

# YCB7LE-63Y


Residual Current Operated  
Circuit Breaker

OPERATION INSTRUCTION

Standard: IEC 61009-1

**CNC**

Deliver  
Power For Better Life

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

# **YCB7LE-63Y series**

## **RCBO Instruction**

### **1 General**

YCB7LE-63Y residual current operated circuit breaker with over-current protection (hereinafter referred to as RCBO) is suitable for AC 50Hz/60Hz, rated voltage up to 400V, rated current up to 63A, for residual current protection, overload and short circuit protection. When the human body gets an electric shock or the network leak current exceeds the specified value, the residual current operated circuit breaker can rapidly cutoff the human body and the powered equipment. With the function of overload and short circuit protection, the residual current operated circuit breaker can be used to protect the circuit or motor from being damaged by overload and short circuit, and can also be used for not-frequent operational transformation in the circuit under normal condition.

The product meets the standards of IEC 61009-1.

### **2 Operating conditions**

2.1 Ambient temperature:  $-25^{\circ}\text{C}\sim+60^{\circ}\text{C}$ .

2.2 Air conditions: At mounting site, relative humidity not exceed 50% at the maximum temperature of  $+40^{\circ}\text{C}$ . For the wettest month, the maximum relative humidity averaged shall be 90% while the lowest temperature averaged in that month is  $+20^{\circ}\text{C}$ , special

measures should be taken to occurrence of condensation.

2.3 Altitude:  $\leq 2000\text{m}$ .

2.4 The installation category is II and III.

2.5 The circuit breaker shall be installed on DIN rail EN 60715(35mm), which shall meet the A1.1 TH 35-7.5 steel mounting rail requirements.

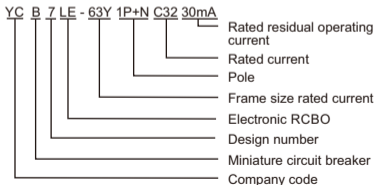
2.6 Pollution grade: 2

2.7 Mounting conditions: inclination between mounting plane and vertical plane not exceed  $\pm 5^\circ$

2.8 The external magnetic field of the installation site should not exceed 5 times of the geomagnetic field in any direction. 2.8 The product should locate in the places where there are no obvious impact and shake.

### 3 Basic parameters

#### 3.1 Type designation



### 3.2 The basic specifications and technical

- Parameters of the circuit breaker are shown in Table 1
- Breaking time of the residual current operating is shown in Table 2

Table 1

Model	Frequency Hz	Rated current In A	Rated voltage Ue/V	Rated short circuit capacity Icn A	Rated residual operating current I $\Delta$ n mA	Rated residual non operating current I $\Delta$ no=	Breaking time at I $\Delta$ n s	Tripping type	Rated residual making and breaking capacity I $\Delta$ m A
YCB7LE-63Y	50/60Hz	6 10 16 20 25 32 40 50 63	AC230	6000	30 100 300	I $\Delta$ no=0.5I $\Delta$ n	≤0.1	B type(3~5)In C type(5~10)In D type(10~20)In	630

Table 2

In(A)	I $\Delta$ n(A)	Breaking time when the residual current is the following values (s)				
		I $\Delta$ n	2I $\Delta$ n	5 I $\Delta$ n a	5A~200A, 500A b	I $\Delta$ n t c
6~63	0.03/ 0.05/ 0.1/0.3	0.1	0.05	0.04	0.04	0.04

- a. For general RCBO with I $\Delta$ n $\leq$ 0.03A, 0.25A can be used instead of 5I $\Delta$ n.  
 b. The test of 5A ~ 200A, 500A is only performed for the verification of operation, and is not performed for the magnitude of current greater than the lower limit of the over-current instantaneous tripping range.  
 c. The test is carried out for the current with the I $\Delta$ n being equal to the lower limit of the over-current instantaneous tripping range for Type B ,Type C or Type D.

3.3 Over-current protection characteristic is shown in Table 3-1&Table 3-2.

Table 3-1

Test	Type	Testing current	Initial state	Time limit for tripping or not tripping	Expected result	Testing environment temperature	Remarks
a	B/C/D	1.13In	Cold state	t $\leq$ 1h (In $\leq$ 63A)	Not tripping	30°C~35°C	Current is rising within 5s
b	B/C/D	1.45In	Right after test "a"	t<1h (In $\leq$ 63A)	Tripping		
c	B/C/D	2.55In	Cold state	1s<t<60s (In $\leq$ 32A) 1s<t<120s (In>32A)	Tripping		

Note: The terminology "Cold state" means that the test is performed at the base calibration temperature with no load prior to the test.

### Table 3-2

Test	Type	Testing current	Initial state	Time limit for tripping or not tripping	Expected result	Testing environment temperature	Remarks
d	B	3I <sub>n</sub>	Cold state	$t \leq 0.1s$	Not tripping	30°C~35°C	Current is rising within 5s
e	C	5I <sub>n</sub>					
f	D	10I <sub>n</sub>					
g	B	5I <sub>n</sub>		$t < 1s$	Tripping		
h	C	10I <sub>n</sub>					
i	D	20I <sub>n</sub>					

Note: The terminology "Cold state" means that the test is performed at the base calibration temperature with no load prior to the test.

