

# YCB1LE-125


Earth Leakage 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.

# YCB1LE-125 series

## Warning:

1. This product must be wired and installed by qualified personnel.
2. It is forbidden to operate circuit breakers with wet hand, otherwise electric shock accidents may occur.
3. Residual current circuit breaker can not protect the body electric shock caused by contact the two wires of protected circuit at the same time.
4. Should use the special test instrument qualified by the relevant departments of the state to make the residual current circuit breaker movement characteristic test. It is forbidden to use the test method of direct contact to the grounding device or directly short circuit.
5. It is strictly prohibited to test the insulation resistance at the end of outlet directly. Should break the product electronic circuit board auxiliary power to ensure that the input and output of electronic components end no voltage, otherwise it will burn out the electronic components of circuit board (This project of electronic products is generally not checked).
6. Residual current circuit breaker overload, short circuit, residual current protection feature setted by the factory, regulation is not allowed to open or set.
7. The circuit breaker break for the malfunction (leakage, overload or short circuit) of protecting circuit. Must find out the reasons, troubleshooting finished before closing operation.

## Notice

1. Be sure type selection right before installation: correct selection of current size to match the actual use, for direct leakage protection should choose residual action current 30 mA circuit breaker, should choose the residual action current 100 mA (or: 300 mA) circuit breaker for indirect leakage protection on bus. Manual operation several times

flexible, confirmed in good condition, then can be installed.

2. Should choose the conductor wire which can bear the load flow when installation, reference value shown in table 1. Fastening the wire inside the socket of circuit breaker with 2 # screwdriver, twist tightening torque should be not less than 3.5 N·m. If the cross-sectional area is too small or the tightening torque is too small will likely lead to circuit breaker temperature rise too high and cause false action, even damaged the circuit breaker.

Table 1 Cross-sectional area recommended list

Rated current $I_e$ (A)	Nominal cross-sectional area of copper wire(mm <sup>2</sup> )
63	16
80	25
100	35
125	50

3. Wiring installation strictly according with the wiring diagram 1

4. Check if the wiring is right before running, especially check circuit breaker inlet line connected the power cord, outgoing wire termination connected with load line. For the terminal broken phase, broken N, less wiring, wrong line, the circuit breaker can not have leakage protection function.

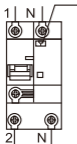
5. The residual current circuit breaker operation a certain period after installation (generally a month). Need to push the test button once under the closed state of electricity (circuit breaker should tripping), in order to check whether the circuit breaker operate normally;

6. The residual current circuit breaker shall not be affected by rain during the transport, storage and use.

1 pole 2 wires  
(1P+N)

in put terminal

test  
button

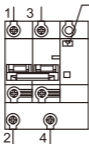


out put terminal

2 poles(2P)

in put terminal

test  
button

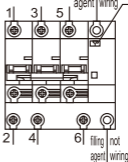


out put terminal

3 poles (3 p)

in put terminal

filling agent  
not wiring  
test  
button

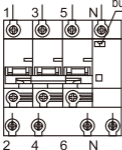


out put terminal

3 poles 4 wire(3P+N)

in put terminal

test  
button

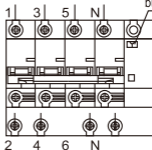


out put terminal

4 poles(4P)

in put terminal

test  
button



out put terminal

Diagram 1: Wiring Diagram

## **1.The main application**

YCB1LE-125 Earth Leakage Circuit Breaker apply to AC 50Hz, rated voltage single pole two wires, double poles 230V, triple poles, triple poles four wires, four poles 400V, rated current from 63A to 125A circuit circle. When somebody in electric shock or electric grid leakage current over specified value, the earth leakage circuit breaker can swiftly cut off fault current in a twinkling, to protect the person and electric equipment in safe. Meanwhile to protect circuit wire and motor from overload or short-circuit. Also it can be used for circuit circle infrequent convert, and motor infrequent start.

The product is confirm to GB14048.2 《 Low voltage circuit breaker for low voltage switch equipment and control equipment 》 standard, equal to IEC 60947-2 standard.

## **2. Normal operating situation and using environment**

2.1 Ambient air temperature  $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$  , 24h averagetemperature below  $35^{\circ}\text{C}$ .

2.2 Altitude: the altitude of installed place is below 2000m.

2.3 Atmosphere situationThe installed place air humidity is less than 50% undertop temperature  $40^{\circ}\text{C}$  , other temperature could be higherhumidity, such as 90% when  $20^{\circ}\text{C}$ . Considering oftemperature change, the condensation would be onproduct, to do necessary measure.

2.4 Installation category Installation category is class III .

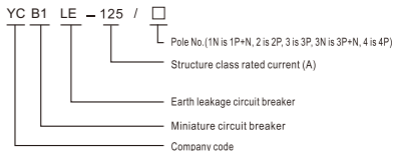
2.5 Class of pollution

2.6 Installation type Adopt TH35-7.5 Type steel installing din rail.

2.7 Installation situation Installation site external magnetic field any direction should be lower than 5 times of earth magnetic field, the earth leakage circuit breaker normally is vertically installed, each orientation lean within 5°. Handle up is connecting on electric position, installation place should be no remarkable shock and vibration.

### 3. Main specification and technical data

#### 3.1 Type and meaning



3.2.1 Pole no.: single pole two wires (1P+N), double poles (2P), triple poles (3P), triple poles four wires (3P+N), four poles (4P).

