


# YCM7YV series

Moulded case circuit breaker

## OPERATION INSTRUCTION


**CNC** Deliver  
Power For Better Life

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

## 1.Features

1. This series of circuit breakers has the characteristics of compact structure, small volume, high breaking capacity.
2. Relative to the thermomagnetic plastic-case circuit breaker, electronic circuit breaker not only has short circuit and short delay protection function, but also all protection functions will not change with the change of environmental temperature.
- 3.The circuit breaker has the characteristics of adjustable rated current,adjustable overload long delay time, adjustable short-circuit short delay current multiple, adjustable short-circuit short delay action time,adjustable instantaneous current multiple, and adjustable warning current multiple.
- 4.The intelligent control panel has perfect functions and easy operation.Users can set and adjust the trip device according to the requirements of load current.
- 5.Circuit breakers have operating current light column indication, current overload indication and current warning indication.

## 2. Usage and scope of application

1. YCM7YV series electronic plastic-case circuit breaker (hereinafter referred to as circuit breaker) is suitable for low-voltage networks with AC 50Hz,rated insulation voltage 800V, rated operating voltage 400v or lower, and rated operating current up to 630A. The circuit breaker has the functions of overload long delay inverse time, short short delay inverse time, shortshort delay fixed time, short short instantaneous and undervoltage protection. Under normal conditions, the circuit breaker is used for infrequent conversion of the line and infrequent starting of the motor.
2. The circuit breaker can be equipped with undervoltage release device,shunt release device, auxilliary contact, alarm contact, electric operating mechanism, rotating operating handle and other accessories.
3. This series of circuit breakers has isolation function, and the corresponding symbol is "".

## 3. Comply with

Standard: IEC60947-2

#### **4. Working environment**

##### 1. Ambient air temperature

- a) The upper limit value shall not exceed +40°C;
- b) The lower limit value shall not be less than -5 °C;
- c) The average value within 24 hours shall not exceed +35°C;

##### 2. Altitude

The elevation of the installation site shall not exceed 2000m.

##### 3. Atmospheric conditions

The relative humidity of the atmosphere shall not exceed 50% at the highest ambient temperature of +40°C; At lower temperatures, there can be higher relative humidity levels; When the monthly average minimum temperature in the wettest month is +25°C, the monthly average maximum relative humidity in that month is 90%; Considering the condensation that occurs on the surface of the product due to temperature changes.

##### 4. Pollution level

Pollution degree 3, and the pollution level of the accessories installed in the circuit breaker is 2.

##### 5. Installation category

The main circuit of the circuit breaker should be in installation category III, while the auxiliary and control circuits should be in installation category II.

##### 6. Installation conditions

Circuit breakers should generally be installed vertically, usually with upper incoming lines, and the external magnetic field of the installation site should not exceed in any direction five times the geomagnetic field.

#### **5. Classification of circuit breakers**

##### 1. Classified by the purpose of the circuit breaker:

- a) Used for power distribution protection;
- b) Used for motor protection.

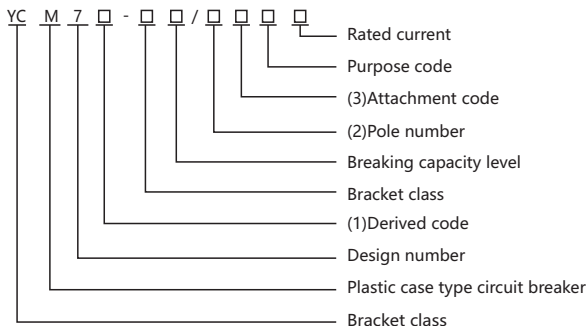
##### 2. According to the pole number of the circuit breaker:

- a) 3P; b) 4P

##### 3. According to the operation mode of the circuit breaker:

- a) Direct operation of the handle;
- b) Electric operation (P);
- c) Rotate the handle operation (Z)

## 6. Type designation



Note:

- (1) Derived code: E-electronic current release.
- (2) Number of poles: 3- three poles; 4- Quadropole.
- (3) Please refer to the attachment code table for the attachment codes.

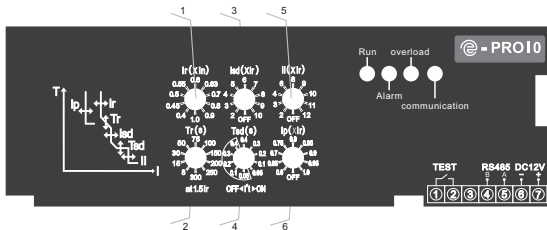
Table 1. Attachment Code

Accessories code	Release method	Attachment Name																	
	Instantaneous release	No attachments	200	208	210	220	230	240	250	260	270	218	228	238	248	258	268	278	
	Repeater release	Alarm contact	300	308	310	320	330	340	350	360	370	318	328	338	348	358	368	378	

