YCM6i series

Molded Case Circuit Breaker

OPERATION INSTRUCTION

Standard: IEC 60947-2

CNC Deliver Power For Better Life

⚠ Before installing and using this product, please read this manual carefully and pay more attention to safety.

YCM6i series

Instruction

1 Application

YCM6i series molded case circuit breaker (hereinafter called circuit breaker) is one of the new type circuit breakers designed and developed by our company through using international advanced technology. It can be sorted : L type (standard type), M type(higher breaking capacity type), according to its rated ultimate short-circuit breaking capacity. This product is of small volume, high breaking capacity, short flashover. It is used in distribution network of AC50/60Hz, rated insulation voltage 800V (500V for 63 type), rated working voltage up to 690V (400V for 63 type), rated current up to 1000A for distributing electrical power, protecting circuit and power supply equipment from damages of overload, short-circuit and under-voltage, and also can be used for infrequent start, overload, short-circuit and under-voltage protection for electric motor.

This circuit breaker can be installed vertically or horizontally. This product complies with IEC60947-2 standard.

2 Installation Environment

2.1 Altitude of installation position is not more than 200om (when altitude is higher than 2000 m, please consult with manufacturer and use);

2.2 The upper limit of ambient temperature is + 40℃, lower limit is -5℃. Average value within 24h is not more than +35℃ ;

Note: if upper limit of ambient temperature is higher than +40℃, or lower than -5℃, you shall consult with manufacturer and use according to the data in the product catalogue and instruction manual;

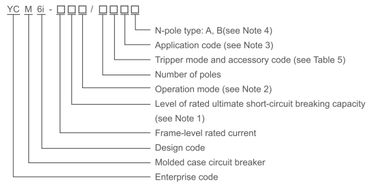
2.3 In the medium without explosion danger or without gas and conductive dust which can corrode metal and damage insulation.

2.4 Places without rain or snow damage;

2.5 When ambient air temperature is +40℃, atmospheric relative hamidity shall not be more than 50%; At lower temperature, there is higher relative humidity. At the wettest month, the month average biggest relative humidity is 90%.Meanwhile, month average lowest temperature of this month is +25℃ while condensation on the product due to temperature change is considered;

2.6 Pollution degree is 3.

3 Model and specification of circuit breaker



Notes:

Classified into Type L (standard type) and Type M (high breaking type) according to the levelof rated ultimate short-circuit breaking capacity.No code for direct handle operation; code P ffor electric operation; code Zifor rotatinghandle operation.

No code for power distribution circuit breakers; code 2 for motor protection circuit breakers.The products are divided into 3-pole and 4-pole types. Among 4 -pole products, the neutralpole (N-pole) has 2 types:

Type A: No overcurrent tripper is installed on the N-pole, and the N-pole is always on anddoes not switch on or off together with the other three poles.Type B: No overcurrent tripper is installed on the N-pole, and the N-pole switches on and offtogether with the other three poles (the N-pole switches on first and off last).

Type designation:

1. Ambient temperature: -5°C ~ +40°C
2. Altitude: 2000m
3. Humidity: The relative humidity of air shall not exceed 50% at +40°C.
4. Pollution degree: Grade 3
5. Installation category: Category III6.Places free from rain and snow erosion.
7. Places free from metals, gases that damage insulation, and conductive dust.
8. Places free from explosive media and media that are corrosive enough to damage the product.9. Installation method: Vertical installation, horizontal installation
10. Transportation and Storage Conditions:Between -25°C and +55°C under normal conditions.
11. Short-term temperature: It can reach up to +70°C for a short period (24 hours).

4 Protection Characteristics

Tripper Operation Performance

For Power Distribution

Table 1

Rated Operating Current of Tripper (In)	Thermal Tripper (Reference Temperature 40°C)		Electromagnetic Tripper Operating Current (A)	Remarks
	1.05In [Cold State] Non-operation Time	1.30In (Hot State) Operation Time		
10 < In ≤ 63	≥1	<1	10In ± 20%	Power distribution protector. Note: For 1000A, It: ± 7ms 20%
63 < In ≤100	≥2	<2	10In ± 20%	
100 < In ≤1600	≥2	<2	5In ± 20% 7In ± 20% 10In ± 20%	

Note:Circuit breakers with a rated current less than 160A do not have tripping at 5In current.

For Motor Protection

Table 2

Rated Operating Current of Tripper (In) (A)	Thermal Tripper (Reference Temperature 40°C)			Electromagnetic Tripper Operating Current (A)
	1.0In [Cold State] Non-operation Time(h)	1.20In (Hot State) Operation Time(h)	1.50In [Hot State] Operation Time(h)	7.20In (Cold State) Operation Time(h)	
10 < In ≤630	≥2	≤2	8min	6s<Tp < 20s	12In ± 20%

