JOBET杰贝特

User Manual

JBTM3HU Series High Voltage

Moulded Case Circuit Breaker

Please read the manual and keep it for future reference before installation and use

JOBET杰贝特

Certificate of Conformity

This product complies with GB/T 14048.2 and IEC 60947-2 standards, and is qualified upon inspection, approved for delivery.

Name: Moulded Case Circuit Breaker

Model: JBTM3HU Series

Inspector : 02

Inspection Date: See product or packaging

Jobet Electric Co., Ltd.

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⚠ Safety Alert

1) The product must not be installed in environments containing flammable or explosive gases, or in damp or condensing conditions. Do not operate the product with wet hands.

2) Do not touch the conductive parts during operation.

3) During installation, maintenance, and servicing of the product, the power supply must be disconnected, and the work must be carried out by qualified personnel.

4) Do not allow children to play with the product or its packaging.

5) Ensure sufficient space and safe clearance are maintained around the product during installation.

6) Do not install in areas where gas media can corrode metals or damage insulation.

7) When installing and using the product, the specified standard wiring must be used, and the power supply and load must comply with the required specifications.

8) To prevent hazardous incidents, the product must be installed and secured strictly in accordance with the instructions. After unpacking, check the product for any damage and verify that all items are complete.

9) When installing and securing the product, an insulating plate must be placed between the circuit breaker and the metal mounting plate.

10) Connect terminals 1, 3, and 5 of the circuit breaker to the transformer side, and terminals 2, 4, and 6 to the inverter side.

11) Before operation, be sure to install the terminal cover and arc barrier.

12) The circuit breaker has been insulation-tested in accordance with standards prior to leaving the factory. If re-testing is required before installation, proceed as follows:

   a) Use a 1000 V DC megohmmeter.

   b) The insulation resistance shall not be less than 20 MΩ.

   c) With the circuit breaker in the open position, perform tests between terminals 1–2, 3–4, and 5–6, as well as between terminals 1, 3, 5 (connected together with conductors) and the enclosure (covered with metal foil), respectively.

      If a megohmmeter is not available, a power-frequency withstand voltage tester may be used as an alternative. Refer to the insulation test method for test points; apply 3500 V for 5 seconds.

1、Main Applications and Scope of Use

The JBTM3HU series high-voltage AC moulded case circuit breaker (hereinafter referred to as the circuit breaker) is designed for photovoltaic, energy storage, and other new energy applications. It is a high-voltage, high-performance thermal-magnetic circuit breaker.

It is suitable for AC 50 Hz circuits with rated operating voltage of AC 800/1000/1140 V and rated current up to 800 A, for infrequent switching.

The circuit breaker provides overload and short-circuit protection to prevent damage to circuits and equipment. It is widely used in new energy systems, power systems, and industrial applications.

The circuit breaker has an isolation function, indicated by the symbol "  ".

2、Model Specifications and Meanings

JBT M 3 HU – 250 □ /3/ □ / □ / □

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

(1) Enterprise code (2) Moulded case circuit breaker

(3) Design series: 3, 5 (4) High voltage rating

(5) Current rating (A): 250,320,400,630,800

(6) Breaking capacity code: Standard type: H, High breaking capacity type: R

(7) Poles: 3P

(8) Trip unit type and accessory code (see Table 1)

(9) External accessories: D electric operating mechanism, Z manual operating mechanism

(10) Rated current code:

JBTM3HU-250: 63A、80A、100A、125A、140A、160A、180A、200A、225A、250A

JBTM3HU-320: 250A、280A、315A、320A

JBTM3HU-400: 250A、280A、315A、320A、350A、400A

JBTM3HU-630: 400A、450A、500A、630A

JBTM3HU-800: 630A、700A、800A

Table 1: Tripping Modes and Accessory Codes

Name / Trip Type	None	Alarm	Shunt	Auxiliary	Under-voltage	Shunt+ Auxiliary	Shunt+ Under-voltage	Dual Auxiliary	Auxiliary+ Under-voltage	Shunt+ Alarm	Auxiliary +Alarm	Under-voltage+ Alarm	Shunt+ Auxiliary + Alarm	Shunt+ Under-voltage+ Alarm	Dual Auxiliary +Alarm
Instantaneous Tripping	200	208	210	220	230	240	250	260	270	218	228	238	248	258	268
Dual Tripping	300	308	310	320	330	340	350	360	370	318	328	338	348	358	368

3、 Normal Operating, Installation, Transport, and Storage Conditions

3.1 Operating Conditions

1) Ambient temperature: −40°C to +70°C; 24-hour average ≤ +35°C. Normal operating range: −5°C to +40°C. For use at −40°C to −5°C, specify when ordering. For temperatures above +40°C, derating is required (see Table 2).
2) Atmospheric conditions: At +40°C, relative humidity ≤ 50%. Higher humidity is permitted at lower temperatures (e.g., 90% at 20°C). Measures shall be taken to prevent condensation due to temperature changes.
3) Altitude: ≤ 2000 m. For 2000–5000 m, special design is required; derating applies (see Table 3 for correction factors).
4) Pollution degree: 3.
5) Installation: Vertical or horizontal.
6) Installation category: Main circuit category III; auxiliary and control circuits (not connected to the main circuit) category II.