## 7. Technical data

Type	YCM7YV-160M	YCM7YV-250M	YCM7YV-400M	YCM7YV-630M
Frame(A)	160	250	400	630
Number of poles	3	3	3	3
Rated current adjustable range In(A)	16-32, 40-100, 64-160	100-250	160-400,	160-400, 252-630,
Rated voltage Ue(V)	AC400V	AC400V	AC400V	AC400V
Rated insulation voltage Ui(V)	AC800V	AC800V	AC800V	AC800V
Short-circuit breaking capacity Icu/1cs(kA)	AC400V 35/25	35/25	50/35	50/35
Operation life (cycle)	ON	1500	1000	1000
	OFF	8500	7000	4000
Motor-driven operation	•	•	•	•
External rotary handle	•	•	•	•
Automatic tripping device	Electronic type	Electronic type	Electronic type	Electronic type

## Electronic controller adjustment panel (E-PRO10 knob type)



(E-PRO10)Note:(E-PRO10)

### 1. Rated current setting knob switch

The panel setting of 160-630 shell frame can be set at 0.4, 0.45, 0.5, 0.55, 0.6, 0.7, 0.8, 0.9, and 1.0;

2. Tr: Overload long delay time setting knob switch, when the circuit breaker passes 1.5 times  $I_r$  ( $xI_n$ ) current, the circuit breaker is in the setting time intermittent tripping,selectable gears are 8s, 15s, 30s, 50s, 75s, 100s, 150s, 200s, 250s, and 300s.

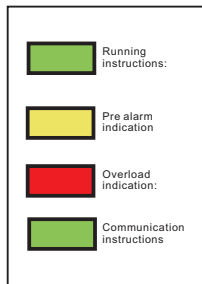
3. Isd: Short circuit short delay current multiple setting knob switch, with selectable gears of 2, 3, 4, 5, 6, 7, 8, 9, 10, when Setting value of circuit breaker on  $\times$  When the short-circuit current of  $I_r$  ( $xI_n$ ) is reached, the circuit breaker will delay tripping.

4. Tsd: Short circuit short delay action time setting knob switch, divided into inverse time limit protection (12toN) and definite time limit protection (rtoFF), with optional gears of 0.05s, 0.1s, 0.2s, 0.3s, 0.4. When the circuit breaker passes through Isd short circuit current,the circuit breaker will trip within the setting time.

5. Ii: Instantaneous current multiple setting knob switch, with selectable gears of 2, 3, 4, 6, 8, 9, 10, 12, 14, OFF, when off Setting value of circuit breaker  $\times$  When the short-circuit current of  $I_r$  occurs, the circuit breaker will momentarily trip.

6. Ip: Pre alarm current multiple setting knob switch, with selectable gears of 60%, 65%, 70%, 75%, 80%, 85%,90%, 95%, 100%, When the circuit breaker exceeds the setting value  $\times$  When a short circuit current  $I_r$  occurs, the circuit breaker warning indicator light will light up.

### The indicator lamp of the electronic release panel is set as follows



#### Overload pre-alarm features:

Load current:	$0.9I_p < I < 1.15I_p$	$I \geq 1.15I_p$
Indicator status:	Flicker	Steady ON

#### Overload indication:

Load current:	$I < 1.15I_p$	$I \geq 1.15I_p$
Indicator status:	Not bright	Steady ON

#### Running instructions:

Condition:	$I < 0.4I_n$ (single phase) $I < 0.2I_n$ (three-phase)	$I \geq 0.4I_n$ (single phase)	$I \geq 0.2I_n$ (three-phase)
Light	Does not light up	Green light	Green light

#### Note:

1. The above current error is  $\pm 10\%$ .

2. The pre alarm current must meet the starting current constraint, that is, the current cannot be lower than the operating conditions.

## 10. Electronic controller characteristics (E-PRO10)

1. With overload long delay reverse time, short circuit short delay reverse time, short circuit short delay fixed time, short circuit instantaneous action and other protection functions.

2. The anti-time action characteristics of long delay overcurrent protection are shown in the table:

Current		Action time	
Power distribution	1.05I <sub>r</sub>	>No action for 2 hours (When I <sub>n</sub> >63A), no action for >1 hour (When I <sub>n</sub> ≤ 63A)	
	1.3I <sub>r</sub>	<1h action	
	1.5I <sub>r</sub>	Setting time t <sub>r</sub> (s)	Inm-125A, 160A, 250A, 400A, 630A, 800A 8, 15, 30, 50, 75, 100, 150, 200, 250, 300

Note: The error in action value is ± 10%, and the error in action time is ± 15%

### When T<sub>s</sub> is in I<sup>2</sup>t within the ON gear range:

Current		Action time				
I <sub>s</sub> ≤ I < 6I <sub>r</sub> Inverse time limit		I <sup>2</sup> T <sub>2</sub> = (6*I <sub>r</sub> ) <sup>2</sup> T <sub>s</sub> (time error ± 15%)				
I ≥ I <sub>s</sub> just I ≥ 6I <sub>r</sub> Inverse time limit to fixed time limit	Setting time T <sub>s</sub> (s)	0.05	0.1	0.2	0.3	0.4
	Error	±0.02	±0.03	±0.06	±0.08	±0.1
	Returnable time	—	—	0.21	0.3	0.4
Note: I represents the actual current passing through, T <sub>2</sub> represents the actual action time; I <sub>s</sub> d is the set short delay current, and T <sub>s</sub> d is the set short delay action time.						

