DELIXI
ELECTRIC
德力西电气

DZ47LE-125

Residual Current Operated Circuit-Breaker

NAVIGATOR Series

User Manual

Please carefully read this User Manual before installing and operating the product, and keep this manual properly for future reference

Safety Notice

Please carefully read this instruction before the installation, operation, run, maintenance, and inspection, and follow the contents of the instruction to properly install and operate this product.

Danger:

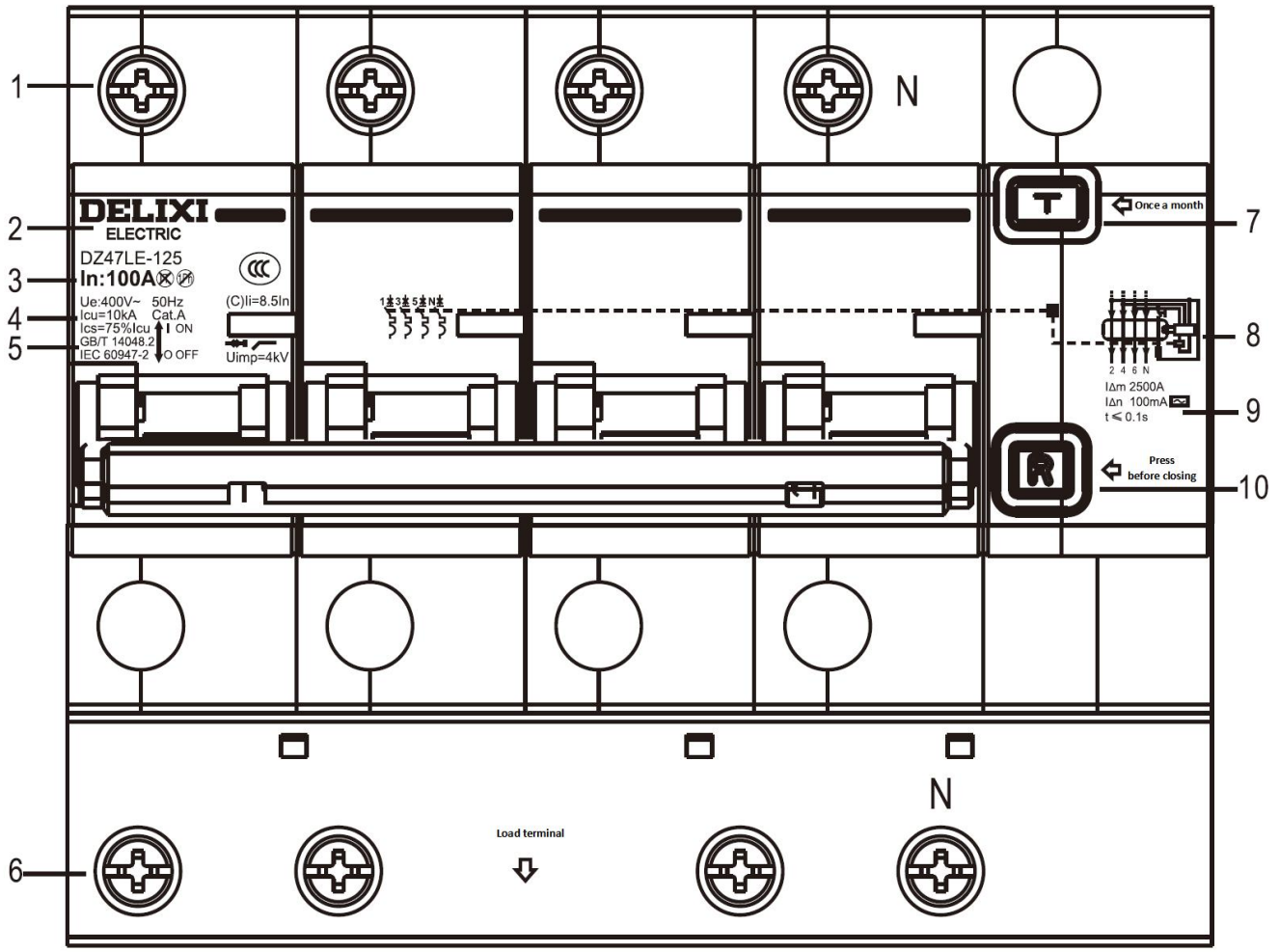
- Do not operate the circuit breaker with your wet hands;
- Do not touch the energized parts during operation;
- Mark sure that the product is de-energized during the maintenance and service;
- Do not use the short circuit method for product testing;