3.2 Installation Conditions

Under the specified safety conditions, the circuit breaker shall not be installed in locations with significant vibration or shock, excessive humidity, flammable or explosive atmospheres, corrosive gases that may damage metal or insulation, or external magnetic fields exceeding five times the Earth's magnetic field; otherwise, normal operation cannot be ensured.

3.3 Transportation and Storage Conditions

The permissible temperature range is −40°C to +70°C, with a maximum of +85°C for short periods (within 24 hours).

The product shall be stored and transported in a dry, well-ventilated environment, free from significant shock or vibration, direct sunlight, rain, dust, and corrosive chemical gases.

Table 2: Derating Factors for Ambient Temperature Variation

Model	Derating factor for ambient temperature (×In)						
	+40℃	+45℃	+50℃	+55℃	+60℃	+65℃	+70℃
JBTM3HU-250	1	0.98	0.96	0.94	0.92	0.91	0.88
JBTM3HU-320	1	0.97	0.95	0.93	0.91	0.89	0.87
JBTM3HU-400 JBTM3HU-630	1	0.97	0.95	0.93	0.91	0.89	0.87
JBTM3HU-800	1	0.97	0.95	0.93	0.91	0.89	0.87

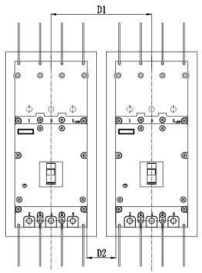
Table 3: Altitude Derating Factors

Altitude (m)	2000	2500	3000	3500	4000	4500	5000
Operating current correction factor (×In)	1	1	0.98	0.97	0.96	0.95	0.94
Operating voltage correction factor (×Ue)	1	1	0.87	0.85	0.82	0.78	0.75
Withstand voltage correction factor (W)	3500	3500	3150	2900	2700	2600	2500

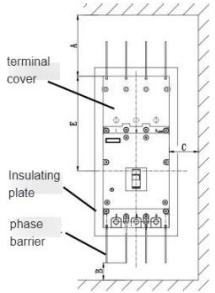
4、 Installation

4.1 The circuit breaker may be installed vertically or horizontally. During use, on the 1, 3, 5 terminal side, install terminal covers and phase barriers as shown. On the 2, 4, 6 terminal side, install phase barriers, and place an insulating plate between the circuit breaker and the metal mounting plate. The hole dimensions of the insulating plate shall be the same as those of the mounting plate.

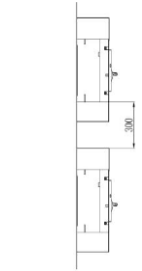
4.2 Installation Schematic

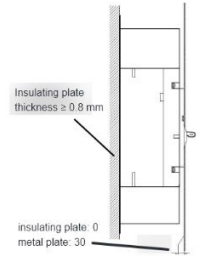


minimum clearance between upper and lower breakers



minimum clearance to front panel





Model	Distance (mm)					
	A	B	C	D1	D2	E
JBTM3HU-250 JBTM3HU-320	150	30	30	156	40	167
JBTM3HU-400 JBTM3HU-630	110	30	30	190	40	194
JBTM3HU-800	110	30	30	222	40	190

5、Outline and Installation Dimensions

Front panel wiring, overall dimensions and mounting cut-out dimensions are shown in Figure 1.

- X-X, Y-Y is the center of the three-pole circuit breaker

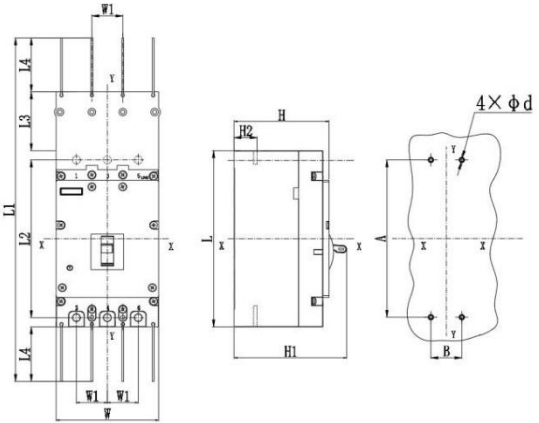


Figure 1 Front wiring outline and installation diagram

Model	W	W1	L	L1	L2	L3	L4	H	H1	H2	A	B	d
JBTM3HU-250 JBTM3HU-320	116	35	200	467	179	67	100	107.5	127.4	26	178	35	5
JBTM3HU-400 JBTM3HU-630	150	48	258	532	224	64	105	120	156	42	194	48	7
JBTM3HU-800	182	58	250	530	218	64	108	133	170	60	200	58	7

6、 Circuit Breaker Connection

The 1, 3, 5 terminals are connected to the transformer side, and the 2, 4, 6 terminals are connected to the inverter side.