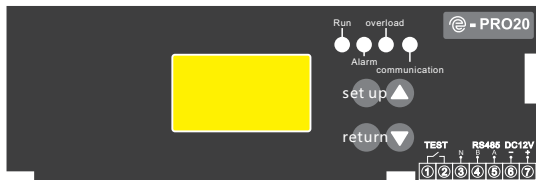
### When T<sub>s</sub>d is in I<sup>2</sup>t within the OFF gear range, there is a fixed time limit:

Current		Action time				
I ≥ I <sub>s</sub> Current error ± 10%	Setting time T <sub>s</sub> (s)	0.05	0.1	0.2	0.3	0.4
	Error	±0.02	±0.03	±0.06	±0.08	±0.1
	Returnable time	—	—	0.21	0.3	0.4
Note: I represents the actual current passing through, T <sub>2</sub> represents the actual action time; I <sub>s</sub> d is the set short delay current, and T <sub>s</sub> d is the set short delay action time.						

### Short circuit instantaneous protection action characteristics

Current		I <sub>i</sub> = (2, 3, 4, 6, 8, 9, 10, 12, 14) × I <sub>r</sub>	
Action characteristic	Action current	Minimum operating current 0.9I <sub>i</sub> Maximum inactive current 1.1I <sub>i</sub>	
	Action time	<0.1s	

## 9. Electronic controller adjustment panel (E-PRO20 liquid crystal type)



Note: (E-PRO20)

### ■ Characteristic parameter

50Hz Rated operating frequency: 50Hz Rated working voltage:AC400V

AC voltage measurement accuracy: Three-phase voltage sampling deviation does not exceed  $\pm 2\%$

AC current measurement accuracy: 0.4-1.0In three-phase current sampling deviation shall not exceed  $\pm 5\%$ ;

AC current measurement accuracy: 0.2-1.0In three-phase current sampling deviation is not more than  $+0.2\%$

### ■ Function

1. Overcurrent protection: overload long delay inverse time protection, short circuit short delay protection, short circuit instantaneous protection.
2. Voltage protection: that is, overvoltage protection, undervoltage protection, lack of phase protection, lack of zero protection, power trip.
3. With RS485 communication interface, it can realize remote communication, telemetry, remote control and remote adjustment.
4. LCD human-computer interaction: you can change the LCD screen parameters on the controller panel by pressing the button, setting the protection parameters;
5. Protection setting: by pressing the button to change the LCD screen parameters on the controller panel, setting the protection parameters;
6. Rotation setting: by pressing the button to change the LCD screen parameters on the controller panel, setting protection parameters;
7. Measurement function: the parameters can be measured for current, phase voltage
8. Fault record query: You can query the cause and time of the last ten trips Real-time clock



## ■ Function Description

### 1.Symbol Description

The following are the symbols used in the feature description.

Phase A current value

Phase B current value

Phase C current value

A phase voltage value

B phase voltage value

C phase voltage value

Overload long delay trip setting current, Overload long delay setting time Short circuit short delay trip setting current Short circuit short delay setting time Short circuit instantaneous trip setting current Overvoltage protection action value Undervoltage protection action value

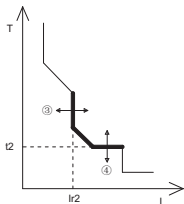
Specifications and functions			
Classification	Description		
Display method	LCD display+LED indicator		
Interface operation	key		
Protection function	Current protection	Overload long delay protection function	●
		Short circuit protection Time delay protection	●
		Short circuit instantaneous protection function	●
		Overload warning function	●
	Voltage protection	Undervoltage protection work	●
		Overvoltage protection function	●
		Lack of phase protection function	●
		Power side zero crossing protection function	●
	Communication function	DLT645-2007 multifunctional meter communication protocol Modbus-RTU	●
		Modbus-RTU communication protocol	○
		RS-485communication hardware 1 RS-485	●
	External DI/O port function	Communication auxiliary power input	○
		One DI/O programmable control input	○
	Fault record	10 trip failure storage	●
		80 protection function logout events recorded	●
		10 gate position change events recorded	●
10 alarm event records		●	
Time function	With year, month, day, minute and second real-time clock function	●	
Measurement function	Measure electrical parameters	Voltage 0.7Ue~1.3Ue,0.5%	●
		Current 0.2In~1.2In,0.5%	●
		Three-phase and total powerfactor 0.5~100005	●
		Three-phase and total active power, reactive power,apparent power	●
		Three-phase and total active energy, reactive energy,apparent energy	●
		Voltage harmonics and total voltage harmonic distortion	●
		Current harmonics and total current harmonic distortion	●

Note: The symbol "●" indicates that it has its function: the symbol "○" indicates that this function is optional; The symbol "-" indicates that this function is unavailable.

### 2. Overload long delay protection

Overload long delay protection is used to prevent lines and equipment from overheating in the event of overload.





