

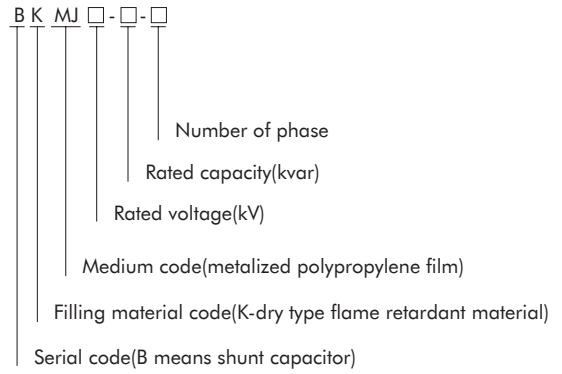


BKMJ Dry Type Low-voltage Shunt Capacitor

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



3. Operating conditions

3.1 Ambient air temperature: $-25\text{ }^{\circ}\text{C} \sim +50\text{ }^{\circ}\text{C}$ ($-25/\text{C}$), $-40\text{ }^{\circ}\text{C} \sim +55\text{ }^{\circ}\text{C}$ customizable;

3.2 Relative humidity: $\leq 50\%$ at $40\text{ }^{\circ}\text{C}$; $\leq 90\%$ at $20\text{ }^{\circ}\text{C}$;

3.3 Altitude: $\leq 2000\text{m}$. 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 Number |
|---------------|------------------------|--------------------|-----------------------|----------------------|----------------------|-------------------|-----------------------|---------------|
| 1 | BKMJ 0.23-1-3 | 0.23 | 1 | 50 60 | 60 50 | 2.5 | 95 | Figure 1 |
| 2 | BKMJ 0.23-3-3 | 0.23 | 3 | 50 60 | 181 151 | 7.5 | 120 | |
| 3 | BKMJ 0.23-5-3 | 0.23 | 5 | 50 60 | 301 251 | 12.6 | 140 | |
| 4 | BKMJ 0.23-6-3 | 0.23 | 6 | 50 60 | 361 301 | 15.1 | 190 | |
| 5 | BKMJ 0.23-7.5-3 | 0.23 | 7.5 | 50 60 | 451 376 | 18.8 | 190 | |
| 6 | BKMJ 0.23-10-3 | 0.23 | 10 | 50 60 | 602 502 | 25.1 | 195 | Figure 2 |
| 7 | BKMJ 0.23-12-3 | 0.23 | 12 | 50 60 | 722 602 | 30.1 | 220 | |
| 8 | BKMJ 0.23-15-3 | 0.23 | 15 | 50 60 | 904 753 | 37.7 | 250 | |
| 9 | BKMJ 0.23-18-3 | 0.23 | 18 | 50 60 | 1084 903 | 45.2 | 295 | |
| 10 | BKMJ 0.23-20-3 | 0.23 | 20 | 50 60 | 1203 1003 | 50.2 | 295 | |
| 11 | BKMJ 0.23-25-3 | 0.23 | 25 | 50 60 | 1505 1245 | 62.8 | 250 | Figure 3 |
| 12 | BKMJ 0.23-30-3 | 0.23 | 30 | 50 60 | 1805 1504 | 75.3 | 315 | |
| 13 | BKMJ 0.25-1-3 | 0.25 | 1 | 50 60 | 51 42 | 2.3 | 95 | Figure 1 |
| 14 | BKMJ 0.25-3-3 | 0.25 | 3 | 50 60 | 153 127 | 6.9 | 120 | |
| 15 | BKMJ 0.25-5-3 | 0.25 | 5 | 50 60 | 255 212 | 11.5 | 140 | |
| 16 | BKMJ 0.25-7.5-3 | 0.25 | 7.5 | 50 60 | 382 318 | 17.3 | 190 | |
| 17 | BKMJ 0.25-10-3 | 0.25 | 10 | 50 60 | 510 424 | 23 | 195 | Figure 2 |
| 18 | BKMJ 0.25-12-3 | 0.25 | 12 | 50 60 | 611 510 | 27.7 | 220 | |