Power Loss

Circuit Breaker Power Loss

Table 3

Model	Energized current	Three-pole Total Power Loss (W)		
		Front-panel wiring, rear-panel wiring	Plug-in front-panel wiring	Plug-in rear-panel wiring
YCM6i-63/125 (L, M) Direct heating type (10A - 25A)	25	28	/	32
YCM6i-63/125 (L, M) Indirect heating type(32A - 63A)	63	20	/	24
YCM6i-160 (L, M) Indirect heating type(32A - 100A)	125	35	37	40
YCM6i-250(L, M)	250	62	66	70
YCM6i-320(L,M)	250	62	66	70
YCM6i-400/630(L, M)	400	115	120	125
YCM6i-800(L, M)	630	187	193	200
YCM6i-1000(M)	800	262	/	300

Derating Factor

Derating Factor of Circuit Breaker with Ambient Temperature Change

Table 4

Model	Derating Factor(In)				
	+40°C	+45°C	+50°C	+55°C	+60°C
YCM6i-63/125	1	0.94	0.88	0.81	0.74
YCM6i-160	1	0.96	0.91	0.85	0.78
YCM6i-250	1	0.97	0.94	0.90	0.86
YCM6i-320	1	0.97	0.94	0.90	0.86
YCM6i-400/630	1	0.95	0.89	0.82	0.75
YCM6i-800	1	0.94	0.88	0.82	0.76
YCM6i-1000	1	0.94	0.87	0.80	0.72

Notes: The above derating factors are measured under the frame-level rated current.

5 Technical data

Table 5

Frame rating current Inm (A)		63/125	160	250	320	400	630	800	1000
Rated current In (A), 40°C		10, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125	25, 32, 40, 50, 63, 80, 100, 125, 160	125, 160, 180, 200, 225, 250,	125, 160, 180, 200, 225, 250, 280, 315, 320	250, 315, 350, 400	400, 500, 630	630, 700, 800	800, 1000
insulation voltage Ui (V)		800	1000	1000	1000	1000	1000	1140	1140
Rated impulse withstand voltage Uimp (kV)		8	12	12	12	12	12	12	12
Rated operating voltage Ue (V)		400, 690	400, 690	400, 690	400, 690	400, 690	400, 690	400, 690	400, 690
Selectivity category		A	A	A	A	A	A	A	A
Arcing distance (mm)		< 50	< 50	< 50	< 50	< 50	< 100	< 100	< 120
Operating performance (times)	Electrical life (with current supply)	1500	1000	1000	1000	1000	1000	500	500
	Mechanical life (without current supply)	8500	7000	7000	7000	4000	4000	2500	2500

Breaking capacity class		L	M	L	M	L	M	L	M	L	M	L	M	L	M	L	M
Number of poles	3P	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	4P	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Rated ultimate short-circuit breaking capacity Icu (kV)	Ue=AC400V	35	50	35	85	35	85	50	75	50	100	50	100	75	100	75	100
Rated service short-circuit breaking capacity Ics (kV)		20	35	22	50	22	50	35	50	35	75	35	75	50	65	50	65
Rated ultimate short-circuit breaking capacity Icu (kV)	Ue=AC690V	8	10	8	10	8	10	8	10	10	10	10	10	10	10	10	10
Rated service short-circuit breaking capacity Ics (kV)		4	5	4	5	4	5	4	5	10	10	10	10	10	10	10	10

Overall dimensions Width (W) × Height (H) × Depth (D)																	
W	3P	75	92	72	107	107	150	150	182	210							
	4P	100	122	122	142	142	198	198	240	280							
H		130	130	130	165	165	257	257	270	280							
D		67	77.5	78	78	110	110	118	120								

Notes: The symbol □ □ indicates not applicable, The symbol □ □ indicates applicable.

Notes: For models 63-125, the minimum instantaneous operating current is 40A, and those below 40A are equivalent to 40A. For the 160 frame size, the instantaneous operating current below 50A is equivalent to 50A.

Note: For the 2P version of models 125-250, refer to the detailed dimension page for overall and installation dimensions.

6 Outline and Mounting Dimensions

Figure 1 63-1000 Outline and Mounting Dimensions of Molded Case Circuit Breaker (MCCB) Frame

(Unit: mm)

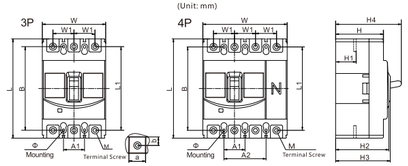
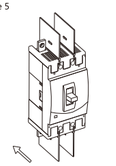