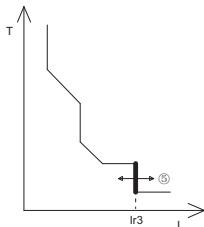
Number	Parameter	Description
③	$I_{r1}$	Short circuit short delay trip setting current $(2-12) \times I_{r1}$
④	$t1$	Short-circuit short delay setting time, 0.1, 0.2, 0.3, 0.4 adjustable

### $I_{r1}$ The setting range of

Setting time		12	60	100	150
Action time	$I_{r1} \leq 1$ $< 1.5I_{r2}$	Inverse time limit	$= (\text{---}) \times \pm 15\%$		
	$1.5 \leq I_{r1}$ $< I_{r3}$	Inverse time limit	$0.1 \pm 0.03$	$0.2 \pm 0.03$	$0.3 \pm 0.45$
Note: Inherent error					

### $I_{r1}$ The setting range of

Short circuit instantaneous protection action characteristics



Number	Parameter	Description
⑤	$I_{r2}$	Instantaneous trip setting current

Load current	$I \leq 0.85I_{r3}$	$I \geq 1.15I_{r3}$
Action time	non-action	$< 100\text{ms}$

### Overvoltage protection function

Voltage action value: Phase voltage is adjustable from 250 to 320V(default:280V), step difference is 1v, can be turned off: action delay time :1 to 5s adjustable (default: 3s), step difference is 1s.Trigger condition: any phase voltage is greater than the overvoltage setting value.Operating voltage tolerance is 5V.

### Undervoltage protection function

Voltage action value: Phase voltage is adjustable from 145 to 200V (default:160V), stage difference is 1V,and can be closed: action delay time:1-5s (3s by default), stage difference is 1s.Trigger condition: any phase voltage is less than the undervoltage setting value.Operating voltage tolerance is 5V.

### Lack of phase protection function

Voltage action value: Phase voltage is adjustable from 10 to 100V(default:50V), step difference: 1V, off: Action delay time :1-5s adjustable (default:1s), step difference: 1s.Trigger condition: any phase voltage is less than the missing phase setting value.Operating voltage tolerance is 5V.

### Power-off trip

When the three-phase voltage acquisition value of the incoming line end is less than the current phase deficiency setting, the trip action can be immediately switched off.

## 8.Liquid crystal display and controller operation instructions

The operation interface of the controller is shown in Figure 1, which consists of a liquid crystal display window, three LED function indicators andfour function keys.

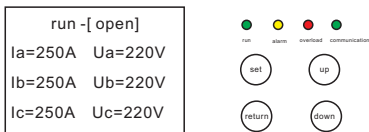


Figure 1: Controller operation interface.

### **1.1.1.Function definition of LED indicator**

Closing light: When the switch is in closing state,, the indicator light is always on, and the indicator light is off

Failure light: When the switch failure alarm light shines.

Communication light: When the data exchange occurs in the communication between the switch and the upper computer, the indicator light shines

### **1.1.2 Definition of key functions**

Up key: Display current current, current voltage and current switching state;

Down key: Switch down the menu or data subtraction operation under the setting state.Under normal operation, press the down lock to manually open the circuit breaker and keep the circuit breaker in the off state.

Set/OK key: Switch under any state, press this key to enter the main menu interface of the controller. Switch in the setting state, press this button to select the menu to enter or set the data storage operation.Back key: Switch in the setting state, press this key to exit the setting menu operation;

Back key: Switch in the setting state, press this key to exit the setting menu operation; It is also used for the switch to unlock and return to normal operating state when the button is locked.It is also used for abandoning storage when the data is set and the submenu to return to the upper-level menu.

### **1.1.3 Key operation definition**

Press: Press a key and hold it for a short time (less than 1s) before releasing it;Long press: Press a key and hold it for 3s to 5s to release it:Continuous press: Press a key continuously for less than 1 second.

### **1.1.4 Display interface status**

The controller display status is divided into: normal operation status,alarm status, fault blocking state and man-machine operation status

### **1.1.5 Normal operating status**

Under normal operating conditions, the liquid crystal displays the current main circuit real-time current, voltage, and other information.

Figure 2-A and B are the normal operation of the LCD display interface

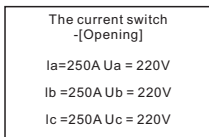


Figure 2-a

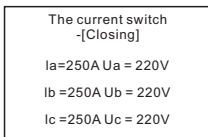


Figure 2-b

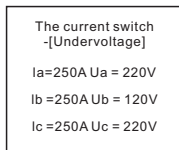
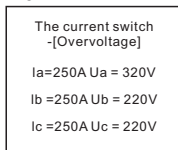
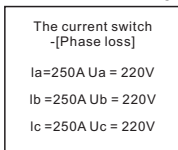
Under the normal operation interface, the "Run" indicator light is always on.

Figure 2-a When the switch is open: switch [split smell], Figure 2 is when the switch is closed: switch [closed news].

### 1.1.6.Rounding status interface

The alarm status interface refers to the alarm information interface displayed by the controller when there is a fault trip delay and the fault alarm does not trip, as shown in Figure 3, several alarm interfaces, and the "camp" indicator flashes alarm..