Caution:

- The installation, maintenance and service shall be performed by the qualified professional;
- Three-pole and four-pole products are only suitable for three-phase system power supply;
- Various characteristics of product have been set in factory and cannot be removed or adjusted without permission during operation;
- Please confirm that the rated voltage, rated current, frequency and characteristics of the product meet the operating requirements before use;
- In order to prevent short circuit between phases, exposed wire or copper busbar should be insulated;
- If you need to test insulation resistance or power frequency withstand voltage, you must first disconnect the electronic components between the current circuit, otherwise it will damage the product performance;
- This product only provides protection for leakage faults generated at the load end;
- For less wiring, wrong wiring, this product can not play the role of leakage protection;
- If found damage or abnormal sound when unpacking, please stop the operation immediately and contact the supplier;
- This product is not suitable for some special applications such as frequent starts of motor, electric heating equipment, high capacity cabinet, high inductive or high capacitive loads, or high temperature environment;
- When scrapping the product, please dispose the product waste properly. Thanks for your cooperation.

About DZ47LE-125 Residual Current Operated Circuit Breaker

● Panel Introduction



Legends:

1 Power supply terminal 2 Company Logo 3 Rated current: 63A, 80A, 100A, 125A

4 Technical parameter: Ue: 230V (1P+N,2P)/ 400V (3P,3P+N,4P), Icu: 10kA, Ics=75% Icu, Uimp: 4kV
(C) Ii=8.5In (for distribution protection), (D) Ii=12In(for motor protection)
IΔm = 2500A

5 Reference standard: GB/T 14048.2 IEC 60947-2

6 Load terminal 7 Test button 8 Wiring diagram

9 Residual operated current and time 10 Reset button

Normal Operation, Installation and Transport Conditions

●Normal Operation and Installation Conditions

(1) The ambient air temperature is not higher than +60℃, and is not below -20℃, and the average value within 24 hours does not exceed +35℃;

(2) The altitude of the installation site does not exceed 2000m;

(3) The relative humidity of the atmosphere does not exceed 50% when the highest ambient temperature is +60℃, and a higher relative humidity is allowed at lower temperatures, such as 90% at 20℃. Protective measures shall be taken for condensation occasionally occurred due to temperature changes.

(4) The external magnetic field nearby the residual current operated circuit breaker installation site shall not exceed 5 times earth magnetic field in any direction;

(5) The installation position shall be vertical, and the inclination angle at each direction shall not exceed 10°;

(6) Installed at a place where there is no impact, vibration, and rain or snow erosion;

(7) Pollution level: Level 2;

(8) Installation category: Class II, III;

(9) Protection grade: IP40. Installed in a power distribution box, a power distribution cabinet or tank.

● Normal Storage and Transport Conditions

(1) Temperature: -40℃~+70℃;

(2) Relative humidity (at 25℃): ≤95%;

(3) During the transport, please handle the product gently, and do not upside it down, and prevent the product from harsh collision.

Main Specifications and Technical Parameters

Main technical parameters are listed in Table 1

Table 1 Main technical parameters

Model	Pole	Neutral line	Freq. Hz	Rated current In A	Rated voltage Ue V	Rated short circuit breaking capacity Icn A	Rated residual operating current I△n mA	Rated residual non-operating current I△no mA	Breaking time at I△n s	Rated residual making and breaking capacity I△m A	Release type
DZ47LE-125	1	N	50	63 80 100 125	230	10000 (Ics=75 %Icu)	30 50 75 100 300	15 25 37.5 50 150	≤0.1	2500	C Ii=8.5ln D Ii=12ln
	2										
	3				400						
	3	N									
	4										