Table 6

Model Number	W	L	H	W1	L1	H1	H2	H3	H4	A1	A2	B	Φ	M	a	b
YCM6i-63/3P	75	130	56.5	25	117	22.5	68	70.5	84.5	25	–	111	4-Φ3.5	M6	18	9. 5
YCM6i-63/4P	100										50		6-Φ3.5			
YCM6i-125/3P	75	130	56.5	25	117	22.5	68	70.5	84.5	25	–	111	4-Φ3.5	M6	18	9. 5
YCM6i-125/4P	100										50		6-Φ3.5			
YCM6i-160/3P	92	150	65	30	132	23.5	77.5	79.5	94.5	30	–	129	4-Φ4.5	M8	17. 5	7
YCM6i-160/4P	122										60		6-Φ4.5			
YCM6i-250/320/3P	107	165	69	35	144	22	77	81	97	35	–	126	4-Φ4.5	M8	23	10
YCM6i-250/320/4P	142										70		6-Φ4.5			
YCM6i-400/3P	150	257	103	48	224	39	110	113	152	44	–	194	4-Φ7	M10	30	11. 5
YCM6i-400/4P	198										94		6-Φ7			
YCM6i-630/3P	150	257	103	48	224	39	110	113	152	44	–	194	4-Φ7	M10	30	11. 5
YCM6i-630/4P	198										94		6-Φ7			
YCM6i-800/3P	182	270	112	58	243	44	111	118	156	58	–	234	4-Φ7	M12	40. 5	15
YCM6i-800/4P	240					45.4					116		6-Φ7			
YCM6i-1000/3P	210	280	112	70	243	42	120	122	158	70	–	243	4-Φ7	M12	44. 5	15
YCM6i-1000/4P	280					40					140		6-Φ7			

Figure 5



Installation Precautions

⚠

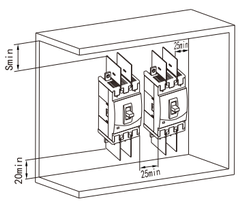
① Make sure to install the arc barrier before use.

② Ensure insulation resistance to ground is ≥ 10 MΩ after installation.

③ Ensure correct and tight connections. See Tables 6 & 7 for wire specs.

Figure 6

Minimum Mounting Distance



(Unit: mm)

Model	S
YCM6i-63/125 YCM6i-160 YCM6i-250/320	50
YCM6i-400 YCM6i-630 YCM6i-800/1000	100

⚠ The circuit breaker should be installed on metal or other non-combustible materials, and ensure the minimum safety distance.

7 Busbar and Cable CSA Selection

Table 7 Selection of copper cables

Table 7

In A	10 16 20	25 32	40 50	63	80	100	125	140 160	180 200 225	250	315 350	400
Wire size mm²	2.5	6	10	16	25	35	50	70	95	120	185	240

Table 8 Copper Cable / Busbar Selection

Table8

In A	Wire size		Wire size	
	Total	Size (mm²)	Total	size mm
400 < Is≤500	2	150	2	30 × 5
500 < Is≤630	2	185	2	40 × 5
630 < Is≤800	2	240	2	50 × 5
800 < Is≤1000	-	-	2	50 × 6
1000 < Is≤1250	-	-	2	50 × 8
1250 < Is≤1600	-	-	2	50 × 10

8 Maintenance & Troubleshooting

1) Maintenance and inspection must be performed by qualified personnel.

2) If internal or external accessories are to be added, they must be provided by our company according to the ordered model to ensure quality.

If users purchase or modify them on their own, our company cannot be held responsible for any risks arising from such use.

3) Before maintenance, the upstream power supply must be disconnected, and it must be ensured that the incoming terminals of the circuit breaker are de-energized. Under normal operating conditions, circuit breaker maintenance should be performed once a year; under abnormal conditions, every six months. For maintenance details, refer to Table 9.

Table 9

Type	Item	Content
MCCB	Outline	Clean dust from the surface and connections of the circuit breaker (using a clean, dry cloth).
		Clean the phase barrier plates; replace if necessary.
		The circuit breaker housing should be free of cracks,and the connection terminals should show no abnormal discoloration (oxides can be removed with sandpaper).
	Arc barrier connection terminals	Insert the arc barriers into place as required by the instruction manual.
		Check all connections to ensure they are tightened and secure.
	Operation Test	Reset the circuit breaker and perform 5 make-and-break operations. During closing, use the trip button to open the breaker; the operation should be reliable.
	Insulation Test	Perform an insulation test on the circuit breaker in accordance with safety warning requirements.
Accessories	Undervoltage release	Disconnect the power supply to the undervoltage release; the circuit breaker should open, and the handle should indicate the trip-free position.
	Shunt release	Apply rated voltage to the shunt release; the circuit breaker should open, and the handle should indicate the trip-free position.
	Auxiliary contacts	Open and close the circuit breaker; the auxiliary contact switching signals should operate correctly.
	Alarm contacts	During closing, opening, and tripping (by pressing the trip button)operations, the alarm contact switching signals should operate correctly.
	Manual operating	Operate the circuit breaker 3 times using the manual operating mechanism; the operating rod should move freely.
	Motor operator	Operate the circuit breaker 3 times using the motor operator; the electric control function should operate correctly.
	Plug-in device	Insert and withdraw the circuit breaker 2 to 3 times; the mating parts function and sliding movement should be normal without jamming.

⚠ **If the circuit breaker is equipped with an undervoltage release, the release must be energized before performing reset, closing, and opening operations.**

Ordering instruction

1.Name and model of circuit breaker

2.Rated current and setting multiples of circuit breakers

3.Accessories Name and Rated Voltage。

CNC ELECTRIC

CERTIFICATE

Product Model: YCM6i

Standard: IEC 60947

Inspector : CNC 003

Production date: Printed on the product or package.

This product is qualified according to the delivery inspection

CNC YCM6i Series

CNC ELECTRIC

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