When Tsd is in the range of I tOFF gear, it is a fixed time limit

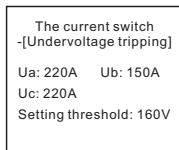
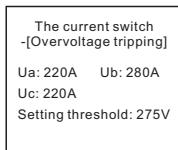
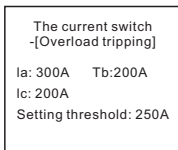


The anti-black display in the alarm interface indicates that the fault has occurred.

### 1.1.7.Fault latch-off status interface

The fault latching interface refers to the information interface displayed by the controller after the switch trips, such as several fault latching interfaces shown in Figure 4, and the "fault" indicator is always on alarm.

Figure 4: Fault latching interface



An anti-black display in the fault latching interface indicates that a fault has occurred.

### 1.1.8 Machine operation interface

1 Function setting 2 Record query 3 Time setting 4 System maintenance	1 Overload protection :[trip] 2.Overload Ir:630A 3.Overload delay : 12S 4 Short delay protection :[trip]	5.Short delay Isd:2520A 6.Short delay Tsd:300ms 7.Instantaneousprotection:[trip] 8 Instantaneous Ii:630OA
9.Overtoltage protection :[trip] 10.Overtoltage Uvo:280V 11.Undervoltage protection:[trip] 12.Undervoltage Uvu:165V	13.Lack of phase 14 Phase loss voltage :100v 15.Zero-crossing protection:[Alarm] 16. Power off protection :[off]	17.Leakage protection :[trip] 18.Leakage current :1000mA 19.Leakage time :500ms

The above operating instructions only list part of the interfaces.For details,perform corresponding operations according to the interface.

"☞" indicates that submenu data is available, and "←" or "or" box "indicates that data options are currently available for setting.

### 1.1.9 LCD operation

#### 1.1.9.1.Main menu operations

In any state of the switch, you can press the "set" key to set parameters or information query and other operations, special tips: in the switch open state should first determine the cause of the switch tripping,and can press the "set" key to enter the setting menu after troubleshooting.

After troubleshooting. Operation method: Press the "Set" key to enter the main menu of setting, as shown in Figure 6. Then press the "Up" and "Down" keys to browse the menu information up or down.After browsing the current menu, press the "Set/Confirm" key to enter the submenu of the corresponding item.

The main menu includes four functional menus :1 function setting, 2 record query, 3 time setting, and 4 system maintenance

- |  |
|--|
| 1 Function setting<br>2 Record query<br>3 Time setting<br>4 System maintenance |
|--|

### 1.1.9.2.Function setting options

The function list includes Settings Menu 1-19, which indicates that there are 1-19 protection settings.Click "Up" or "Down" under the menu of "Function Setting" to browse parameter setting options. When the parameter setting item pointed to "]" is displayed, click" Set "to set the parameter or function.Then, you can click" up "or" down "to save the parameter or press" Back "to abandon the setting.The steps are shown in Figure 7.

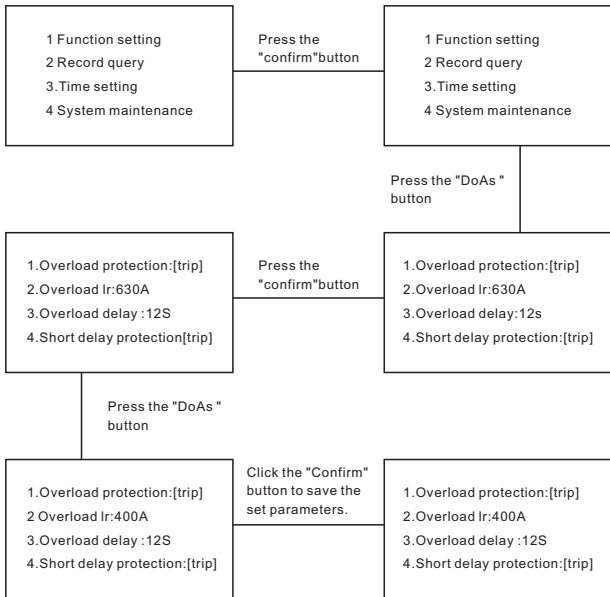


Figure 7

The following table shows all parameter settings and the scope of all parameter settings in the function setting menu:



Set parameter menu	Setting item	Parameter setting range	Factory default
Function setting 1	Overload protection function	Shutdown, alarm, trip	trip
Function setting 2	Overload current threshold	$I_r=(0.4\sim 1.0)\times I_n$ , 6 times inverse time curve	1.0I <sub>n</sub>
Function setting 3	Overload action delay	3~18s	12s
Function setting 4	Short circuit delay protection	Shutdown, alarm, trip	trip
Function setting 5	Short circuit delay threshold	$I_{sd}=(2\sim 10)\times I_r$	4I <sub>r</sub>
Function Setting6	Short circuit short delay time	0.1~1.0s	0.3s
Function Setting7	Short circuit instantaneous protection	Shutdown, alarm, trip	trip
Function Setting8	Short circuit instantaneous threshold	$I_i=(2\sim 12)\times I_r$	10I <sub>r</sub>
Function Setting9	Overvoltage protection function	Shutdown, alarm, trip	trip
Function Setting10	Overpressure protection threshold	253v~286v, step 1v continuously adjustable	280V
Function Setting11	Undervoltage protection function	Shutdown, alarm, trip	trip
Function Setting12	Undervoltage protection function	Step 1v continuously adjustable	165V
Function Setting13	Lack of phase protection function	Shutdown, alarm, trip	trip
Function Setting14	Phase loss protection threshold	Step 1v continuously adjustable	100V
Function Setting15	Zero-crossing protection function	Shutdown, alarm, trip	trip
Function Setting16	Power outage protection function	Shutdown, alarm, trip	Shut down

