25	50	167	20.9	220	Fig.2
43	BKMJ 0.69-30-3	0.69	30	50	201	25.1	250	Fig.2
44	BKMJ 0.69-40-3	0.69	40	50	267	33.5	250	Fig.3
45	BKMJ 0.69-50-3	0.69	50	50	334	41.8	315	Fig.3
46	BKMJ 0.69-60-3	0.69	60	50	401	50.2	315	Fig.3
47	BKMJ 1.20-10-3	1.20	10	50	22	4.8	190	Fig.1
48	BKMJ 1.20-15-3	1.20	15	50	33	7.2	250	Fig.2
49	BKMJ 1.20-20-3	1.20	20	50	44	9.6	250	Fig.2
50	BKMJ 1.20-30-3	1.20	30	50	66	14.4	315	Fig.3
51	BKMJ 1.20-40-3	1.20	40	50	88	19.2	315	Fig.3
52	BKMJ 0.4-5-3YN	0.4	5	50	99	7.6	140	Fig.2*
53	BKMJ 0.4-7.5-3YN	0.4	7.5	50	149	10.8	195	Fig.2*
54	BKMJ 0.4-10-3YN	0.4	10	50	199	14.4	195	Fig.2*
55	BKMJ 0.4-15-3YN	0.4	15	50	298	21.7	250	Fig.2*
56	BKMJ 0.4-20-3YN	0.4	20	50	398	28.9	295	Fig.2*
57	BKMJ 0.4-25-3YN	0.4	25	50	497	36.1	315	Fig.3*
58	BKMJ 0.4-30-3YN	0.4	30	50	597	43.3	315	Fig.3*
59	BKMJ 0.45-5-3YN	0.45	5	50	99	7.6	140	Fig.2*
60	BKMJ 0.45-7.5-3YN	0.45	7.5	50	118	9.6	195	Fig.2*

- Notes: 1. The single-phase product may be custom-made. When rated voltage is lower than 800VAC, the overall dimensions of single-phase product are the same as those of three-phase product with the same specification;
2. System voltage 127V/220V, grid frequency 60Hz, please select the product of rated voltage 0.23kV or 0.25kV, frequency 60Hz;
3. The product with “*” is of split-phase compensation capacitor; the product has four connecting terminals of star connection, in which the isolated terminal is connected with the zero conductor N.

5. Main Features and Precautions for Use

5.1 Main features

- 5.1.1 Advanced import production equipment, good metalized polypropylene film, small product size, reliable quality.
- 5.1.2 Use safety: The product is filled with dry type flame retardant material and installed with the over-pressure protection device and self-discharge device, and is characterized by being free of oil, environmental friendly, corrosion proof, explosion proof, good safety and avoiding the product oil leakage and other hazards.
- 5.1.3 Applicable environment: applicable for all industrial users and places with high fire rating.
- 5.1.4 Convenient installation and use: The plastic mounting feet are first inserted from the bottom, and then the product is fixed and installed using screws; it may be installed vertically or horizontally.
- 5.1.5 BKMJ series products have good materials selected with certain design margin and long use life.
- 5.1.6 The external installing dimensions of BKMJ series products are the same as those of our BZMJ series, easy for product maintenance and replacement.

5.2 Precautions for use

5.2.1 Type selection of three-phase capacitor:

Grid system voltage (V)	Capacitor rated voltage (kV)	User grid frequency 60 Hz
127/220	0.23/0.25	0.25kV-50 Hz or 0.23kV-60Hz product may be selected
220/380	0.4/0.45/0.525	0.45kV/0.525kV-50 Hz or 0.4kV-60Hz product may be selected
660	0.69/0.75	0.75kV-50 Hz or 0.69kV-60Hz product may be selected

5.2.2 Over-voltage and overheating will shorten the capacitor life. At the tropical or high-altitude region, please recommend the selection of products with higher rated voltage according to the grid system voltage.

5.2.3 When the system is installed with the shunt capacitor, it should pay attention to:

- a. Harmonic current amplification is the main cause for capacitor damage. Common harmonic sources include: power electronic devices, frequency converters (energy conservation transformation, such as motor speed control, inverter air conditioner), DC rectifier, inverter, electrolytic plating equipment, electric arc furnace, intermediate frequency furnace, etc. Under the harmonic environment, please refer to the following table for the capacitor type selection and harmonic suppression measures:

Product type selection	Harmonic source power/transformer capacity		
	NLL≤10%	NLL≤20%	20%≤NLL≤40%
Harmonic voltage resultant distortion factor	THDu≤3%	3%<THDu≤5%	THDu>5%
Capacitor rated voltage	0.4kV, 0.45kV	0.45kV, 0.48kV	0.525 kV
Harmonic suppression measures	No need	Proposed series reactor 7%	Proposed series reactor 7% or 14%

Note: The harmonic power ratio NLL means the ratio of the sum of load power generating harmonic to the distribution transformer capacity. When the harmonic power ratio NLL is >40%, it must be installed with CKSG series reactor or take the harmonic suppression measures.

b. In the AC 380V grid system, when the capacitor is in front series connection with the reactor, the capacitor' s rated voltage is selected as follows:

When the reactance ratio of the reactor is 6% or 7%, the capacitor' s rated voltage should have 0.45kV or 0.48kV selected;

When the reactance ratio of the reactor is 12% or 14%, the capacitor' s rated voltage should have 0.525kV selected;

Reactor model selection: The reactor' s rated capacity is calculated according to the formula $QC \times \text{reactance ratio} (\%)$. For example, the capacitor BKMJ0.48-30-3 is equipped with the reactor with 7% of reactance ratio, the model of series reactor is CKSG-2.1/0.48-7%.

c. When the motor is in permanent connection with the shunt capacitor, the capacitor' s running current should be not more than 90% of the motor' s no-load current.

d. When the transformer is of no load, it should ensure the capacitor is out of service to prevent overcompensation.



