

# YCM1LE series


## EARTH-LEAKAGE CIRCUIT-BREAKER

### OPERATION INSTRUCTION

Standard: IEC60947-2

**CNC**

Deliver  
Power For Better Life

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

## **YCM1LE series**

### **EARTH-LEAKAGE CIRCUIT-BREAKER**

#### **1 Application rangel**

M1L Series Earth-leakage circuit-breaker (hereafter simply reffered to as breakers) are mainly suitable for turn-on or turn-off not frequently and starting a motor not frequently in

the circuit of AC50Hz, rated working voltage 400V and rated current up to 630A . The breakers have overload, short-circuit and under voltage protection devices, so as to protect the circuit and the power equipment against damage. Synchronously, the breakers provide indirect contact protection for man, and protect the fire damage may caused by long-term existed earth fault, which can't be examined by the over-current protection device.

#### **2 Normal Use, Installation, and Transportation, Storage Conditions:**

##### **2.1 Use Conditions:**

2.1.1 Ambient temperature:  $-5^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ .

2.1.2 Air conditions: At the mounting site, the relative humidity should not exceed 50% at the maximum temperature of  $+40^{\circ}\text{C}$ . For the wettest month, the maximum average relative humidity should be 90% while the lowest average temperature in that month is  $+20^{\circ}\text{C}$ . Special measures should be taken to prevent condensation.

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

2.1.4 Pollution degree: 2.

2.1.5 Protection degree: Ip20.

2.1.6 The installation category is II and III.

2.1.7 This product is not suitable for directly starting high inductive and high capacitive loads such as fans, motors, electric heaters, capacitor cabinets, etc.

2.1.8 This product does not provide protection against electric shock hazards caused by simultaneous contact with both protected circuit wires.

## 2.2 Installation Conditions:

2.2.1 The external magnetic field at the installation site should not exceed 5 times the geomagnetic field, while adhering to safety precautions. Residual current operated circuit breakers should generally be installed directly, in a location free from shaking, impact, and vibration.

2.2.2 The product must not be installed in environments containing flammable or explosive gases, or in damp and condensing areas. It is strictly prohibited to operate the product with wet hands.

2.2.3 Do not install the product in locations where the gas medium can corrode metal or damage insulation.

2.2.4 The product must be wired and installed by qualified personnel, who should also conduct regular inspections.

2.2.5 Please strictly follow the wiring diagram for correct wiring of the product.

2.2.6 During installation and use, the terminal screws should be tightened, and the wires should not be loose or pulled out. Select wires according to the requirements and connect them to the power source and load as specified.

2.2.7 Foreign objects should be prevented from entering the product to avoid affecting its normal operation.

### 2.3 Packaging, Transportation, and Storage Conditions:

2.3.1 Ensure secure packaging to prevent any damage during transportation and handling.

2.3.2 Use appropriate packaging materials such as sturdy cartons or boxes to provide sufficient impact and moisture protection.

2.3.3 Use suitable cushioning materials such as foam or bubble wrap to provide additional protection and prevent any physical damage.

2.3.4 Securely seal the packaging with strong adhesive tape or strapping to ensure the contents remain intact.

2.3.5 Handle with care during transportation to avoid any physical damage.

2.3.6 During storage and transportation, avoid dropping or exposure to rainwater or corrosive gases.

2.3.7 If transporting the product by vehicle, ensure proper fixation to prevent movement or damage during transit.

2.3.8 Comply with all applicable transportation regulations and guidelines for the safe handling

and transportation of electrical equipment.

2.3.9 Store the product in a clean, dry, and well-ventilated environment to prevent moisture damage.

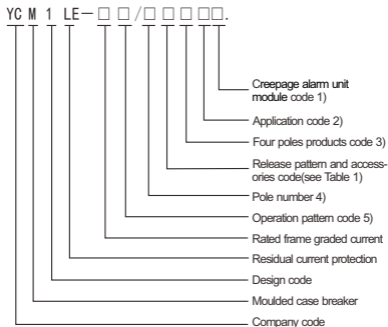
2.3.10 Keep the product away from direct sunlight, extreme temperatures, humidity, and corrosive substances.

