



Delixi Electric **Easy** Electric

DZ47sLE Residual Current Operated Circuit Breaker

User Manual



Load Standard: IEC60009-1 GB/T 16917.1

☐ Please read this User Manual carefully before installing and using the device and keep it properly for future reference.

Safety Notice

Make sure to read this manual carefully before installation, operation, maintenance and inspection, and correctly install and use this product according to the manual.



Danger:

- Do not operate the breaker with wet hands;
- Never touch the conductive parts in use;
- Make sure that the product is de-energized during maintenance and care;
- Do not test the product by means of short circuit;

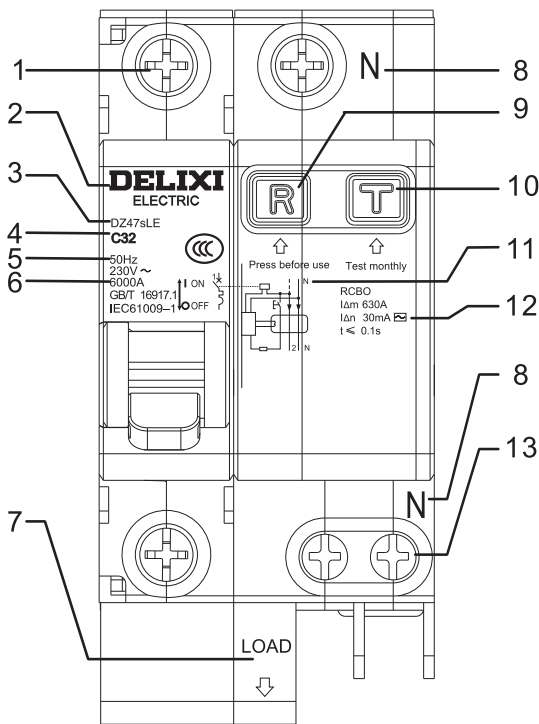


Attention:

- The installation, repair and maintenance shall be implemented by qualified personnel;
- All features of the product have been set when delivery, do not disassemble or modulate the product at your own discretion;
- Before use, make sure that the working voltage, rated current, frequency and features of the product meet the working requirements;
- For wiring, the top terminals are for lining and the bottom are for loading. Pay attention to the wiring sequence of multi-phase electricity system. Tighten the screw when the cable is connected with the torque $2.5\text{N}\cdot\text{m}$ ($6\text{A} \sim 32\text{A}$ are $2.0\text{N}\cdot\text{m}$), where the cables cannot be loose and exacted meanwhile the bare cables can't be exposed in the air.
- The product cannot protect the risk caused by touching both line and phase.
- The product's protection degree is IP20, with no dust protection. When it is used in dusty environment, please install it in a concealed distribution box.
- Stop using the product, if the it is found broken or making noise.
- Close the products after fixing the problems when it tripped because of overload, and short-circuit. Or the endurance will be decreased.
- The product should not be tested with megger.
The product should protect from rain drops and decent.

About DZ47sLE

Panel Introduction



1. Power supply terminal
2. Company trademark
3. Product model
4. Current specification (tripping type + rated current)
5. Frequency and rated voltage
6. Breaking capacity
7. Load indication mark
8. N pole indication mark
9. Reset Button
10. Test Button
11. Wiring Diagram
12. Rated residual making/ breaking capacity, Rated residual operating current, rated tripping time (Overvoltage: $U = (280 \pm 5\%)V$)
13. Load terminals

Conditions for Use, Installation and Transportation

Conditions of normal use and installation

- The ambient temperature ranges between -20°C and $+60^{\circ}\text{C}$ with average value in 24h not exceeding $+35^{\circ}\text{C}$;
 - Altitude: $<2000\text{m}$;
 - When temperature is $+40^{\circ}\text{C}$, air relative humidity of not more than 50%; it is allowed to have higher relative humidity under lower temperature, e.g. less than 90% for $+20^{\circ}\text{C}$. For considering the dew in the product surface formed by the changes of the temperature, special measures shall be adopted;
 - The external magnetic field near the installation site of the residual current circuit breaker shall not exceed 5 times the geomagnetic field in any direction;
 - It shall be installed in medium free of explosion risk and gas or dust that may cause metal corrosion or damage to insulation;
 - It shall be installed in places where there is no shock and vibration, or rain and snow either;
 - Pollution class: 2;
 - Installation category: III;
 - It shall be installed in distribution box, distribution cabinet or box;
 - Protection Degree: IP20 (IP40 installed in Distribution Box)
 - Wiring reversibility is not allowed for the product.
- For products with N pole, the zero line shall be connected to the pole with the indication N.;