| 19 | BKMJ 0.25-15-3 | 0.25 | 15 | 50 60 | 764 637 | 34.6 | 250 | |
| 20 | BKMJ 0.25-20-3 | 0.25 | 20 | 50 60 | 1019 849 | 46.2 | 295 | |
| 21 | BKMJ 0.25-25-3 | 0.25 | 25 | 50 60 | 1274 1062 | 57.7 | 250 | Figure 3 |
| 22 | BKMJ 0.25-30-3 | 0.25 | 30 | 50 60 | 1529 1274 124 | 69.3 | 315 | |
| 23 | BKMJ 0.4-3-3 | 0.4 | 3 | 50 60 | 59.7 49.8 | 4.3 | 95 | Figure 1 |
| 24 | BKMJ 0.4-5-3 | 0.4 | 5 | 50 60 | 99 82.5 | 7.2 | 95 | |
| 25 | BKMJ 0.4-6-3 | 0.4 | 6 | 50 60 | 119 99 | 8.7 | 120 | |
| 26 | BKMJ 0.4-7.5-3 | 0.4 | 7.5 | 50 60 | 149 124 | 10.8 | 120 | |
| 27 | BKMJ 0.4-10-3 | 0.4 | 10 | 50 60 | 199 166 | 14.4 | 140 | |
| 28 | BKMJ 0.4-15-3 | 0.4 | 15 | 50 60 | 298 248 | 21.7 | 190 | |
| 29 | BKMJ 0.4-16-3 | 0.4 | 16 | 50 60 | 318 265 | 23.1 | 190 | |
| 30 | BKMJ 0.4-18-3 | 0.4 | 18 | 50 60 | 358 299 | 26.0 | 220 | |
| 31 | BKMJ 0.4-20-3 | 0.4 | 20 | 50 60 | 398 332 | 28.9 | 220 | |
| 32 | BKMJ 0.4-25-3 | 0.4 | 25 | 50 60 | 497 414 | 36.1 | 220 | |
| 33 | BKMJ 0.4-30-3 | 0.4 | 30 | 50 60 | 597 498 | 43.3 | 250 | |
| 34 | BKMJ 0.4-40-3 | 0.4 | 40 | 50 60 | 796 663 | 57.7 | 250 | |
| 35 | BKMJ 0.4-50-3 | 0.4 | 50 | 50 60 | 995 829 | 72.7 | 315 | |
| 36 | BKMJ 0.4-60-3 | 0.4 | 60 | 50 60 | 1194 995 | 86.6 | 315 | |
| 37 | BKMJ 0.45-1-3 | 0.45 | 1 | 50 60 | 15.7 13.1 | 1.3 | 95 | Figure 1 |
| 38 | BKMJ 0.45-3-3 | 0.45 | 3 | 50 60 | 47.2 39.3 | 3.8 | 95 | |
| 39 | BKMJ 0.45-5-3 | 0.45 | 5 | 50 60 | 79 65.8 | 6.4 | 95 | |
| 40 | BKMJ 0.45-7.5-3 | 0.45 | 7.5 | 50 60 | 118 98 | 9.6 | 120 | |
| 41 | BKMJ 0.45-10-3 | 0.45 | 10 | 50 60 | 157 131 | 12.8 | 140 | |
| 42 | BKMJ 0.45-15-3 | 0.45 | 15 | 50 60 | 236 197 | 19.2 | 190 | |
| 43 | BKMJ 0.45-16-3 | 0.45 | 16 | 50 60 | 252 210 | 20.5 | 190 | |
| 44 | BKMJ 0.45-18-3 | 0.45 | 18 | 50 60 | 283 236 | 23.1 | 220 | |
| 45 | BKMJ 0.45-20-3 | 0.45 | 20 | 50 60 | 314 262 | 25.7 | 220 | |
| 46 | BKMJ 0.45-25-3 | 0.45 | 25 | 50 60 | 393 328 | 32.1 | 280 | |
| 47 | BKMJ 0.45-30-3 | 0.45 | 30 | 50 60 | 472 393 | 38.5 | 250 | |

