

# HDM3-1600

## User Manual

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Installation and usage instruction  
Please read the instruction carefully and keep it properly



### Safety Notice

Before the installation, operation, run, maintenance, and inspection, please carefully read this manual, and install and operate this product properly according to this manual.

#### Danger:

- Do not operate the circuit breaker with your wet hands;
- Do not touch the live part during operation;
- Cut off the power supply before maintenance and service;
- Do not use the short circuit method to test the product;


#### Attention:

- The installation, maintenance and service of the product shall be conducted by the qualified professional;
- All features of the product have been set in factory, and the product cannot be dismantled or adjusted without permission during operation;
- Before operation, confirm that the rated voltage, rated current, frequency and characteristics of the product meet the working requirements;
- To prevent the interphase short circuit, a phase partition is provided when delivery. Please install the product properly and insulate the exposed wire or copper busbar at the wiring terminal for insulation safety;
- To test the insulation resistance or power frequency withstand voltage, please disconnect the electronic components between the current circuits to prevent damage to the product performance;
- If found any damage or abnormal sound when unpacking, please stop the product immediately and contact the supplier;
- The overload alarm non-trip product has no the overload protection function, and is only suitable for overload alarm without trip;
- For the product with an undervoltage release, apply the rated voltage onto the undervoltage release before power-on;
- To select accessories, please use the supporting accessories provided by the company to ensure the quality; our company will not bear any adverse consequence due to the use of the accessories not provided our company;
- When scrapping the product, please dispose the product waste properly. Thanks for your cooperation.

#### Test:

- This circuit breaker has passed the insulation test specified in the standard in the factory. The steps for re-test (if required) before installation are as follows:

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- A 1000VDC megameter is used;
  - The insulation resistance shall not be less than 20M $\Omega$ ;
  - Between the contacts of circuit breaker, between the phases, and between the phase and the housing (the housing is covered with metal foil);
  - When connecting to the undervoltage release of main circuit, between the incoming line and the housing of the circuit breaker;
- Note: If there is no megameter, a power frequency withstand volage tester is used for alternative test. Apply 2000V volage for 5s onto the measuring part using the insulation test method.
- Please note the information marked with 

### 1.About HDM3

#### 1.1 Packing list

Product model	Mounting screw Qty.	Wiring screw Qty.	Phase partitions Qty.	Extended handle	Circuit breaker	Manual (with certificate)
HDM3-1600 N	M5 x 75-4	M10x 40-12 (800A-1250A) M10x45-12 (1600A)	4	1	1	1

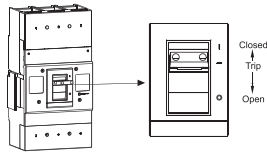
#### 1.2 Product use environment and conditions

- The protection grade of this product is IP30 (IP00 for wiring terminal)
  - The pollution level of this product is Level 3
  - The rated working voltage is 400/415V
  - The altitude of the installation place shall not exceed 2000m. If installed at the altitude of more than 2000m, please contact the manufacturer
  - The allowable ambient temperature is ranged -25 $^{\circ}$ C to +70 $^{\circ}$ C; the relative humidity (at the ambient temperature 25 $^{\circ}$ C) is  $\leq$ 95%; the average temperature within 24h does not exceed 35 $^{\circ}$ C
- (Note: If used in the temperature range -25 $^{\circ}$ C to -5 $^{\circ}$ C and +40 $^{\circ}$ C to +70 $^{\circ}$ C, please contact the manufacturer)

### 2.Operation and commissioning HDM3

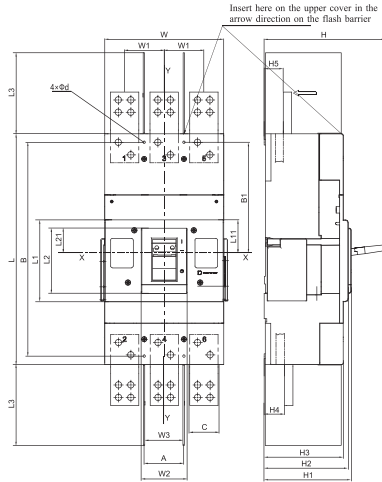
- Turn the handle of the circuit breaker to the "Trip" position when shipment;
- Turn the operating handle to the "Open" position before trip;
- Turn the circuit breaker to the "Closed" position;
- Press the Trip button to return the handle of the circuit breaker to the "Trip" position;

