



HUM8 Series Molded Case Circuit Breaker

Installation and Operation Instruction

Before installing and using the product, please read the instruction carefully and well keep it for future reference.

Product Certificate

This product has passed the inspection and meets the requirements of GB/T14048.2, and therefore is allowed to leave the factory.

Inspector:



Date of inspection: See the product or packaging.

HUANYU HIGH-TECH CO., LTD.

The HUM8 Series Molded Case Circuit Breaker (hereinafter referred to as “circuit breaker”) is the high-tech product in the 21st century. This product is characterized by advanced design, reliable performance, high technical indicators, beautiful appearance, and small size.

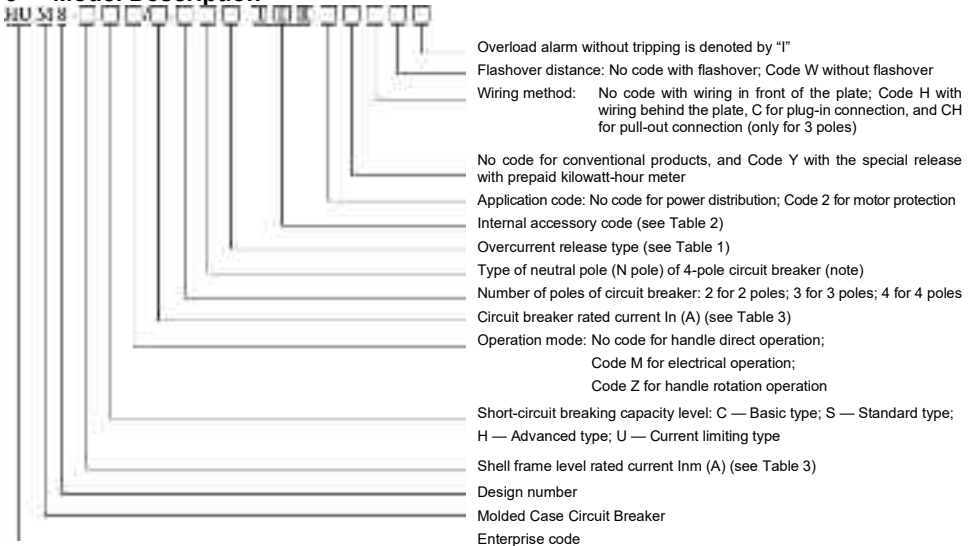
1 Purpose and Scope of Application

This circuit breaker is suitable for the power system with AC 50 Hz, rated voltage up to 690 V, and rated current up to 800 A. It is used to distribute electric energy, protect circuits and power supply equipment from overload, short circuit, undervoltage and other faults, and prevent the infrequent operation of the motor.

2 Standards Followed

The product complies with GB/T 14048.2 *Low-voltage Switchgear and Controlgear — Part 2: Circuit-breakers*, and IEC 60947-2 *Low-voltage Switchgear and Controlgear — Part 2: Low-voltage Circuit Breakers*, etc.

3 Model Description



Note: In 4-pole products, two types are provided for the neutral pole (N pole):
 Type A: The N pole is not equipped with an overcurrent release and is normally on, and is not opened/closed with the other three poles.
 Type B: The N pole is not equipped with an overcurrent release, and is closed/opened with the other three poles.

Table 1 Type of the overcurrent release

Serial number	Name	Description
1	Delay release	With the overcurrent inverse time limit protection characteristic
2	Instantaneous release	i.e. electromagnetic release, with the overcurrent instantaneous operation protection characteristic
3	Complex release	With the above two functions

Table 2 Internal accessory code

Imm (A)	I		II		III		Notes
	Code	Description	Code	Description	Code	Description	
63 100 250	0	N/A	0-2	Number of auxiliary contacts	0-2	Number of alarm contacts	
	1	Shunt trip	0-1		0-1		
	2	Undervoltage release	0-1		0-1		
400	0	N/A	0-5		0-2		II+III≤7
	1	Shunt trip	0-3		0-2		II+III≤5
	2	Undervoltage release	0-3		0-2		II+III≤5
	3	Shunt/Undervoltag e release	0-1		0-1		II+III≤2
630 800	0	N/A	0-8		0-3		II+III≤11
	1	Shunt trip	0-6		0-3		II+III≤8
	2	Undervoltage release	0-6		0-3		II+III≤8
	3	Shunt/Undervoltag e release	0-3		0-2		II+III≤5

4 Normal Working Conditions

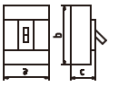
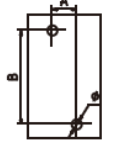
The circuit breaker is suitable for the following working conditions:

- 4.1 The ambient air temperature shall not be higher than +40°C or lower than -5°C.
- 4.2 Altitude ≤ 2,000 m.
- 4.3 The relative air humidity shall not exceed 50% at the maximum temperature of +40°C. A higher relative humidity is allowed at a lower temperature. The average minimum temperature of the wettest month shall not exceed +25°C, and the average maximum relative humidity of that month shall not exceed 90%.
- 4.4 Contamination grade: Grade 3. There is no explosion danger and no gas or conductive dust that corrodes metals or damages insulation in the surrounding air.
- 4.5 The installation category is Grade III.
- 4.6 The "1, 3, 5 and N1" terminals of the circuit breaker are connected to the power supply, and the "2, 4, 6 and N2" terminals are connected to the load, which cannot be reversed.
- 4.7 The installation surface of the circuit breaker shall be vertical to the horizontal plane. The circuit breaker is basically installed vertically, with the power supply terminal at the top and the load terminal at the bottom, and can also be installed horizontally.

5 Main Technical Performance Indicators

5.1 The main technical performance indicators are shown in Table 3.

Table 3 Main technical performance indicators

Shell frame level rated current Inm (A)	63	100 (125)						250									
Product model	HUM8-63S	HUM8-100C HUM8-125C	HUM8-100S HUM8-125S	HUM8-100H HUM8-125H	HUM8-100U HUM8-125U	HUM8-250C	HUM8-250S	HUM8-250H	HUM8-250U								
Rated current In (A)	10,16,20 25,32,40 50,63	10,16,20,25,32,40,50,63,75,100 (125)						100,125,150,175,200,225,250									
Number of poles	3	3	4	2	3	4	3	4	3	3	4	3	4	3			
Rated insulation voltage Ui (V)	AC 800	AC 1,000						AC 1,000									
Flashover distance (mm)	≤50(0)*	≤50 (0)*						≤50 (0)*									
Rated ultimate/service short-circuit breaking capacity Ics (kA)	690V	-	-	5/3	10/5	10/5	-	5/3	10/5	10/5							
	400V	30/22	30/15	50/35	85/65	125/125	30/15	50/35	85/65	125/125							
	230V	50/38	50/25	100/50	125/125	200/200	50/25	100/50	125/125	200/200							
Operation performance (times)	Energizing	8,000	8,000						8,000								
	De-energizing	20,000	20,000						20,000								
Outline dimensions (mm) 	a	75	90	120	60	90	120	90	120	90	105	140	105	140	105	140	105
	b	130	155						216			165			240		
	c	68	68						68								
Installation dimensions (mm) 	A	25	30(2-pole: 0)						35								
	B	111	132						193			126			201		
	Φ	5	5						5								

* The flashover distance, if zero, shall be indicated when ordering.

Table 3 Main technical performance indicators (completed)

Shell frame level rated current Inm (A)	400						630						800												
Product model	HUM8-400C	HUM8-400S	HUM8-400H	HUM8-400U	HUM8-630C	HUM8-630S	HUH8-630H	HUM8-630U	HUM8-800C	HUM8-800S	HUM8-800H	HUH8-800U													
Rated current In (A)	250,300,315,350,400						400,500,630						630,700,800												
Number of poles	3	4	3	4	3	3	3	4	3	4	3	3	3	4	3	4	3	3							
Rated insulation voltage Ui (V)	AC 1,000						AC 1,000						AC 1,000												
Flashover distance (mm)	≤100 (0)*						≤100 (0)*						≤100 (0)*												
Rated ultimate/service short-circuit breaking capacity Ics (kA)	690V	10/10	10/10	15/10	35/35	10/10	15/15	20/15	35/35	10/10	15/15	20/15	35/35												
	400V	45/45	70/70	100/100	125/125	45/45	70/70	100/100	125/125	45/45	70/70	100/100	125/125												
	230V	85/85	100/100	150/100	200/200	85/85	100/100	150/100	200/200	85/85	100/100	150/100	200/200												
Operation performance (times)	Energizing	7500						7500						7500											
	De-energizing	10000						10000						10000											
Outline dimensions (mm)	a	140	185	140	185	140	140	210	280	210	280	210	210	210	280	210	280	210	210						
	b	257				297				275				322				275				322			
	c	103				200				103				200				103				200			
Installation dimensions (mm)	A	44						70						70											
	B	194				234				243				290				243				290			
	Φ	7						7						7											

* The flashover distance, if zero, shall be indicated when ordering.