| Serial number | Type and Specification | Rated voltage (kV) | Rated capacity (kvar) | Rated frequency (Hz) | Rated capacitor (µF) | Rated current (A) | Enclosure height (mm) | Figure Number |
|---------------|------------------------|--------------------|-----------------------|----------------------|----------------------|-------------------|-----------------------|---------------|
| 48 | BKMJ 0.45-40-3 | 0.45 | 40 | 50 | 629 | 51.3 | 250 | Figure 3 |
| 49 | BKMJ 0.45-50-3 | 0.45 | 50 | 50 | 524 | 64.2 | 315 | |
| 50 | BKMJ 0.45-60-3 | 0.45 | 60 | 50 | 786 | 77.0 | 315 | |
| 51 | BKMJ 0.48-3-3 | 0.48 | 3 | 50 | 41.5 | 3.6 | 95 | Figure 1 |
| 52 | BKMJ 0.48-5-3 | 0.48 | 5 | 50 | 34.6 | 6.0 | 95 | |
| 53 | BKMJ 0.48-7.5-3 | 0.48 | 7.5 | 50 | 69 | 9.0 | 120 | |
| 54 | BKMJ 0.48-10-3 | 0.48 | 10 | 50 | 57.5 | 12.0 | 140 | |
| 55 | BKMJ 0.48-15-3 | 0.48 | 15 | 50 | 104 | 18.0 | 190 | |
| 56 | BKMJ 0.48-16-3 | 0.48 | 16 | 50 | 86.7 | 19.2 | 190 | |
| 57 | BKMJ 0.48-20-3 | 0.48 | 20 | 50 | 138 | 24.0 | 220 | |
| 58 | BKMJ 0.48-25-3 | 0.48 | 25 | 50 | 115 | 30.0 | 220 | Figure 2 |
| 59 | BKMJ 0.48-30-3 | 0.48 | 30 | 50 | 207 | 36.1 | 250 | |
| 60 | BKMJ 0.48-40-3 | 0.48 | 40 | 50 | 173 | 48.1 | 250 | Figure 3 |
| 61 | BKMJ 0.48-50-3 | 0.48 | 50 | 50 | 221 | 60.1 | 315 | |
| 62 | BKMJ 0.48-60-3 | 0.48 | 60 | 50 | 184 | 72.2 | 315 | |
| 63 | BKMJ-0.525-3-3 | 0.48 | 3 | 50 | 277 | 3.3 | 95 | Figure 1 |
| 64 | BKMJ-0.525-5-3 | 0.525 | 5 | 50 | 231 | 5.5 | 95 | |
| 65 | BKMJ-0.525-7.5-3 | 0.525 | 7.5 | 50 | 346 | 8.2 | 120 | |
| 66 | BKMJ-0.525-10-3 | 0.525 | 10 | 50 | 288 | 11.0 | 140 | |
| 67 | BKMJ-0.525-15-3 | 0.525 | 15 | 50 | 415 | 16.5 | 190 | |
| 68 | BKMJ-0.525-16-3 | 0.525 | 16 | 50 | 346 | 17.6 | 190 | |
| 69 | BKMJ-0.525-20-3 | 0.525 | 20 | 50 | 553 | 22.0 | 220 | |
| 70 | BKMJ-0.525-25-3 | 0.525 | 25 | 50 | 461 | 27.5 | 220 | Figure 2 |
| 71 | BKMJ-0.525-30-3 | 0.525 | 30 | 50 | 691 | 33.0 | 250 | |
| 72 | BKMJ-0.525-40-3 | 0.525 | 40 | 50 | 576 | 44.0 | 250 | Figure 3 |
| 73 | BKMJ-0.525-50-3 | 0.525 | 50 | 50 | 829 | 55.0 | 315 | |