The protection characteristics of the overcurrent release are listed in Table 2

Table 2 Protection characteristics of the overcurrent release

Type of overcurrent instantaneous release	Test current A	Start state	Test time	Expected result	Remarks	Reference temperature
C, D	1.05In	Cold state	t≤1h (In≤63A) t≤2h (In＞63A)	Not-trip	--	$+30^{+5}_{0}$℃
C, D	1.31In	Followed by test	t＜1h (In≤63A) t＜2h (In＞63A)	Trip	The current rises to the specified value within 5s	
C, D	2.55In	Cold state	1s＜t＜120s	Trip	--	
C	8.5In×80%	Cold state	t≤0.2s	Not-trip	Turn on the auxiliary switch to supply power	
D	12In×80%					
C	8.5In×120%	Cold state	t≤0.2s	Trip	Turn on the auxiliary switch to supply power	
D	12In×120%					

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

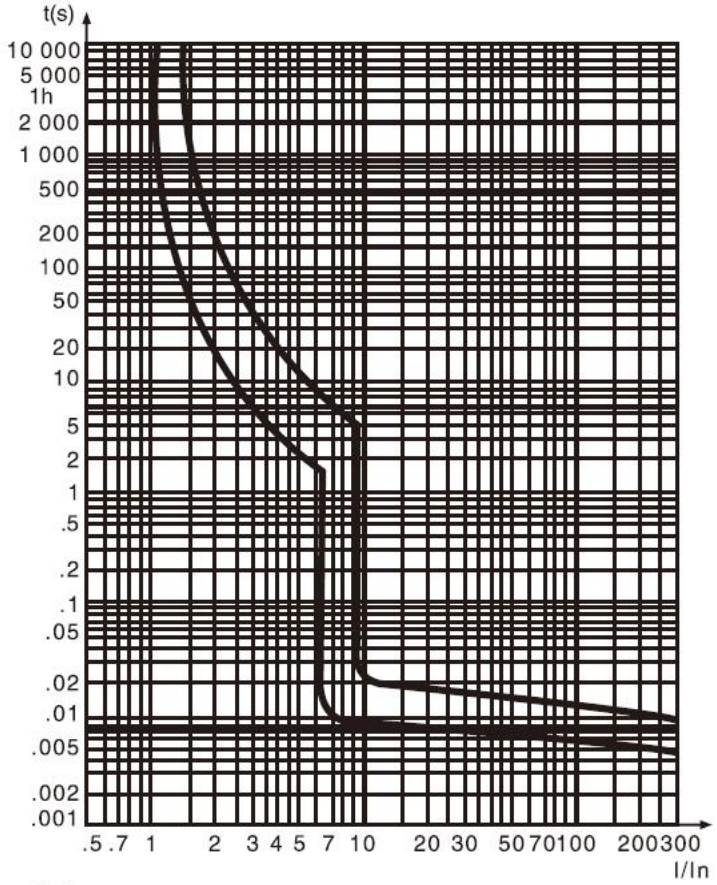