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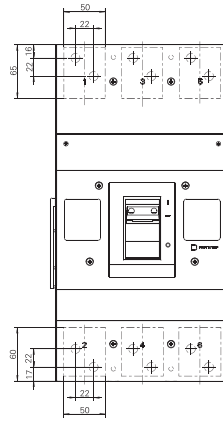
### 3.Outline, installation and wiring dimensions of HDM3 series

X-X: as the center axle of the base, which is same below  
Y-Y: as the center axle of the handle, which is same below



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### HDM3-1600 wiring dimensions



Unit: mm

Product model HDM3-	Number of poles	Outline dimensions														Installation dimensions						
		L	L1	L2	L3	W	W1	W2	W3	H	H1	H2	H3	H4	H5	A	B	B1	C	Φd		
1600F/N	3	48	145	52	115	37	140	223	70	81	68	213	154	149	140	36	34	70	378	189	50	6

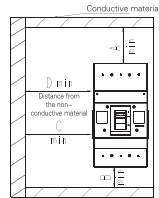
### 4.Install HDM3

#### 4.1 Safety distance of circuit breaker

Unit: mm

Product model HDM3-	Amin	Bmin	Cmin	Dmin
1600F/N	110	55	10	0

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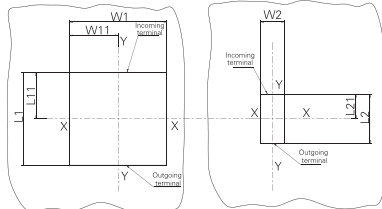
### ⚠ Attention:

- When the circuit breaker is installed in parallel, ensure the insulation safety between the terminals. It is recommended to install the terminal cover or additional phase partition as insulation protection between two products;
- Please note the insulation protection of the mounting bottom to prevent the ground clearance of the busbar, terminal or screw from <8mm.

#### 4.2 Size of hole on the circuit breaker panel

Unit: mm

Product model HDM3-	Number of poles	Exposed front cover and toggle handle				Exposed toggle handle			
		L1	L11	W11	W1	L2	L21	W2	W21
1600F/N	3P	148	53.5	106.5	213	118	38.5	84	84



Exposed front cover and toggle handle

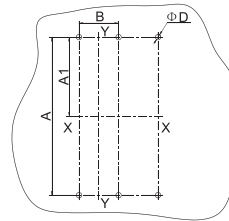
Exposed toggle handle

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#### 4.3 Size of the hole on the mounting plate

Unit: mm

Product model HDM3	Number of poles	A	A1	B	ΦD
1600F/N	3P	378	189	70	6.2



#### 4.4 Recommended value for the wiring capacity

Rated current (A)	700	1000	1250	1600
	Recommended sectional area of wire (mm <sup>2</sup> )	240x2	-	-
Recommended sectional area of copper busbar (mm <sup>2</sup> )	250x2	300x2	400x2	500x2

### ⚠ Attention:

Please follow the outlines of HDM3 series, the C dimensions in the installation and wiring dimensions, and the diameter of the corresponding wiring screw, and select the appropriate wiring terminal or busbar to satisfy the wiring capacity requirements.