6.1 Selection of Connecting Conductors

The cross-sectional area of the connecting conductors corresponding to the rated current is shown in Table 4.

Table 4

Rated current (A)	32	63	80	100	125/140	160	180/200/225	250	100	400/500	630	700/800
Conductor cross-sectional area (mm²)	6	16	25	35	50	70	95	120	240	150×2	185×2	240×2

6.2 Selection of Terminals

The terminals used with the JBTM3HU-250 circuit breaker are JGC or JBC types. The specifications and models are shown in Figures 2 and 3 and Table 5.

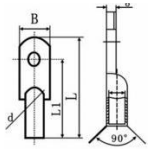


Figure 2 JGC Type

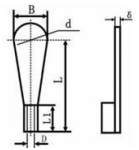


Figure 3 JBC Type

Table 5 Terminal Model Specifications

Model	Current (A)	Conductor cross-sectional area (mm²)	Terminal Model	B	L	L1	D	d	δ
JBTM3-250HU	32	6	JBC6-8	15	24.5	10	φ3.5	φ8.2	1
	63	16	JBC16-8	12.5	41	33.5	φ6	φ8.2	3
	80	25	JBC25-8	14	46	38.5	φ7	φ8.2	3
	100	35	JBC35-8	15.5	52	44.5	φ8	φ8.2	3
	125、140	50	JBC50-8	17	54	45	φ10	φ8.2	3
	160	70	JBC70-8	21.6	61	52	φ11	φ8.2	4
	180、200、225	95	JBC95-8	22	66	57	φ13	φ8.2	5

6.3 For copper busbar connections, the busbar and hole dimensions are shown in Figure 4 and Table 6.

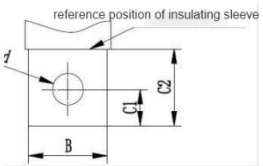


Figure 4 Copper busbar and hole dimensions

Table 6 Copper busbar and hole dimensions

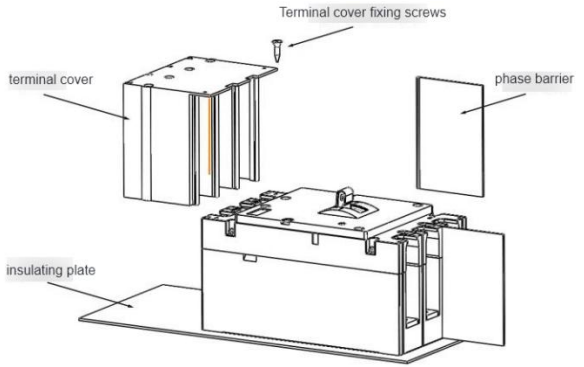
Model	B	C1	C2	d
JBTM3HU-250 JBTM3HU-320	22	9	22	φ8.5
JBTM3HU-400 JBTM3HU-630	30	10.5	27.5	φ11
JBTM3HU-800	47	16.5	21	φ13

6.4 Connect the crimped wire to the circuit breaker connection plate with bolts (the bolts must be fitted with flat washers and spring washers), and tighten the bolts with a torque wrench. The torque size is shown in Table 7.

Table 7

Shell frame current	Screw specifications	Torque (N.m)
JBTM3HU-250	M8	9.5~10.5
JBTM3HU-320	M8	9.5~10.5
JBTM3HU-400	M10	19.5~20.5
JBTM3HU-630	M10	19.5~20.5
JBTM3HU-800	M12	29.5~30.5

6.5 After installing the circuit breaker and connecting the conductors, install terminal covers on the 1, 3, 5 side and secure them with fixing screws. Install phase barriers on the 2, 4, 6 side. (Note: Terminal covers and phase barriers may be installed on both the input and output sides as required.)



7、Electrical Wiring of Internal Circuit Breaker Accessories

(1) Under voltage release

Connect the power supply according to the terminal numbers on the external undervoltage release module.