Fig. 1
C type thermal/electromagnetic trip characteristics curve

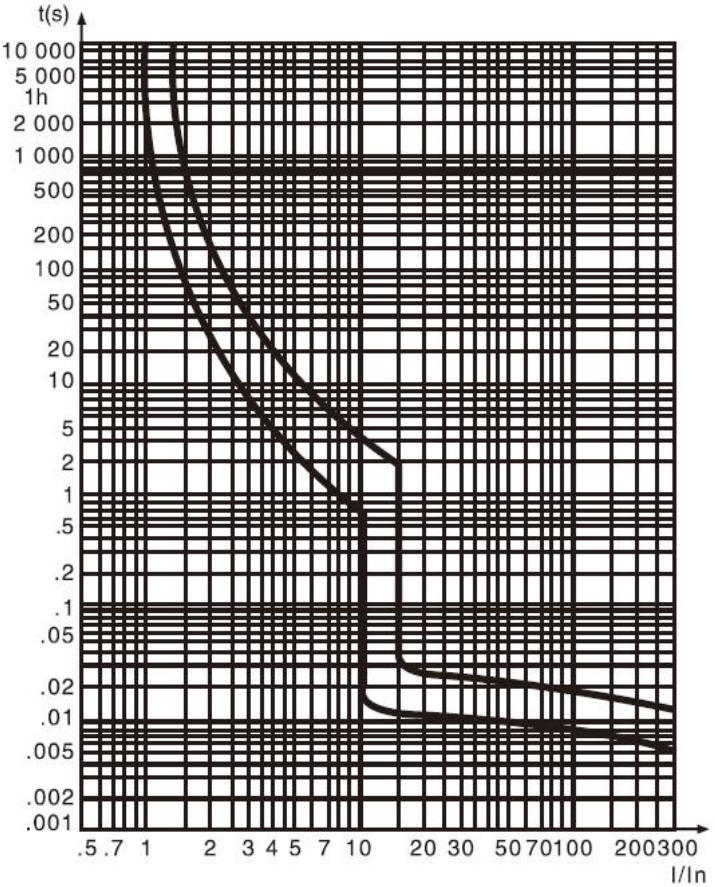


Fig. 2
D type thermal/electromagnetic trip characteristics curve

Outline and Installation Dimensions

This series of circuit breakers are rail-mounted, suitable for TH35-7.5 steel mounting rails.

The outline and installation dimensions are shown in Fig. 3.

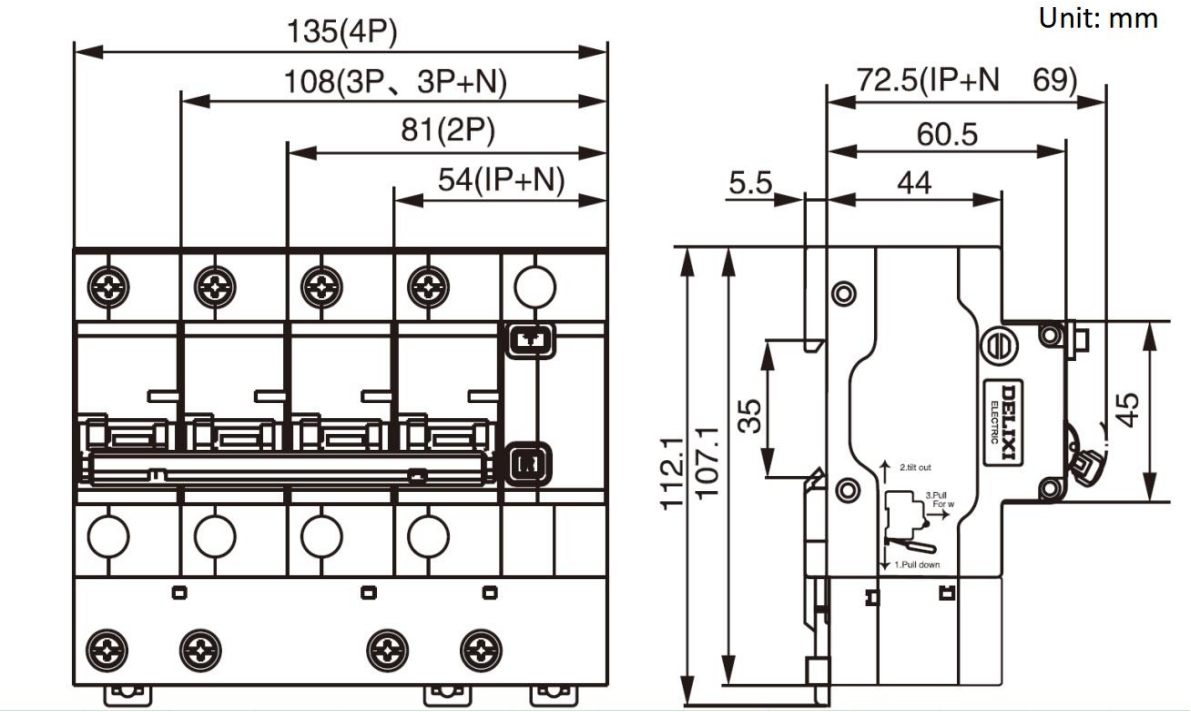


Fig. 3

Product Accessories

There are two different accessories in the circuit breaker, including OF auxiliary contact, SD alarm contact. All accessories are installed on the left side of the product.

Installation, Operation and Maintenance

Installation and Operation

(1) Before installation, check whether the product marks is consistent with the working conditions.