Conditions for normal storage and transportation

- Temperature: -40℃ ~ +70℃ ;
- Relative Humidity (25℃) : <95%;
- The product should be handled properly, no upside down and should avoid violent collision.

Main Technical Data

Main technical data Table 1

Table 1 Main technical data

Type	Pole	Phase	Fre Hz	In A	Ue V	Icn A	IΔ n mA	IΔ no mA	IΔ n s	IΔ m A	Tripping Curve
DZ47sLE	1	N	50/60	6	230	6000	30 50 75 100 300	15 25 37 50 150	≤ 0.1	630	B,C,D
	2			10							
	3			16							
	3	N		20							
	3			25							
	4			32							
				40	400						
				50							
				63							

Protection characteristics of over current tripping refer to Table 2.

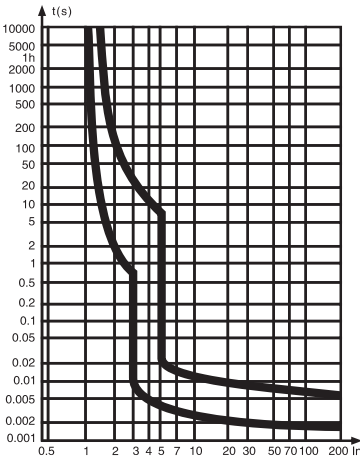
Table 2 Protection characteristics of over current tripping.

Overcurrent instantaneous tripping type	In A	Testing Current A	Initial Status	Testing Time	Estimated Result	Remark	Ref Temp
B,C,D	≤63	1.13In	Cold	t≤1h	No tripping	—	+30 ⁺⁵ ₀ ℃
B,C,D		1.45In	Immediately following test	t<1h	Tripping	Current rises to set value within 5s	
B,C,D		2.55In	Cold	1s<t≤60s (For In≤32A)	Tripping	—	
				1s<t<120s (For In>32A)			
B,C,D		3In/5In 10In	Cold	t≤0.1s	No tripping	Switch off auxiliary switch and switch on power supply	
B,C,D		5In/10In 14In	Cold	t<0.1s	Tripping		

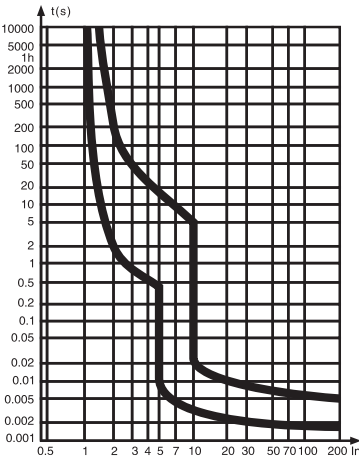
Product's endurance

- ME: 10000 times;
- EE: 4000 times;

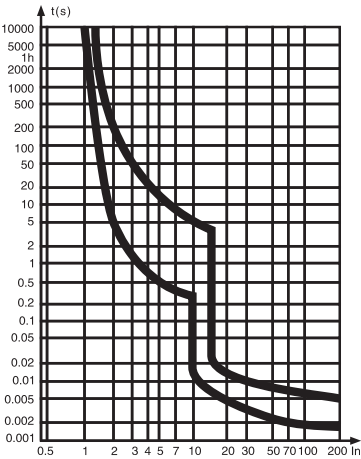
Tripping Curves (B, C, D)



B Curve



C Curve



D Curve

Structure Characteristics and Working Principle

This RCBO consists of the zero–sequence current mutual transformer, the electric components panel, the tripper, the contact operating mechanism and the plastic shell etc.