2.3.11 Store in the original packaging or suitable storage containers to prevent dust, dirt, and physical damage.

2.3.12 Ensure the storage area is free from any potential mechanical stress or sources of impact.

2.3.13 Regularly inspect stored products for any signs of damage. If any issues are found, contact the manufacturer or qualified electrician for further guidance.

### 3 Type and its meaning:



#### Note:

1) No code for no creepage alarm unit module; I for creepage alarming and tripping; II for creepage alarming without tripping.

2) No code for current distribution, 2 means for motor protection.

3) No code for three poles breakers. Four poles breakers are classified into A, B, C, D.

Type A: N-pole without over-current release unit, it has been connected all along, and dose

not act with other three poles to turn on or off.

Type B: N-pole without over-current release unit, it could act with other three poles.(N-pole turns-on prior to turns-off).

Type C: N-pole fixed with over-current release unit, it could act with other three poles.(N-pole turns-on prior to turns-off).

Type D: N-pole fixed with over-current release unit, it has been connected all along, and dose not act with other three poles to turn on or off.

4)3 for three poles, 4 for four poles.

5)No code for operating directly with handle, D for motor operating and Z for rotary handle operating.

Table 1 Release pattern and accessories code

Accessories code Accessories name	Release pattern	Electromagnetic instantaneous release pattern	Electromagnetic double release pattern
Nothing		200	300
Alarm contact		208	308
Shunt release		210	310
Auxiliary contact		220	320
Undervoltage release		230	330
Shunt release+auxiliary contact		240	340
Shunt release+undervoltage release		250	350
Two group of auxiliary contact		260	360
Undervoltage release+auxiliary release		270	370
Shunt release+alarm contact		218	318
Auxiliary contact+alarm contact		228	328
Undervoltage release+alarm contact		238	338
Shunt release+auxiliary contact +alarm contact		248	348
Shunt release+undervoltage release +alarm contact		258	358
Two group of auxiliary contact +alarm contact		268	368
Undervoltage release+auxiliary release +alarm contact		278	378



## 4 Main technical parameter

4.1 The specifications and technical parameter see table2、3.

Table 2 The specifications and technical parameter

Frame Current Inm(A)	Rated voltage Un(V)	Rated frequency (Hz)	Pole number	Rated current In(A)	Limiting short-circuit breaking ability Icu/cosφ	Operating short-circuit breaking ability Ics/cosφ	Rated residual working current IΔn(mA)	Rated residual nonoperating current IΔno(mA)
125	400	50	3P	16, 20, 25, 32 40, 50, 63, 80 100, 125	50kA/0.25	35kA/0.25	100 300 500	0.5IΔn
250				100, 125, 140, 160, 180, 200, 225, 250	50kA/0.25	50kA/0.25		
400			4P	225, 250, 315 350, 400	50kA/0.25	35kA/0.25		
630				400, 500, 630	50kA/0.20	35kA/0.25	300 500 1000	

Table 3 Operating time of the residual current protection

Residual current		IΔn	2IΔn	5IΔn	10IΔn
Non-time-delay	Maximum break time (s)	0.3	0.15	0.04	0.04
Time-delay	Maximum break time (s)	0.5/1/1.5/2/5	0.35/1/2	0.25/0.9/1.9	0.25/0.9/1.9
	Limiting non-actuating time (s)	---	0.1/0.5/1	---	---

4.2 The thermodynamic release of a circuit breaker provides the feature of inverse time-delay, while the magnetic release feature of instantaneous operation as shown on table 4(distribution circuit breaker). (distribution circuit breaker). The specifications and technical parameter see table2、 3.