(2) Press the Reset button before power-on.

(3) Before power-on, operate the residual current operated circuit breaker several times and check that its mechanism works flexibly and reliably without blockage.

(4) "1", "3", "5" and "N" of the residual current operated circuit breaker are power supply terminals, "2, "4", "6" and "N" are load terminals, and inversion is not allowed.

(5) The cross-sectional areas of the connecting wire are listed in Table 3.

Table 3 Sectional area of the connecting wire and the rated current

Rated current A	63	80	100	125
Sectional area of wire mm2	16	25	35	50
Wiring torque N•m	Both the power supply and load are 3.5			

(6) After power-on, operate the test button of the residual current operated circuit breaker to confirm whether it can work reliably.

(7) When the handle moves upwards, the indicator window displays red, indicating that the circuit is connected; when the handle moves downward, the indicator window displays green, indicating that the circuit is disconnected.

(8) When installation, insert the residual current operated circuit breaker into the mounting rail to fix the residual current operated circuit breaker on this rail without looseness or falling off. To remove the residual current operated circuit breaker, pull the stop block downward for removal.

The working reference temperature of the residual current operated circuit breaker is +30+5 0℃. When the ambient temperature changes, its rating shall be corrected. The temperature correction coefficients are listed in Table 4; if multiple residual current operated circuit breakers are all installed in a closed box, the temperature inside the box will rise, so that the rated current shall multiply by the derating coefficient 0.8.

Table 4 Rated current and temperature correction coefficient table

Rated current (A)	Rated current correction value A								
	-20℃	-10℃	0℃	+10℃	+20℃	+30℃	+40℃	+50℃	+60℃
63	78.9	75.7	72.5	69.3	66.2	63	59.2	55.4	51.6
80	100	96	92	88	84	80	75.2	70.4	65.6
100	125	120	115	110	105	100	94	88	82
125	169.2	162.8	143.8	137.5	131.2	125	117.8	111.5	105

Maintenance

1 Maintenance must be operated by qualified personnel;

2 It must be ensured that the product is not charged (except for testing items with the test button);

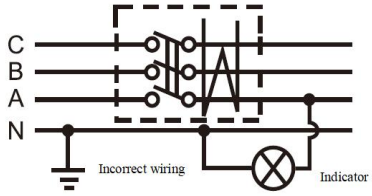
3 Under normal operating conditions, it is repaired and maintained once a year, and the maintenance content is shown in Table 5.

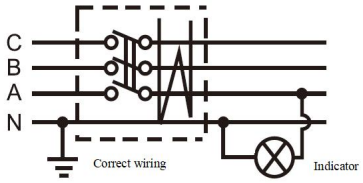
Table 5 Maintenance

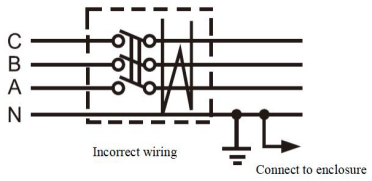
Item	Content
Appearance	No dust, no condensation, clean if necessary No damage No discoloration of the shell and connecting terminals
Terminal connection	Tighten according to the wiring torque in Table 3 without loosening
Handle closing/opening operation	Operation should be flexible
Test button	After the product is tripped, the handle indicator is at the tripped position
Insulation test	It is strictly forbidden to conduct insulation test between phases at the load end
Test button test	Carry out simulated leakage protection test once a month

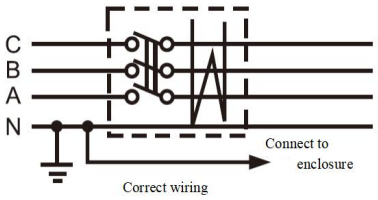
Fault Analysis and Troubleshooting

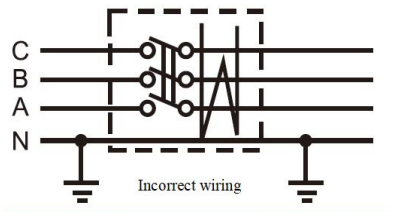
<table>
<tr><th colspan="2">Fault</th><th>Cause</th><th>Solution</th></tr>
<tr><td rowspan="3">Misoperation</td><td>Misoperation caused by improper use of residual current operated circuit breaker</td><td>The three-phase residual current operated circuit breaker is used in the three-phase four-wire circuit. Since the normal working current in the neutral line does not pass through the current transformer, as long as the single-phase load is started, the residual current operated circuit breaker will operate.