- 5.2.4 To ensure normal use of the capacitor, the capacitor circuit should have short-circuit, over-pressure, over-current protections and surge current stopping device (like series reactor or CJ19 special switch contactor).
- 5.2.5 To disconnect the capacitor power supply, the short-circuit discharge must be done before it can be contacted or tested.
- 5.2.6 The capacitor terminals and conductors should be in good connection. The current-carrying capacity of the connecting conductor should be 1.43times higher than the capacitor' s rated current.

Product' s rated voltage (kV)	Capacity range (kvar)	Conductor section area (mm ²)
0.4, 0.45	≤10	4.0
0.4, 0.45	12~20	6.0
0.4, 0.45	24~32	10.0
0.4, 0.45	35~50	16.0
0.4, 0.45	60	25.0

- 5.2.7 The capacitor' s top should keep more than 20mm of distance from other components; the capacitor' s mounting spacing should not be less than 30mm, when the altitude is higher than 2000mm, the mounting spacing should not be less than 80mm.
- 5.2.8 When the capacitor is in fault or its life expires, the product' s internal over-pressure protective device will burst, playing a role of explosion protection; in such case, the shell side will slightly bulge, and the capacitor manifests failure. The user is requested to regularly test the capacitor' s operating voltage and operating current to fulfill prompt maintenance or replacement.

6. Outline and Installing Dimensions:

Fig.1

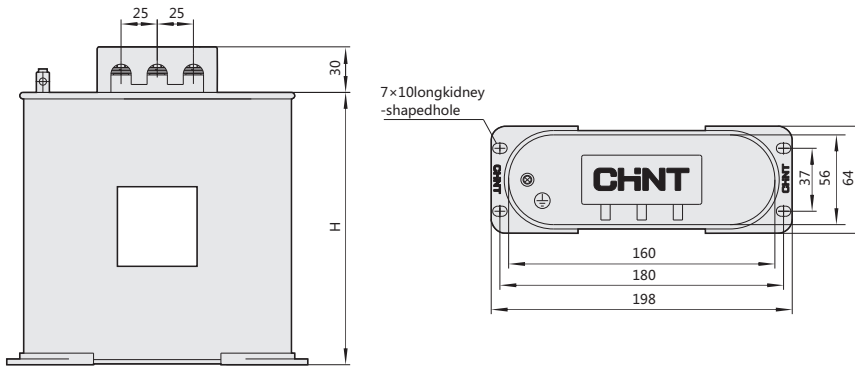


Fig.2

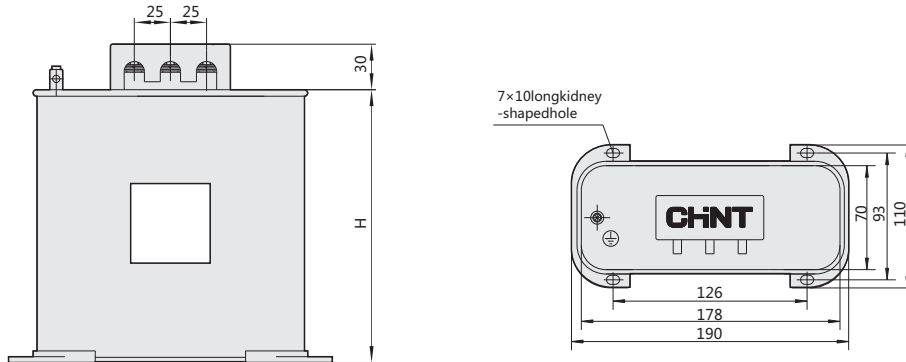
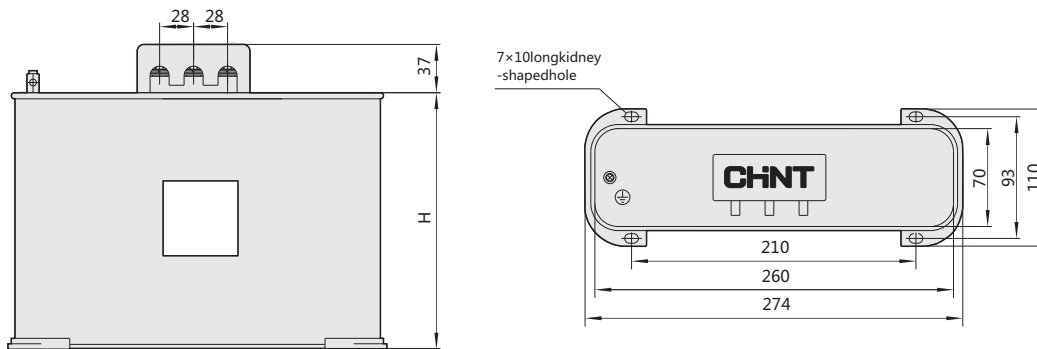


Fig.3



7. Order Instructions

7.1 The user should provide the product' s rated voltage, rated capacity, frequency, number of phases and other parameters.

7.2 The user should provide as much as possible some features of the use place, such as environmental conditions and grid quality.

For example, BKMJ 0.45-30-3 10units

Ordering 10 BKMJ capacitors with rated voltage 450V, rated capacity 30kavr and 3 phases.