Note: Factory default values can be customized according to users

### 1.1.9.3. Record query options

Press the up or down key to select "Record query" in the setting interface, and press "OK" to enter. The record query option includes two sub-menus: 1 trip record and 2 trip times, as shown in Figure 8

<p>Record query</p> <p>1 Trip record</p> <p>2 Number of trips</p>	<p>1/10 Trip record 1/10</p> <p>Trip type: overload trip</p> <p>Trip value :30OA</p> <p>Trip time:19-01-0710:03:15</p>	<p>Time setting</p> <p>19/01/08-10:50:25</p> <p>Version :V1.0-3FEO</p>
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#### 1.1.9.4 Querying the hop record, as shown in Figure 9

There are 10 trip records available for query. 1 in 1/10 indicates the second trip record of the current 0 records. Press the Set key and 0 Delete is displayed. Press other keys to exit deletion screen.

#### 1.1.9.5 Clock settings

The clock setting is used for manually correcting the time of the product year, month, day, hour, minute and second. It can also be used for querying the product version number and software upgrade address code, as shown in Figure 10.

#### 1.1.9.6 Querying the number of trips

Trip times include the following 9 trip times queries, as shown in Figure 11 below.

<p>Trip times 1/4</p> <p>Total trip :0 times</p> <p>Overload trip :0 times</p> <p>Overvoltage trip :0 times</p>	<p>Trip times 2/4</p> <p>Manual trip :0</p> <p>timesZero trip :0 times</p> <p>Test trip :0 times</p>
<p>Trip times 3/4</p> <p>Short circuit trip :0 times</p> <p>Instantaneous trip :0 times</p> <p>Undervoltage trip :0 times</p>	<p>4/4 Trip times 4/4</p> <p>Missing phase trip :0 times</p>

Figure 11

#### 1.1.10 System maintenance options

System maintenance options are important parameter settings for the controller

### 1.1.10.1 Communication settings menu

The communication settings menu contains two options: communication rate and communication address.

Communication rate ranges :0.6,1.2,2.4,4.89.619.2Kbps The default value is 9.6Kbps

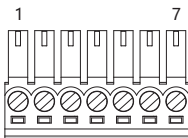
Communication address A5-A0 contains six double-byte parameters(corresponding to the address domain in DL/T65) and is divided into 12 bits.Each value ranges from 0 to 9.

Mapping sequence from left to right: A5 A4A3 A2A1A0=00 0000 000001

### 1.1.10.2 Record the clear menu

1.1.The definition of communication port is shown in Figure 12 and Table 1

The zero-clearing menu is used to record all faults, alarms, events, and trip times of a product before it is tested and leaves the factory.



1.1.Figure 12

Pin position	1	2	3	4	5	6	7
Pin definition	Break-P	Break-P	N	RS-485-B	RS-485-A	RS-GND	RS-12V

Table 1 Definition of communication ports

### 1.1.1 Terminal process switching

The "Break-P" of port 7P is short-circuited with "Break-GND", and the switch is switched of

### 1.1.2 Terminal communication 7P

485B and 485A of port 7P can connect to the 485 communication

### 1.2 Precautions for product testing

In order to avoid ambiguity of the test results of the controller, the test shall be conducted in accordance with the relevant requirements of IEC60947-2

1.Transient and short delay protection test:

The two tests should be tested in accordance with the requirements of IEC60947-2

"Disconnection under short circuit condition in 8.3.3.1.2"

2. Overload long delay protection test: This test shall be conducted in accordance with the requirements of IEC60947-2 "Disconnect under overload conditions"

3. Test on overload warning and overload alarm without tripping: This test shall be conducted in accordance with the requirements of IEC60947-2 "Disconnect under overload bar"

#### 10. Connection wire requirements

The cross-sectional area of the connecting wire and the corresponding rated current are shown in the following table\*

Rated current (A)	16/20	25	32	40/50	63	80	100
Conductor cross-sectional area (mm <sup>2</sup> )	2.5	4	6	10	16	25	35