**Table 4 (For Power Distribution)**

Rated current of release(A)	Thermodynamic release (ambient temp +40°C)		Electromagnetic release operating current
	1.05In(cold state) Not operating time	1.3In(heat state) Operating time	
$I_n \leq 63A$	Not operating within one hour	$\leq 1h$ operating	$10I_n \pm 20\%$
$I_n \leq 63A$	Not operating within two hour	$\leq 2h$ operating	

4.3 Mechanical and electrical performance (table 5).

**Table 5 Operational performance**

Frame current $I_{nm}(A)$	The times of operating cycles every hour	The times of operating cycles		
		With current	Without current	Total
125	120	1000	7000	8000
250	120	1000	7000	8000
400	60	1000	4000	5000
630	60	1000	4000	5000

4.4 The limit over-current which would not lead to misoperation is  $6I_n$  in the main circuit.

reliably when the operation voltage is 70%~100% of the rated control voltage.

4.7 Under-voltage release Under the voltage of 35%~70% of the rated voltage, the under-voltage release should make the breaker trip correctly. In case of the operation voltage less than 35% of the rated voltage, the under-voltage should prevent the breaker from closing. Under the voltage of 85%~110% of the rated voltage, the under-voltage release should make the breaker close reliably.

4.8 Cross-section wiring conductor corresponding rated current (table6,7)

**Table 6**

Rated current (A)	16 20	25	32	40 50	63	80	100	125 140	160	180 200 225	250	315 350	400
Cross-section (mm <sup>2</sup> )	2.5	4	6	10	16	25	35	50	70	95	120	185	240

**Table 7**

Rated current(A)	Cable		Copper bar	
	Amount	Cross-section (mm <sup>2</sup> )	Amount	Size (mmxmm)
500	2	150	2	30x5
630	2	185	2	40x5

## 4.9 Outline and dimensions (see diagram 1 and table 8)

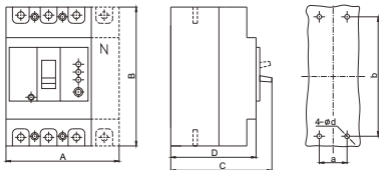


diagram 1

Table 8

Type	Pole	Dimensions (mm)						
		A	B	C	D	a	b	$\phi d$
YCM1LE -125	3	92	150	110	92	30	129	45
	4	122				60		
YCM1LE -250	3	107	165	110	90	35	126	45
	4	142				70		
YCM1LE -400	3	150	257	1465	1065	44	194	7
	4	198				94		
YCM1LE -630	3	210	280	155	1155	70	243	7
	4	280				140		

## **5 Use and maintenance**

5.1 All the performance of the breaker and accessories have been set on by the company, and it could not be adjusted arbitrarily when using.

5.2 The handle of the breaker has three positions: close-up, cut-off or released state respectively. When the handle at the "released" position, it should be pulled backward to make the breaker "recramped", then to switching-in the circuit.

5.3 The company would replace or repair the breakers gratuitously for the products damaged or working irregularly as a result of manufacturing quality, but it should be in accord with following conditions: users comply the demand about application and storage, from delivery date to 18th month.

5.4 The rated residual operating current and residual current operating time (undelay and delay) of the breakers can be adjusted by the users according to actual needs (operated by professionals).

5.5 As the main circuit is energized, for the rated residual operating time of undelayed of the breaker, press the button of simulating residual current working test should release immediately. For the delayed breaker, only while, press the test button and remain the adjusted delay time value, the breaker could release.

5.6 After the breaker released due to creepage, the creepage indicating button on the panel should be out-protrude.

5.7 The breaker with creepage alarm unit module must reset the return button when creepage alarmed, and the creepage protection module of the breaker can work as normal.



# CERTIFICATE

Product Model: YCM1LE series

Standard: IEC60947-2

Inspector : **CNC006**

Production date: Printed on the product  
or package.

This product is qualified according  
to the delivery inspection

**CNC**

YCM1LE series

## CNC ELECTRIC

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

www.cncele.com E-mail: cncele@cncele.com