The working principle refers to Fig. 1. Once there is leakage or electric shocking to human, as long as the residual operating current reaching the set value of operating current, the secondary coil of zero–sequence current mutual inductor will generate a signal (inducting voltage), after amplified by electric circuit, such signal will enable RCBO to cut off the power supply and delivering protection of leakage.

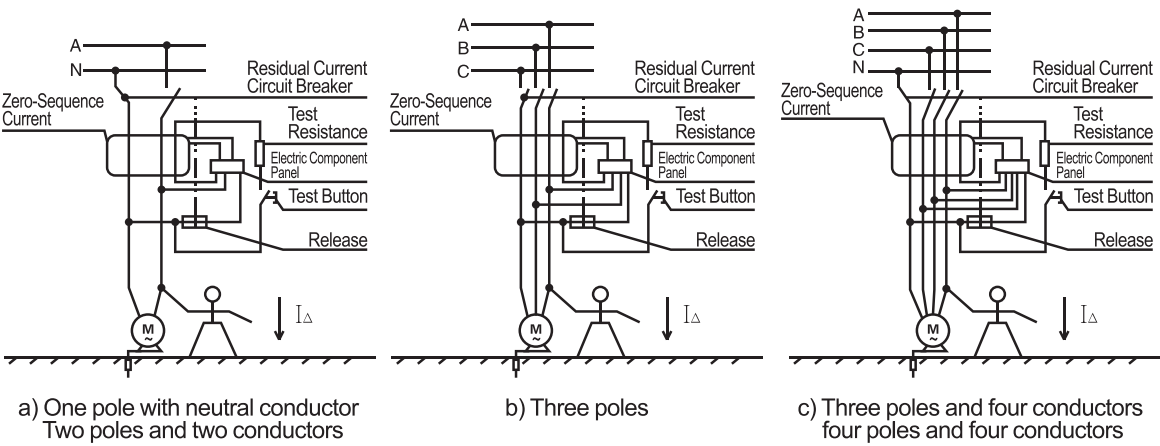
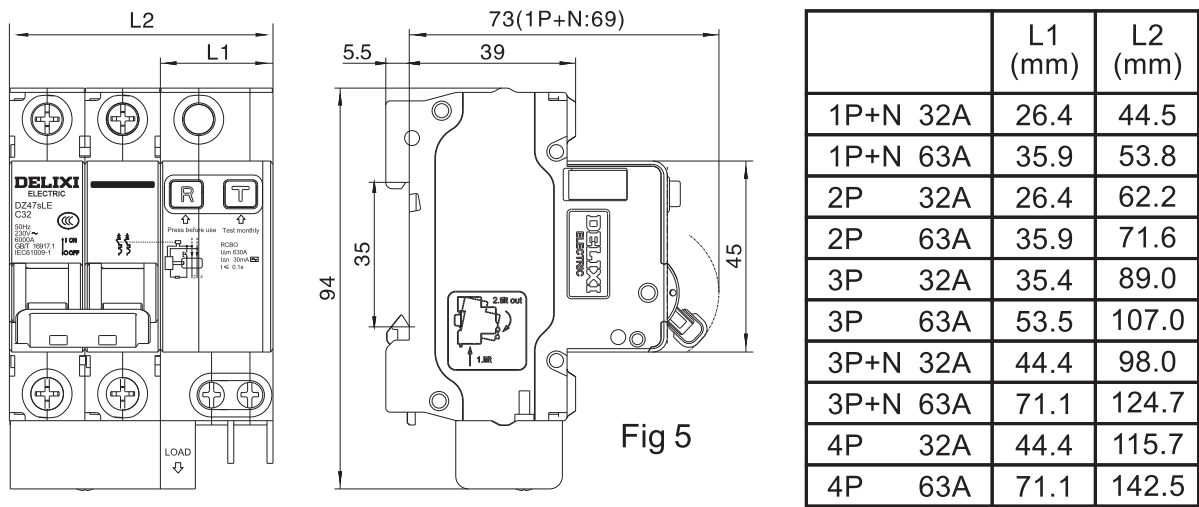