#### 4.5 Recommended value of the wiring screw tightening torque

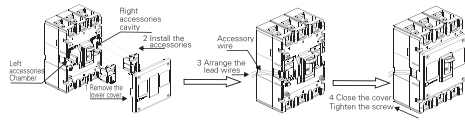
Product model HDM3-	1600F/N
Socket hex wiring screw	M10
Torque (N.m)	11-14

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## 5. Internal accessories and expansion functions

### 5.1 Internal accessories (undervoltage release, shunt release, assists, alarm, dual-assist, and auxiliary alarm)

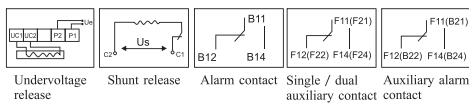
#### ● Assembly diagram



#### ● Installable accessories in each cavity

Left accessory cavity for: left shunt, and left undervoltage  
Right accessory cavity for: right single assist, right dual assist, right alarm, and right auxiliary alarm

#### ● Wiring and schematic diagram



#### ● Electrical parameters

Product model HDM3-	Undervoltage coil holding power consumption (W)		Min. power for suction of undervoltage coil (W)	
	AC400V	AC230V	AC400V	AC230V
1600	1.12	1.08	Auxiliary suction type	Auxiliary suction type

Product model HDM3-	Installation position	Min. action power of shunt coil (W)		
		AC400V	AC230V	DC24
1600	Left cavity -	175	130	80

- The continuous power-on time of the shunt release shall not exceed 5s, or the shunt release may be burnt out; when the rated control power voltage is DC24V, the rated current of the control circuit shall reach 4.5A~5.5A.
- The undervoltage is of the backpack structure when delivery, and all accessories (excluding undervoltage) shall use the lead-wire structure by default.
- The default wire length is about 500mm for lead-wire structure product. If a longer lead wire length is used by the user and the shunt or undervoltage cannot be driven, it is recommended to use a relay mode recommended in the "Note 2" to ensure that the minimum drive power can be satisfied.

## 6. Maintenance and service

- The maintenance and service shall be conducted by the qualified professional;
- Do not maintain the live product;
- The maintenance and service shall be conducted once every year under the normal operation conditions, and the maintenance contents are listed in table below:

Item	Content
Appearance	No dust or condensation; clean if necessary; the shell is not damaged
Connection of the wiring terminal	Tighten it according to the torque listed in the 4.5 Recommended tightening torque table of the wiring screw without any looseness.
Closed/Open/Trip operation by handle	The handle shall be operated flexibly without blockage; this product uses the self-cleaning contact structure. If the contact resistance changes due to the oxidation phenomenon, please open and close the handle multiple times to realize that the oxide layer between the moving and fixed silver contacts is peeled off to reduce the contact resistance.

## 7. Unpacking inspection

After unpacking, check whether the product is intact, whether the exposed metal is rusted, and whether the product is damaged due to poor transport and storage. If found the above phenomenon, do not operate the product, and please contact the supplier timely.

## Alarm and assist electrical parameters

Alarm and assist electrical parameters			
Resistive current	3A		
Use category (GB/T 14048.5-1)	AC15	DC13	
Working voltage	AC400V	0.3A	-
50/60Hz	DC220V	-	0.15A

#### ● Test requirements for internal accessories

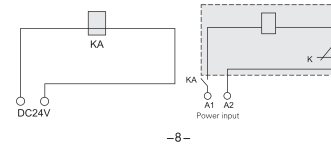
- Undervoltage release
  - When the rated working voltage is ranged 35% to 70%, the undervoltage release will work to trip the circuit breaker;
  - When the rated working voltage is ranged 85% to 110%, the undervoltage release can work to allow the circuit breaker can be closed reliably;
  - When the rated working voltage is below 35%, the undervoltage release can work to prevent the circuit breaker from being closed;
- When 70% ~110% rated voltage is applied onto the shunt release, the circuit breaker can be open reliably, and the handle is turned to the Trip position;
- For circuit breaker with an auxiliary contact, when the circuit breaker is open or closed, the conversion signal of the auxiliary contact shall be issued normally;
- For circuit breaker with an alarm contact, when the circuit breaker is closed or trips (press the red trip button), the conversion signal of the alarm contact shall be issued normally.