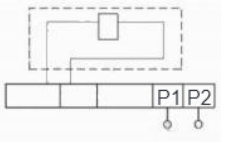


Figure 5: Undervoltage release wiring diagram

(2) Shunt release

Connect the power supply according to the lead wire numbers (polarity is not required for DC power supply).

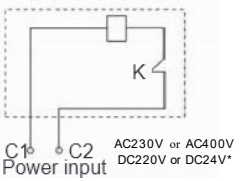
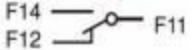
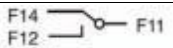


Figure 6: Shunt release wiring diagram

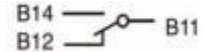
★For DC 24 V shunt release, each copper conductor shall not exceed the maximum length in the table below. The power supply at the shunt release end shall be ≥ 50 W.

Rated control supply voltage Us (DC 24 V)	Input power	Maximum copper conductor length	
		1.5 ㎜²	1.5 ㎜²
100%Us	50 W	150 m	250 m
80%Us	50 W	100 m	160 m

(3) Auxiliary contact wiring diagram

Breaker position in “OFF” and “tripped” states	
Breaker position in “ON” state.	

(4) Alarm contact wiring diagram

Breaker position in “OFF” and “ON” states	
Breaker position in “free trip” state	

8 Operation and Maintenance

8.1 Pre-operation Inspection and Preparation

Check the following before operation:

1) Verify that the nameplate data matches the application requirements.
2) Check wiring correctness. In particular, ensure terminals 1, 3, 5 are connected to the transformer side, and terminals 2, 4, 6 to the inverter side.
3) Measure insulation resistance between phases and to ground using a megohmmeter; value shall be ≥ 20 MΩ.
4) Ensure all terminals and fixing screws are securely tightened.
5) Check that terminal covers and phase barriers are properly installed.
6) For breakers equipped with an undervoltage release, the undervoltage release must be energized before closing is allowed.
7) When the circuit breaker is in the free-trip state, it must be reset (pull the handle toward the OFF position) before it can be closed. Then push the handle to the ON position to close the breaker.

8.2 Test Run

After all items in 8.1 are confirmed normal, a test run may be carried out.

The operating status of the circuit breaker during manual operation is indicated by the handle position:

- Handle at “I”: breaker ON (closed).
- Handle at “0”: breaker OFF (open).
- Free-trip position (between “I” and “0”): breaker tripped due to overload, short circuit, undervoltage, shunt release, or pressing the trip button. For breakers with alarm contacts, an alarm signal is issued.

8.3 Maintenance

Maintenance and inspection shall be carried out by qualified personnel. If internal or external accessories are required, they shall be supplied by the manufacturer according to the ordered model to ensure quality. The company shall not be responsible for any self-purchased or modified parts.

8.3.1 Before maintenance, the following must be completed:

1) Open the circuit breaker.
2) Disconnect all power connections (including main and auxiliary circuits).
3) Remove the circuit breaker from its mounting position.

8.3.2 Maintenance shall be performed once a year under normal operating conditions, and every six months under abnormal conditions. Maintenance includes the following:

1) Reset the circuit breaker and operate it through ON/OFF cycles. While the breaker is ON, use the trip button to open it. Repeat the operation 5 times. The breaker shall operate reliably in reset, close, open, and trip actions.
2) Clean dust from the surface and connection points using a clean, dry cloth.
3) Clean terminal covers and phase barriers; replace if necessary.
4) Perform insulation test (refer to Safety Warning (12)).
5) Check all connections. Remove oxidation with gauze, clean with a suitable solvent, and tighten all bolts and nuts.
6) If internal or external accessories are installed, inspect each one to ensure proper operation.

9 Warranty, After-sales Service and Environmental Protection

9.1 Warranty Period

Under normal storage and transport conditions, and with intact packaging or product seals, the product is covered for up to 24 months from the date of manufacture.

If the product is damaged or fails to operate properly due to manufacturing quality issues, the company will provide free repair or replacement if repair is not possible.

The following are not covered by the warranty:

1) Damage caused by improper use, storage, or maintenance.
2) Use beyond the specified standards.
3) Damage caused by unauthorized disassembly or repair.
4) Products beyond the warranty period.
5) Damage caused by force majeure, including earthquakes, fire, lightning, abnormal voltage, and other natural disasters or secondary damage.

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9.2 After-sales Service

1) In case of failure, contact the company's after-sales service department.
2) Within the warranty period: defects caused by manufacturing issues will be repaired free of charge or replaced if necessary.
3) Outside the warranty period: paid repair if functionality can be restored; paid replacement if normal operation cannot be ensured.

9.3 Environmental Protection

To protect the environment, when this product or its components are disposed of, please handle them as industrial waste or send them to authorized recycling facilities for sorting, dismantling, and recycling in accordance with relevant national regulations.