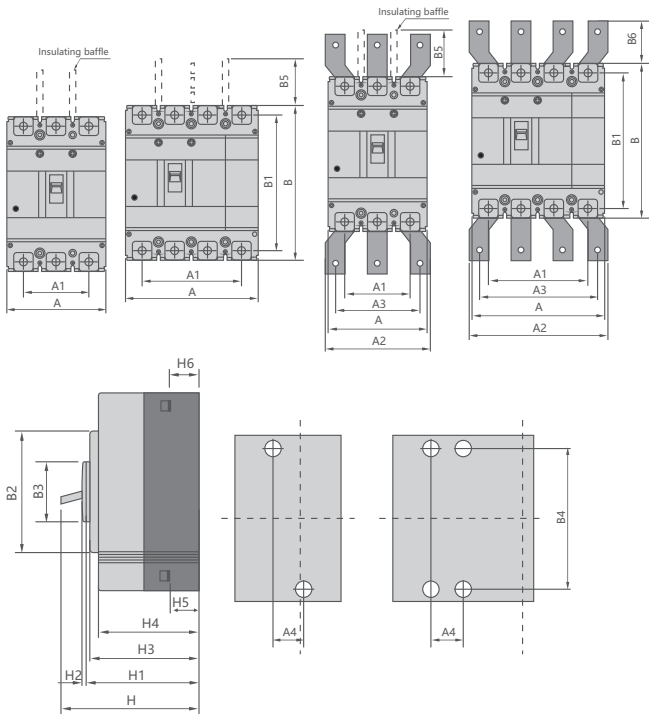
Rated current (A)	125 140	25	180 200 255	250	315 350	400
Conductor cross-sectional area (mm <sup>2</sup> )	50	70	95	120	185	240

Rated current(A)	Cable		Copper bar	
	Quantity	Cross-sectional area of conductor (MM <sup>2</sup> )	Quantity	Size (mmxmm)
500	2	150	2	30×5
630	2	185	2	40×5

\* Because the rated current of the electronic circuit breaker can be adjusted, please check whether the section size of the connecting wire corresponds to the rated current before adjusting the current. It is recommended to use the connecting wire corresponding to the maximum rated current of the circuit breaker housing frame.

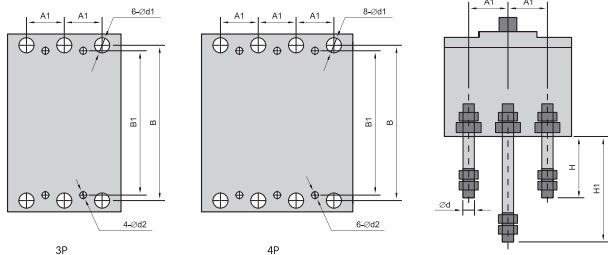
## 11. Circuit breaker external dimensions and mounting dimensions

Board front shape and installation size

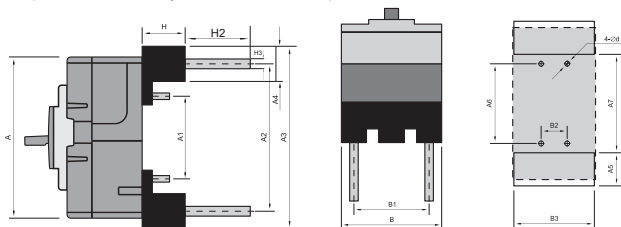


Model			160	250	400	630	800	800
Overall dimensions	A	3P	105	105	140	140	210	210
		4P	-	-	-	-	-	-
	A1	3P	70	70	88	88	140	140
		4P	-	-	-	-	-	-
	A2	3P	-	-	140	140	180	180
		4P	-	-	-	-	-	-
	A3		-	-	112	112	140	140
			-	-	-	-	-	-
	B		165	165	257	257	275	275
	B1		144	144	230	230	243	243
	B2		104	104	179	179	192	192
	B3		59	59	100	100	90	90
	B5		110	110	110	110	110	110
	B6		-	-	42	42	87	87
	H		120	120	155	155	155	155
	H1		98	98	110	110	107	107
	H2		2	2	3	3	5	5
	H3		98	98	110	110	104	104
	H4		84	84	97	97	97	97
	H5		22.5	22.5	29	30	25	27
H6		24	24	30	32	25	27	
Installing dimensions	A4		35	35	44	44	70	70
	B4		126	126	194	194	243	243
Wiring/Screw/Bolt			M8	M8	M10	M10	M12	M12

## Plate rear profile and mounting dimensions

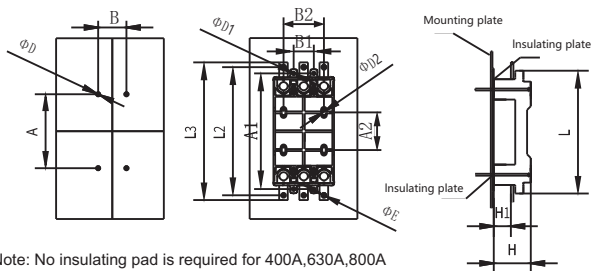


## Rear profile and mounting dimensions of insert plate



Model		160	250	400	630	800	800
Rear connection & overall	A1	35	35	44	44	70	70
	B	144	144	230	230	243	243
	B1	126	126	194	194	243	243
	H	63	63	68	68	108	108
	H1	103	103	109	109	163	163
	Φd	12	12	18	22	24	24
	Φd1	24	24	35	35	48	48
	Φd2	5	5	7	7	7	7
Plug-in connection & overall	A	165	257	257	257	275	275
	A1	54	54	126	139	147	147
	A2	144	144	225	220	242	242
	A3	184	184	279	275	296	296
	A4	45	45	55	55	55	55
	A5	55	55	65	65	65	65
	A6	54	54	125	139	147	147
	A7	95	95	169	168	188	188
	H	50	50	60	60	91	91
	B	107	107	140	133	218	218
	B1	70	70	88	88	140	140
	B2	70	70	60	44	107	107
	B3	109	109	142	143	222	222
	Φd	6.5	6.5	9	9	10.5	10.5
	H2	35	35	32	48(97)	31	31
H3	21.5	21.5	Φ23	Φ30	Φ25	Φ25	