#### ⚠ Attention:

- When the rated power voltage of the shunt release is DC24V, the maximum length of the copper wire cannot exceed the value listed in the table below:

Rated control power voltage $U_s$ (DC24V)	Sectional area is 1.5mm <sup>2</sup>	Sectional area is 2.5mm <sup>2</sup>
100% $U_s$	150m	250m
80% $U_s$	100m	160m

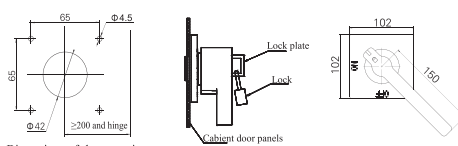
- If the requirements of the above table cannot be met, it is recommended to use the following figure for the design of the control circuit of the shunt release:



## 8. User manual of external accessories

### 8.1 Manual operating mechanism

#### ● Optional handle style and size

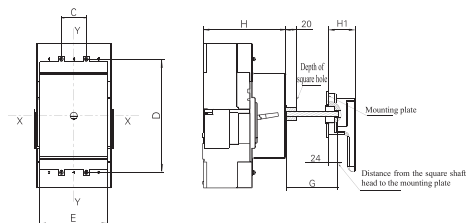


Dimensions of the mounting hole for handle cabinet door

#### ● Features of the operating handle:

- When the circuit breaker is at the Closed state, the cabinet door cannot be opened;
- When at the Closed or Open state, pull the lock plate marked with on the square operating handle for locking (lock with a diameter ranged 5 to 8mm self-provided by the user).

#### ● Outline dimensions of manual operating mechanism

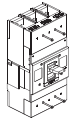


Model HDM3-	C	D	E	H	G <sup>+</sup> direct manual operating mechanism	G <sup>+</sup> extended manual operating mechanism (by default)	Height of round handle H1
1600F/N	70	320	193	236	40	150	91

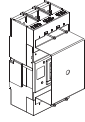
**⚠ Attention:**

G\* For other length to be customized, please contact the manufacturer.

● Manual operating mechanism installation method



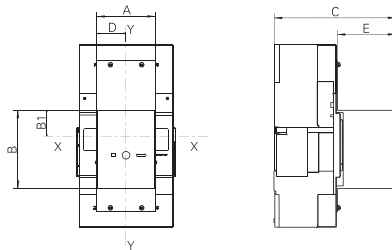
Step 1  
Remove four screws from the cover of circuit breaker



Step 2  
Insert the handle of the circuit breaker into the manual operating mechanism, and tighten the screw; Insert the square shaft, and tighten the screw with a screwdriver; assemble the handle and check whether the product can be closed and opened normally.

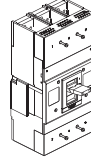
1.2 Electric operating mechanism

● Electric operating mechanism installation dimensions

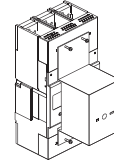


Model	A	B	B1	C	D	E
HDM3-1600 F/N	131	177	63	281	65.5	141

● Installation method



Step 1  
Turn the handle to the Open position



Step 2  
Install the electric operating mechanism, and tighten the screw and nut

**⚠ Attention:**

Check whether the handle can be inserted into the electric operating mechanism before operation.

Electric operating mechanism wiring diagram

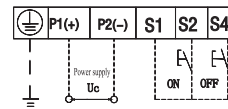


Figure 1: P1 and P2 are connected to the power wire;

- S1 is the common terminal; closed if S1 and S2 are powered on, and opened if S1 and S4 are powered on.

**⚠ Attention:**

- When the circuit breaker of the electric operating mechanism trips, the electric operating mechanism must be opened firmly and then closed;
- At the manual operation mode, turn it clockwise 180° rather than counter clockwise operation.
- Voltage withstand test: The 50HZ, 1890V power frequency voltage can be withstood between the incoming terminals P1 and P2 (not including S1, S2

and S4) of the power supply and the electric operating mechanism mounting screw.

4 For electric operating mechanism, P1 and P2 cannot be connected to the S1, S2, and S4.

Technical Parameters of electric Operating Mechanism

Model of electric operating mechanism	Action current (A)		Motor power (W)
	230VAC	400VAC	
1600	≤2		35

\* Rated control power voltage : When AC 230V, the allowable voltage tolerance is ranged AC 184~253V.

\* Rated control power voltage: At AC 400V, the allowable voltage tolerance is ranged 320 to 440V.