5.2 See Table 4 (for power distribution) and Table 5 (for motor) for the overcurrent protection characteristics.

Table 4 Overcurrent protection characteristics of circuit breakers for the power distribution

Rated current In (A)	Thermal release (ambient temperature +40°C)		Operating current of electromagnetic release (A) [Note]
	1.05 In non-operating time (h) (initial state: cold state)	1.30 In operating time (h) (initial state: thermal state)	
≤63	>1	≤1	(10±2)In
>63	>2	≤2	

Table 5 Overcurrent protection characteristics of circuit breakers for motors

Rated current I_n (A)	Thermal release (ambient temperature +40°C)				Operating current of electromagnetic release (A) [Note]
	1.0 I_n non-operating time (h) (initial state: cold state)	1.2 I_n operating time (h) (initial state: thermal state)	1.5 I_n operating time (min) (initial state: thermal state)	7.2 I_n operating time (s) (initial state: cold state)	
$I_n \leq 63$	>2	≤ 2	≤ 2	$2 < T_p \leq 10$	$(12 \pm 2.4) I_n$
$63 < I_n \leq 250$			≤ 4	$4 < T_p \leq 10$	
$250 < I_n \leq 800$			≤ 8	$6 < T_p \leq 20$	

[Note]: The operating current of the electromagnetic release of HUM8-630 and 800 ($400 A \leq I_n \leq 800 A$) is $(5 \pm 1) I_n$ to $14 I_n$.

Adjustable reference value: Low (4 – 6) I_n ; Relatively low (6 – 8.3) I_n ; Relatively high (8.3 – 10.9) I_n ; High (10.9—14) I_n .

6 Circuit Breaker Accessories

6.1 List of accessory models (see Table 6).

Table 6 List of accessory models

Shell frame level rated current I_{nm} (A)		63	100	250	400	630, 800	
Internal accessories	Alarm contact	B1	B2	B3	B4		
	Auxiliary contact	F1	F2	F3	F4		
	Shunt trip	FL1	FL2	FL3	FL4		
	Undervoltage release	QY1	QY2	QY3	QY4		
	Accessory terminal	JX					
External accessories	Rotation operating handle	CS1-63	CS1-100	CS1-250	CS1-400	CS1-630	
	Electric operating mechanism	MDX0	MDX1	MDX2	MDX3	MDX4	
	Mechanical interlock	3-pole	N1-3	N2-3	N3-3	N4-3	N5-3
		4-pole	—	N2-4	N3-4	N4-4	N5-4

6.2 Rated values of auxiliary contacts and alarm contacts

Conventional thermal current $I_{th} = 6 A$;

Rated working current $I_e = 0.79 A$ (230 V, AC); $I_e = 0.47 A$ (400 V, AC); $I_e = 0.15 A$ (220 V, DC).

6.3 Shunt trip parameters

Rated voltage U_s : AC: 110 V, 230 V, 400 V; input capacity: 180 VA;

DC: 24 V, 48 V, 110 V; input capacity: 60 W.

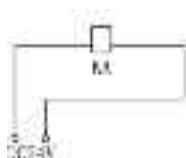
The circuit breaker can interrupt reliably under (70%–110%) U_s , and the operating time is 10 ms–30 ms.

When the rated control power supply voltage of the shunt trip is DC 24 V, the maximum length of the copper conductor shall meet the requirements of Table 7.

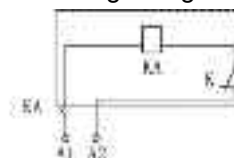
Table 7 Maximum Length of the copper conductor

Rated control area power supply voltage U_c (DC 24 V)	Conductor	
	1.5mm ²	2.5mm ²
100% U_c	150m	250m
80% U_c	100m	160m

If the requirements of the above table are not met, it is recommended to design the control circuit of the shunt trip according to Figure 1.



KA: DC 24 V. The current capacity of the intermediate relay contact is 1 A.



Inside the dotted line box is the schematic diagram of the shunt trip

Power supply input
The voltage of the input terminal of the power supply is: AC 50 Hz 230 V, 400 V

6.4 Parameters of the undervoltage release

Rated voltage U_e : AC: 110 V, 230 V, 400 V; DC: 24 V, 48 V, 110 V.

The circuit breaker can interrupt reliably under (35%–70%) U_s , and the operating time is 10 ms–30 ms. When the power supply voltage is less than 35% U_e , the circuit breaker can be prevented from closing. When the power supply voltage is more than or equal to 85% U_e , the circuit breaker can be reliably closed.

6.5 See Table 8 for the parameters of the electric operating mechanism.

Table 8 Main technical parameters of the MDX Electric Operating Mechanism

Shell frame level rated current I_{nm} (A)	63	100	250	400	630, 800
Model of electric operating mechanism	MDX0	MDX1	MDX2	MDX3	MDX4
Rated working voltage U_e (V)	AC 110V–230V, 50Hz; DC 110V–220V				
Starting current (A)	≤0.5		≤2		
Operating time (s)	≤0.8				
Rated operating frequency (times/h)	180		120		
Mechanical life (times)	15,000	9,000	5,000	3,000	

The power supply capacity of the electric operating mechanism shall be large enough to ensure that the voltage applied to the electric operating mechanism under the starting current is not less than 85% U_e .