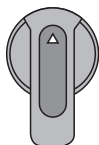




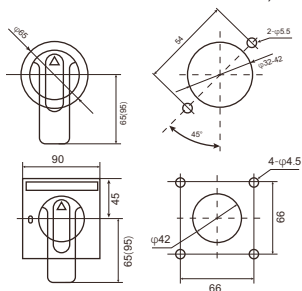
Note: No insulating pad is required for 400A,630A,800A

Model and specification	A	B	L2	L3	D	E	H	H1	L	A1	B1	D1	A2	B2	D2
160	150	35	223	243	4.5	8.5	74	33	202	191	35	5.5	74	70	6.5
250	150	35	223	243	4.5	8.5	74	33	202	191	35	5.5	74	70	6.5
400	249	44	332	358	5.5	10.5	85	36	310	295	44	6.5	146	88	7
630	249	44	332	358	5.5	10.5	85	36	310	295	44	6.5	146	88	7
800	283	70	363	403	6.5	12.5	125	67	341	327	70	6.5	143	140	7
800	283	70	363	403	6.5	12.5	125	67	341	327	70	6.5	143	140	7

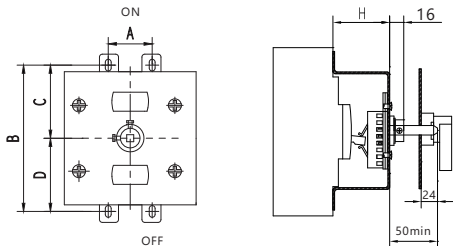
Manual operation mechanism: shape of circular handle and size of opening of door plate (the distance between opening center chain shall not be less than 200mm)



Center type shaft opening diagram



## Outline and installation diagram of central series manual operation mechanism



Manual mechanism model	A	B	C	D	H
160	35	126	63	63	51
250	35	126	63	63	51
400	128	194	97	97	76
630	128	194	97	97	76
800	198	243	121.5	121.5	76

### 12. Use and maintenance

1. Before use, users must read the Instruction Manual in detail to understand the characteristics, performance and use methods of this product.
2. During installation and debugging, users should pay attention to the protection of the controller to prevent blows or bruises. Before putting into operation, special personnel should check whether the parameters are correct and whether the controller is in normal operation state.
3. When setting protection parameters, appropriate tools should be used to adjust the knob switch, and accidental impact or rubbing the knob should be avoided.
4. When setting protection parameters, various parameters shall not cross, requiring  $l_r < l_s < l_i$ .
5. Equipped with the undervoltage trip breaker, undervoltage trip must be energized, circuit breaker can then buckle or close. Otherwise, the circuit breaker will be damaged.
6. The circuit breaker is labeled with "Power Supply Side" and "Load Side," and it must be installed according to regulations, and generally can not be inserted into the circuit.

### 13.Routine setting table of protection characteristics

The ex-factory setting values of various protection features shall be indicated by the user when ordering. If the user has no special requirements when ordering, the protection features shall be configured according to the "ex-factory general setting Table of Protection Features"when leaving the factory.

**Protection features factory routine setting table**

Protective characteristic				Remarks
Distribution protection	Overload long delay	Setting current $I_r$	$1.0I_n$	
		Setting time $T_r$	300s	
	Short circuit delay	Setting current $I_{sd}$	$8 \times I_r$	
		Setting time $I_{sd}$	0.3s	
	Short circuit instantaneous	Setting current $I_i$	$10 \times I_r$	
Forewarning	Setting current $I_p$	$1.0I_r$		
Motor protection	Overload long delay	Setting current $I_r$	$1.0I_n$	
		Setting time $T_r$	300s	
	Short circuit delay	Setting current $I_{sd}$	$10 \times I_r$	
		Setting time $I_{sd}$	0.3s	
	Short circuit instantaneous	Setting current $I_i$	$12 \times I_r$	
Forewarning	Setting current $I_p$	$1.0I_r$		

### 13.Instructions for ordering

- 1.Name and model of circuit breaker
- 2.Rated current and setting multiple of circuit breaker
- 3.Attachment name and rated voltage



# CERTIFICATE

Product Model: YCM7YV series

Inspector: CNC001

Production date: Printed on the product  
or package.

This product is qualified according  
to the delivery inspection

## CNC ELECTRIC

Tel: 0086-577-61989999 Fax: 0086-577-61891122

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