| 74 | BKMJ-0.525-60-3 | 0.525 | 60 | 50 | 691 | 66.0 | 315 | |
| 75 | BKMJ 0.69-5-3 | 0.69 | 5 | 50 | 34.7 | 4.2 | 95 | Figure 1 |
| 76 | BKMJ 0.69-7.5-3 | 0.69 | 7.5 | 50 | 28.9 | 6.3 | 120 | |
| 77 | BKMJ 0.69-10-3 | 0.69 | 10 | 50 | 58 | 8.4 | 140 | |
| 78 | BKMJ 0.69-15-3 | 0.69 | 15 | 50 | 48 | 12.6 | 190 | |
| 79 | BKMJ 0.69-20-3 | 0.69 | 20 | 50 | 86.7 | 16.7 | 220 | |
| 80 | BKMJ 0.69-25-3 | 0.69 | 20 | 50 | 72.2 | 20.9 | 220 | |
| 81 | BKMJ 0.69-30-3 | 0.69 | 30 | 50 | 116 | 25.1 | 250 | |
| 82 | BKMJ 0.69-40-3 | 0.69 | 40 | 50 | 96.3 | 33.5 | 250 | Figure 3 |
| 83 | BKMJ 0.69-50-3 | 0.69 | 50 | 50 | 173 | 41.8 | 315 | |
| 84 | BKMJ 0.69-60-3 | 0.69 | 60 | 50 | 144 | 50.2 | 315 | |
| 85 | BKMJ 1.20-10-3 | 1.20 | 10 | 50 | 185 | 4.8 | 190 | Figure 1 |
| 86 | BKMJ 1.20-15-3 | 1.20 | 15 | 50 | 154 | 7.2 | 220 | |
| 87 | BKMJ 1.20-20-3 | 1.20 | 20 | 50 | 231 | 9.6 | 250 | Figure 2 |
| 88 | BKMJ 1.20-30-3 | 1.20 | 30 | 50 | 193 | 14.4 | 250 | |
| 89 | BKMJ 1.20-40-3 | 1.20 | 40 | 50 | 289 | 19.2 | 315 | Figure 3 |
| 90 | BKMJ 0.4-5-3YN | 0.4 | 5 | 50 | 241 | 7.6 | 140 | |
| 91 | BKMJ 0.4-7.5-3YN | 0.4 | 7.5 | 50 | 346 | 10.8 | 195 | Figure 2 |
| 92 | BKMJ 0.4-10-3Y | 0.4 | 10 | 50 | 288 | 14.4 | 195 | |
| 93 | BKMJ 0.4-15-3YN | 0.4 | 15 | 50 | 462 | 21.7 | 250 | |
| 94 | BKMJ 0.4-20-3YN | 0.4 | 20 | 50 | 385 | 28.9 | 295 | |
| 95 | BKMJ 0.4-25-3YN | 0.4 | 25 | 50 | 577 | 36.1 | 315 | Figure 3 |
| 96 | BKMJ 0.4-30-3YN | 0.4 | 30 | 50 | 481 | 43.3 | 315 | |
| 97 | BKMJ-0.45-5-3YN | 0.45 | 5 | 50 | 693 | 7.6 | 140 | Figure 2 |
| 98 | BKMJ-0.45-7.5-3YN | 0.45 | 7.5 | 50 | 578 | 6.4 | 140 | |
| 99 | BKMJ-0.45-10-3YN | 0.45 | 10 | 50 | 99 | 9.6 | 140 | |
| 100 | BKMJ-0.45-15-3YN | 0.45 | 15 | 50 | 79 | 12.8 | 195 | |
| 101 | BKMJ-0.45-16-3YN | 0.45 | 16 | 50 | 118 | 20.5 | 220 | |
| 102 | BKMJ-0.45-20-3YN | 0.45 | 20 | 50 | 157 | 25.7 | 250 | |
| 103 | BKMJ-0.45-25-3YN | 0.45 | 25 | 50 | 252 | 32.1 | 250 | Figure 3 |
| 104 | BKMJ-0.45-30-3YN | 0.45 | 30 | 50 | 314 | 38.5 | 315 | |