See Figure 2 for the wiring diagram of the electric operating mechanism.

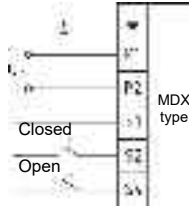
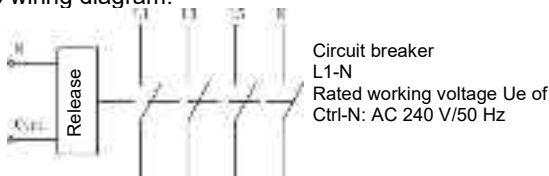


Figure 2 Wiring diagram of the MDX Electric Operating Mechanism

6.6 Special release with prepaid kilowatt-hour meter

The rated working voltage U_e of the special release with prepaid kilowatt-hour meter is AC 240 V/50 Hz. It can work normally in the range of (65%–110%) U_e . When the Ctrl terminal is cut off, the breaker will delay opening by 0.5 s–2 s. See Figure 3 for the wiring diagram.

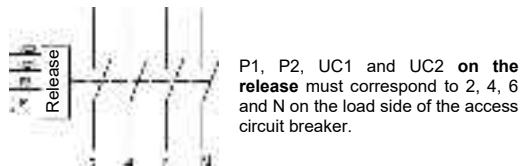


Note: N is connected to the power neutral wire, and Ctrl is connected to the control signal terminal of the prepaid kilowatt-hour meter.

6.7 Parameters of the overvoltage release (applicable to 4-pole circuit breaker):

Rated working phase voltage U_e : AC 230 V 50 Hz (or 60 Hz).

Release operation characteristics: When the main circuit phase voltage is (85%–110%) U_e , the release shall be able to keep the circuit breaker working for a long time. When the phase voltage of the main circuit rises to 270 (1±5%) V, the release combined with the circuit breaker shall operate to open the circuit breaker. See Figure 4 for the wiring diagram.



P1, P2, UC1 and UC2 on the release must correspond to 2, 4, 6 and N on the load side of the access circuit breaker.

Figure 4 Wiring diagram of the overvoltage release

7 Use and Maintenance

7.1 Considerations before installation of the circuit breaker

The appearance of the circuit breaker is in good condition, and no-load operation works normally.

The insulation resistance between the poles of the circuit breaker and the incoming and outgoing line terminals of the same pole in the interrupting state shall not be less than 1.5 MΩ.

The rated values of the circuit breaker and its accessories shall be consistent with the working conditions of the installation site.

There shall be no significant impact vibration at the installation, which meets the normal working conditions.

7.2 The cross-section area of the connecting conductor of the circuit breaker shall not be less than that specified in Table 9, and the connecting screws shall be tightened.

Table 9 Cross-section area of the connecting conductor

Rated current In (A)	10	16	32	40	63	75	100	125	175	200	250	300	400
		20		50				150		225		350	
Cross-section area of conductor (mm ²)	1.5	2.5	6	10	16	25	35	50	70	95	120	185	240
Rated current In (A)					500			630			700, 800		
Copper conductor	Pcs				2			2			2		
	Cross-section area (mm ²)				150			185			240		
Copper busbar	Pcs				2			2			2		
	Cross-section area (mm ²)				30×5			40×5			50×5		

7.3 Various characteristics of the circuit breaker and its accessories are set by our company according to the order requirements, and cannot be adjusted freely during use.

7.4 The handle of the circuit breaker can be in three positions: "Closed", "Open" and "Tripped". When the handle is in the trip position, it shall be pulled in the "Open" direction to make the circuit breaker trip again, and then the "Closing" operation can be carried out.

7.5 For installing the internal accessories, the circuit breaker must be tripped and interrupted before installation.

Company Commitment

On the premise that users abide by the use and storage conditions and that the product seals are intact, if the product is damaged or cannot be used normally due to manufacturing quality problems within 18 months from the production date of the product, our company will be responsible for the repairing or replacement free of charge. If the warranty period expires, users shall pay for the repair. However, if the damage is caused by the following circumstances, the fees for repair still shall be charged even within the warranty period:

- (1) Misuse, self-modification, improper maintenance, etc.
- (2) Use beyond the standard specification requirements.
- (3) Falling, damage during transportation, etc. after purchase.
- (4) Earthquake, fire, lightning strike, abnormal voltage, other natural disasters and secondary disasters, etc.

In case of any questions, please contact the dealer or our customer service department.

Dear customers:

To protect our environment, please recycle the product or its components when the product is scrapped. For materials that cannot be recycled, please handle them properly. Thank you very much for your cooperation and support.

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