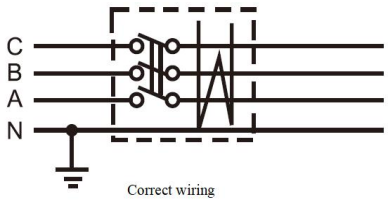
3P Residual current operated circuit breaker
 
</td><td>Three-phase four-wire circuits must use 3P+N or 4P residual current operated circuit breakers.

3P+N or 4P Residual current operated circuit breaker
 
</td></tr>
<tr><td>Misoperation caused by the grounding of the neutral line at the load side of the residual current operated circuit breaker</td><td>The neutral line at the load side of the residual current operated circuit breaker is grounded, which may cause misoperation when the normal operating current passes through the grounded point

Residual current operated circuit breaker
 
</td><td>Connect the ground wire to the neutral line of the power side of the residual current operated circuit breaker

Residual current operated circuit breaker
 
</td></tr>
<tr><td rowspan="2">Misoperation caused by the leakage current and wire capacitance current</td><td>The length of the wire laying against the ground at the load side is too long, there is a large capacitive current to the ground.</td><td rowspan="2">The residual current operated circuit breaker with a larger residual operating current is selected</td></tr>
<tr><td>Earth leakage current of the wire at the load side increases due to the reduction of the insulation</td></tr>
<tr><td rowspan="2">Failure to operate</td><td>Failure to operation is caused by repeated grounding of the load side of the residual current operated circuit breaker</td><td>The neutral line on the load side of the residual current operated circuit breaker is grounded. When a leakage fault occurs in the line, the leakage current is shunted through the ground point, so that the difference between the leakage current generated on the line and the current flowing back to the N-phase is less than the rated residual operating current, resulting in failure to operate

Residual current operated circuit breaker
 
</td><td>Remove the repeated grounding of the load side

Residual current operated circuit breaker
 
</td></tr>
<tr><td>Failure to operation is caused by lackling of phase on the power supply side of three-phase (or four-phase) residual current operated circuit breaker</td><td>The phase line on the power side of three-phase (or four-phase) residual current operated circuit breaker is not connected as required</td><td>Connect the power side phase wire as required</td></tr>
</table>

Unpacking Inspection

After unpacking, please check whether the product is intact, whether the exposed metal is rusty, and whether the product is defected due to poor transport or storage. If found the above phenomenon, please stop the product, and contact the supplier timely for solution.

Company Commitment

Under the condition that users follow the use and storage conditions and the product are well sealed, within 36 months from the production date, our company will provide repair and replacement service free of charge for any damage or abnormal operation due to poor manufacture quality. A paid repair will be provided if the warranty period expires. For any damage due to one of the following situations, a paid repair will be given even if within the warranty period:

(1) Improper operation, maintenance, or storage;
(2) Modified and improper repair without permission;
(3) Damage due to falling off or found during installation after purchase;
(4) Force majeure such as earthquakes, fires, lightning strikes, abnormal voltages, and secondary disasters; If you have any question, please contact the dealer or our company's customer service department.

Order Notice

Please specify the following items when ordering:

1) Name, model and specification of the residual current operated circuit breaker;
2) Rated current of the residual current operated circuit breaker;
3) Residual operating current of the residual current operated circuit breaker;
4) Number of poles;
5) Qty.

Example: To order DZ47LE-125, three-pole, C type, rated current 100A, rated residual operating current 30mA, 100 units.

Please specify: To order DZ47LE-125/3P, C100, 30mA, 100 units.

DELIXI
ELECTRIC
德力西电气

Certificate

DELIXI ELECTRIC LTD

Name: Residual Current Operated Circuit-Breaker

Model: DZ47LE-125

This product passes the inspection and is allowed to be shipped.

Standard: GB/T 14048.2

Inspector: Check 02

Production date: See label on inner box

www.cn-delixi.com
The first edition of this manual was issued on July., 2019.