Fig 4 Diagram of RCBO working principle

Overall Dimensions of Installation

DZ47sLE Overall dimensions of installation Unit: mm



Accessories

The breaker has six different accessories, including OF auxiliary contact, MX+OF shunt release, SD alarm contact, MV overvoltage release, MN undervoltage release and MVMN over/undervoltage release. All accessories are mounted on the left of the device

Installation, Use and Maintenance

Installation and use

- Check whether the technical parameters of the product meet the use requirements;
- Press the reset button before closing
- After it is electrified, you should operate the test button of RCBO for several times to check whether the mechanism can work reliably.
- Top terminals are for lining, and the bottoms are for loading
- The sectional area of connecting conductor shall fit the rated current of the circuit breaker. See table 3;

Table 3 Rated current and section area of the connecting wire

In A	6	10	16、20	25	32	40、50	63
Cross-section of conductor mm ²	1	1.5	2.5	4	6	10	16

- Operate the test button several times after it is energized, in order to make sure the reliability.
- The breaker shows ON when the handle is pushed upwards, which indicates closed circuit; and shows OFF when the handle is pushed downwards, which indicates opening circuit.
- The residual current circuit breaker should be installed onto a DIN rail in order to make it fixed. No loosening or falling should happen. For dismantling, just need to pull the retainer on the residual current circuit breaker.

When the ambient temperature changes, the rated current shall be corrected accordingly. For temperature correction coefficient, see table 4.

Table 4 Table of correction coefficient for rated current

Temp (°C) In(A)	-20	-10	0	10	20	30	40	50	60
6	7.35	7.10	6.84	6.57	6.29	6	5.69	5.37	5.02
10	13.09	12.54	11.95	11.34	10.69	10	9.26	8.45	7.56
16	19.77	19.07	18.35	17.60	16.82	16	15.13	14.22	13.23
20	24.49	23.66	22.80	21.91	20.98	20	18.97	17.89	16.73
25	30.72	29.67	28.57	27.43	26.24	25	23.69	22.30	20.82
32	39.19	37.86	36.49	35.05	33.56	32	30.36	28.62	26.77
40	49.24	47.54	45.77	43.93	42.01	40	37.88	35.64	33.24
50	61.89	59.70	57.43	55.06	52.59	50	47.27	44.36	41.26
63	79.22	76.26	73.17	69.94	66.56	63	59.22	55.19	50.84

Maintenance

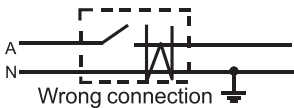
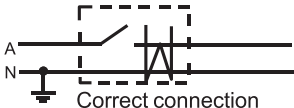
After the RCBO is operated for period of time, it should go through a regular check on a monthly basis. The check will be conducted as follows: under the status of electrified (i.e. making), press test button to check whether the RCBO is working reliably. If no, should stop using and replace immediately.

Troubleshooting

If several pieces residual current circuit breakers are installed into one sealed box, the inner temperature would increase accordingly. Then, the rated current should be multiplied by a derating factor of 0.8;

Troubleshooting of RCBO refers to Table 5.

Table 5 Troubleshooting

Causes		Reason analysis	Troubleshooting methods
False action	False action caused by neutral line ground at the load side of the residual current operated circuit breaker	Neutral line ground at the load side of the residual current operated circuit breaker may cause false action due to normal working current passing through the ground point Residual current operated circuit breaker 	Connect ground wire to the neutral line at the power supply side of the residual current operated circuit breaker Residual current operated circuit breaker 
	Capacitance current false action caused by leakage current and conductor	The length of conductor laid close to the ground at the load side is too long Earth leakage current increases due to decrease of conductor insulation performance at the load side	Select residual current operated circuit breaker with larger residual operating current Change the conductor
Non tripping	Non tripping caused by failure to connect neutral line to the residual current operated circuit breaker	The power supply side of residual current operated circuit breaker is only connected to phase line but not neutral line	Connect the neutral line at the power supply side

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**Certificate
of
qualification**

DELIXI ELECTRIC LTD

Product: RCBO

Type: DZ47sLE

This product has passed the inspection and is approved to delivery.

Standard: GB/T16917.1

Inspector: 01

Date of production: See box label

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