3.2.2 Short-circuit trip character: 8~12 In

### 3.3 Main technical data

3.3.1 Rated voltage  $U_e(V)$ : single pole two wires, double poles 230V, triple poles, triple poles four wires, four poles 400V

3.3.2 Rated insulation voltage  $U_i(V)$ : 500

3.3.3 Using category: Class A

3.3.4 Rated current  $I_n(A)$ : 63, 80, 100, 125A

3.3.5 Structure class rate current  $I_{nm}(A)$ : 125A

3.3.6 Rated residual operation current  $I_{\Delta n}(A)$ : 0.03, 0.1, 0.3;

3.3.7 Rated residual not operation current  $I_{\Delta n0}(A)$ : 0.5  $I_{\Delta n}$

3.3.8 Delayed extremity not drive time: 0.06s, 0.1s

3.3.9 Over voltage protection class: 280V  $\pm$  5%

3.3.10 Breaking capacity  $I_{cm}=I_{cu}(A)$ : 6000

Rated residual connection and breaking capacity  $I_{\Delta m}(A)$ : 1500

3.3.11 Rated residual current operation breaking time refer sheet 2

#### 3.3.12 Sheet 2 Rated residual current operation breaking time

Type			$I_n$ A	$I_{\Delta n}$ A	Max breaking time(s) and Min not drive time(s)				
					$I_{\Delta n}$	$2I_{\Delta n}$	$5I_{\Delta n}$	$10I_{\Delta n}$	
Normal type			63 80 100 125	$\geq 0.03$	0.1	0.07	0.14	0.14	Max breaking time
Delay Type	extremity not drive time	0.06S		$> 0.03$	0.3	0.2	0.15	0.15	
					0.13	0.06	0.05	0.04	Min not drive time
		0.1S			0.6	0.4	0.3	0.2	Min not drive time
					0.23	0.1	0.06	0.05	Min not drive time
For $I_{\Delta n} \leq 0.03A$ normal type earth leakage circuit breaker can use 0.25A instead 5 $I_{\Delta n}$ , 0.5A instead 10 $I_{\Delta n}$									

### 3.3.11 Over current protection character refer sheet 3 Sheet3 Over current protection character

Rated current	Start static	Testing current	Specific time		Expect result	Remark
			$I_n=63A$	$I_n>63A$		
63A 80A 100A 125A	Cool static	$1.05I_n$	$t \geq 1h$	$t \geq 2h$	Not trip	
	Follow first testing continue	$1.30I_n$	$t < 1h$	$t < 2h$	Trip	Current is stable in 5s up to specific value
	Cool static	$8I_n$	$t \geq 0.2s$		Not trip	By close auxiliary switch connect current
	Cool static	$12I_n$	$t < 0.2s$		Trip	By close auxiliary switch connect current

### 3.3.12 Electric mechanical life

Electric life: 1500 times,  $\cos\phi=0.85 \sim 0.9$ , mechanical life: 8500 times.

3.3.13 Insulation withstand voltage performance: It can withstand the peak value of 6000V impulse voltage, between each connected pole and the neutral pole; And it can withstand the peak value of 6000V impulse voltage between each connected pole and metal support.

3.3.14 The peak current of the residual current circuit breaker is 200A.

Under the impulse current and the peak voltage 4000V surge, it has withstanding capacity. And it won't cause false action.



3.3.15 Overcurrent tripping characteristic curve is shown in Figure 2.

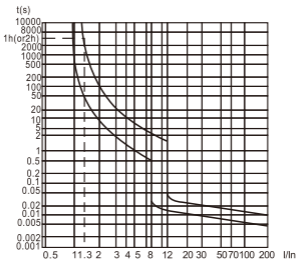


Figure 2: Overcurrent tripping characteristic curve figure

## 4. Main structure and working principle of the product

### 4.1 Structure:

This residual current circuit breaker is composed of YCB1LE-125 miniature circuit breaker and residual current release.

YCB1LE-125 miniature circuit breaker is mainly composed of insulation case, operating mechanism, dynamic contact, static contact, delay release, instantaneous release and interrupter etc.

The linkage between miniature circuit breaker and residual current release take effect through the rod.

#### 4.2 Principal working:

When the residual current circuit breaker handle is turned on, the mechanical mechanism will drive the movement of moving contact to the static. And contact with the static reliably, switch on the circuit.

When the circuit is overloaded, the overload current make the twin metal bend to push the lever to reset the mechanical locking mechanism, then the moving contact can move away from the static contact rapidly, thereby realizing the function of breaking the circuit.

When short circuit happens, the short current will drive instantaneous release. Top rod of iron core push the lever, to reset locking mechanism, realizing the function of breaking the circuit.

When residual current or electric shock fault happens, the signal from zero sequence current transformer will trigger thyristor conduction. It will drive iron core of residual current release, the push rod will make circuit breaker releasing. Residual current circuit breaker will cut off the power in a very short period of time, realizing the function of residual current protection

## 5. Dimensions and installation dimensions

Dimensions and installation dimensions are shown in Figure

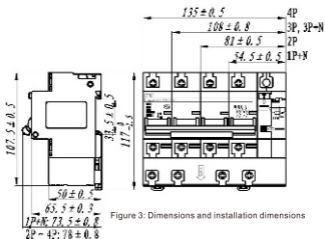


Figure 3: Dimensions and installation dimensions



# CERTIFICATE

Product Model: YCB1L-125

Standard: IEC 60947-2

Inspector : **CNC001**

Production date: Printed on the product  
or package.

This product is qualified according  
to the delivery inspection

A vertical red bar containing the white text 'CNC'.

YCB1L-125 series

## CNC ELECTRIC

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