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

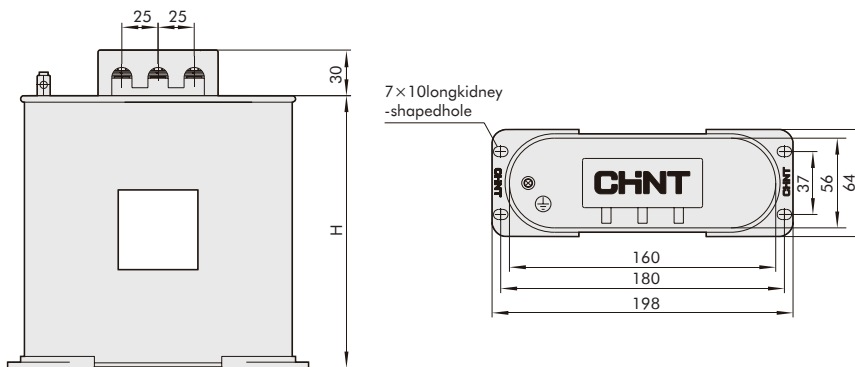


Fig.2

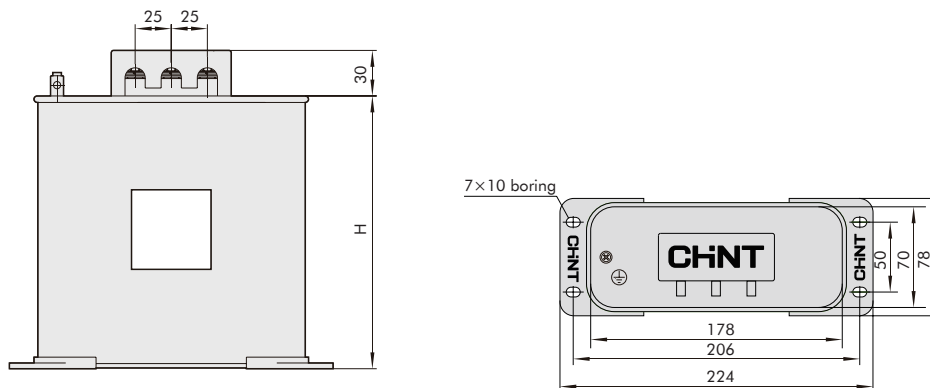
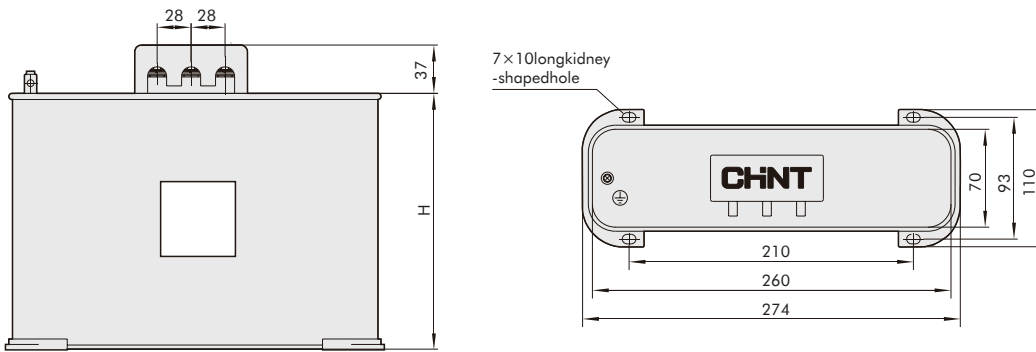


Fig.3



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.