● Protection characteristics curve of circuit breaker are illustrated in Fig.1, Fig.2 and Fig.3.

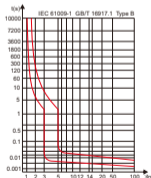


Fig. 1 B type thermal/electromagnetic trip characteristics curve

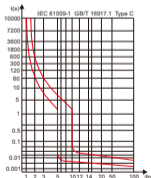


Fig. 2 C type thermal/electromagnetic trip characteristics curve

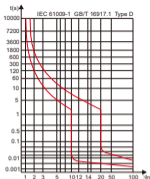


Fig. 3 D type thermal/electromagnetic trip characteristics curve

## Structure Features and Working Principle

This residual current operated circuit breaker primarily consists of zero sequence current transformer, electronic component board, release, contact operating mechanism, and plastic shell.

The working principle is shown in Fig. 3. In case of electric leakage or personal electric shock in circuits, when the residual operating current reaches the set value of the operating current, a signal will be generated from the secondary coil of the zero sequence current transformer (induced voltage) to open the residual current operated circuit breaker after amplification by the electronic line, thereby cutting off the power supply for electric leakage protection.

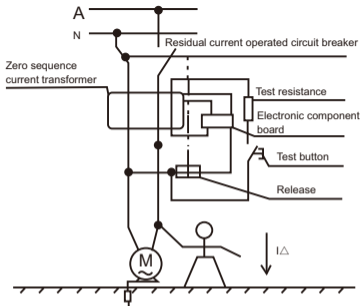


Fig.3 Working schematic diagram of this residual current operated circuit breaker

3.4 Mechanical and electrical life is shown in Table 4.

Table 4

Item	Times	Operating frequency (times/hour)	Power factor
Electrical life	10000	240 times per hour ( $I_n \leq 25A$ )	$\cos \Phi =$ 0.85~0.9
Mechanical life	20000	120 times per hour ( $I_n > 25A$ )	

### 3.5 Wiring

Before installation, check whether technical parameter of the circuit breaker is in conformity with user's requirement.



The conductor of power supply shall be connected to the up terminal of circuit breaker. During installation, the tightening torque is max2.5N-m. The sectional area of connecting wire can refer to Table 5.

Table 5

Rated current In A	Conductor cross section S mm <sup>2</sup>
6	1
10	1.5
16, 20	2.5
25	4
32	6
40, 50	10
63	16

#### 4 Overall and mounting dimensions

Overall and mounting dimensions of the circuit breaker are shown in Fig. 1

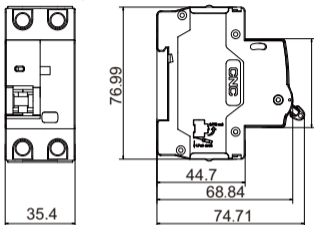


Fig. 1 Overall and mounting dimensions

#### Product Accessories

There are six different accessories in the circuit breaker, including OF auxiliary contact, MX+OF shunt release, SD alarm contact, MV overvoltage release, MN undervoltage release, and MVMN overvoltage and undervoltage release. All accessories are installed on the left side of the product.

Table 4 Rated current and temperature correction coefficient table

Table 4

Rated current value (A) \ Temperature (°C)	-35	-20	-10	0	10	20	30	40	50	60	70
6	8.2	7.35	7.1	6.84	6.75	6.29	6	5.69	5.37	5.02	4.63
10	12.18	13.09	12.54	11.95	11.34	10.69	10	9.26	8.45	7.56	6.78
16	21.36	19.77	19.07	18.35	17.6	13.82	16	15.13	14.22	13.23	12.21
20	25.68	24.49	23.66	22.8	21.91	20.98	20	18.97	17.89	16.73	15.68
25	32.4	30.72	29.67	28.57	27.43	26.24	25	23.39	22.3	20.82	19.56
32	41.18	39.19	37.86	36.49	35.05	33.56	32	30.36	28.62	26.84	25.12
40	51.94	49.24	47.54	45.77	43.93	42.01	40	37.88	35.64	33.24	30.86
50	65.34	61.89	59.70	57.43	55.06	52.59	50	47.27	44.36	41.26	38.12
63	83.72	79.22	76.26	73.17	73.17	66.56	63	59.22	55.19	50.84	46.76

## **5 Ordering instructions**

5.1 When ordering, the customer shall indicate: the product name of RCBO, model, rated current, rated residual operating current, instantaneous tripping type, number of poles, quantity. For example: YCB7LE-63Y C63 2P 30mA 880 units.

5.2 Special requirements of customers can be negotiated separately.



# CERTIFICATE

Product Model: YCB7LE-63Y

Standard: IEC 61009-1

Inspector : **CNC003**

Production date: Printed on the product  
or package.

This product is qualified according  
to the delivery inspection

**CNC**

YCB7LE-63Y Series

## CNC ELECTRIC

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