



Delixi Electric **Easy** Electric

CDB6LEi

Residual Current Operated Circuit Breaker

User Manual



Complied Standard: IEC/EN 61009-1

☐ Please carefully read the User Manual before the installation and use of the products, keep it properly as backup.

CDB6LEi Residual Current Operated Circuit Breaker

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;

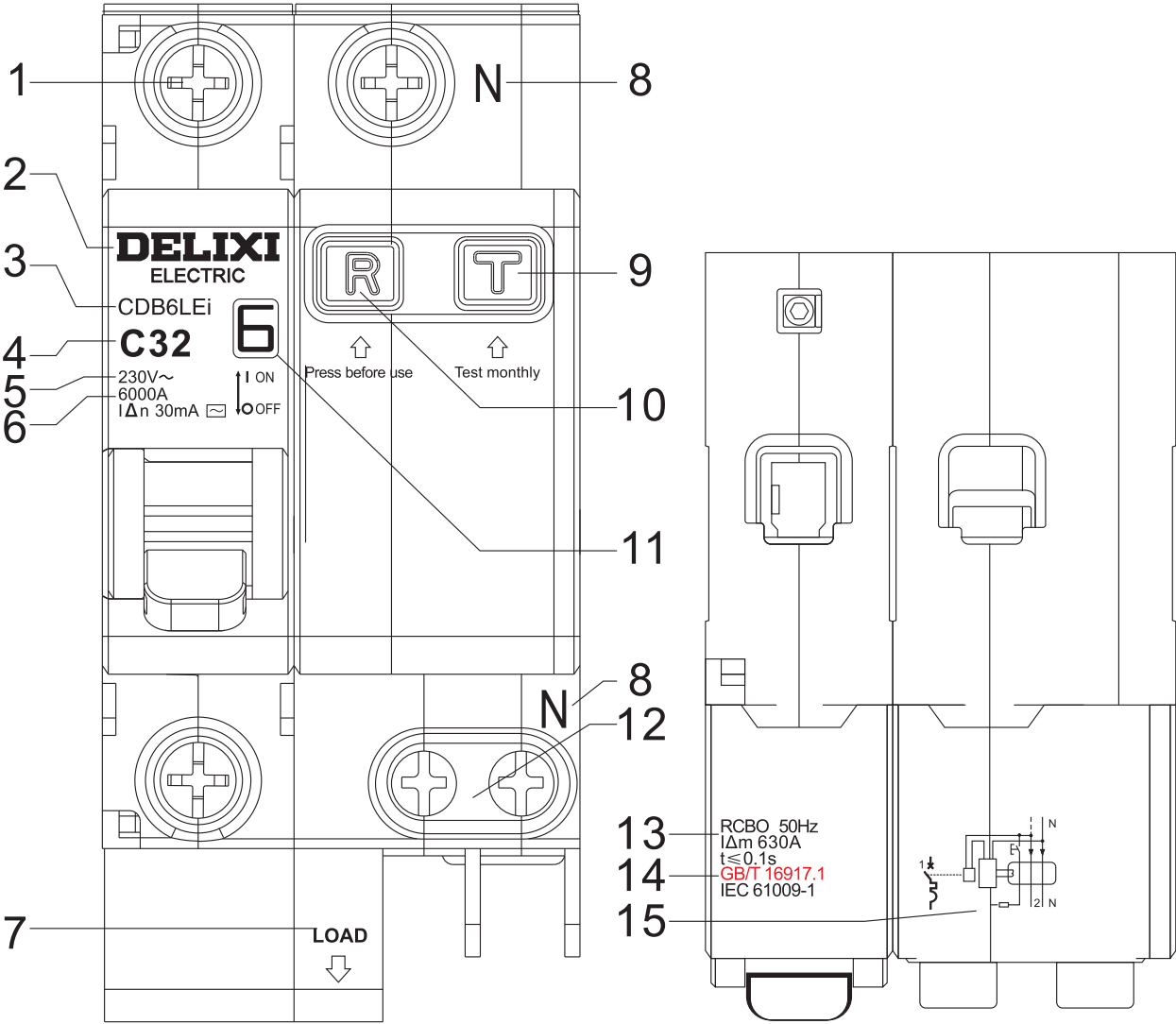


Attention:

- 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 $2.5\text{N}\cdot\text{m}$ (6A ~ 32A 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 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 CDB6LEi

Panel Introduction



- Note:**
- 1. Power supply terminal
 - 2. Company trademark
 - 3. Product model
 - 4.Current specification (tripping type + rated current)
 - 5. Rated voltage
 - 6. Breaking capacity
 - 7. Load indication mark
 - 8. N pole indication mark
 - 9. Test Button
 - 10. Reset Botton
 - 11. Series logo
 - 12.Load terminals
 - 13.Rated residual making/breaking capacity, Rated residual operating current, rated tripping time (Overvoltage:U= (280±5%)V)
 - 14. Complied standard
 - 15. Wiring Diagram

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 $+60^{\circ}\text{C}$, 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: $-40^{\circ}\text{C} \sim +70^{\circ}\text{C}$;
- Relative Humidity (25°C) : $\leq 95\%$;
- 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
CDB6LEi	1	N	50	6	230	6000			≤ 0.1	630	B,C,D
	2			10							
	3			16							
	3	N		20							
	4			25							
				32	400		75	37			
			40			100	50				
			50			300	150				
				63							

Protection characteristics of over current tripping refer to Table 2.

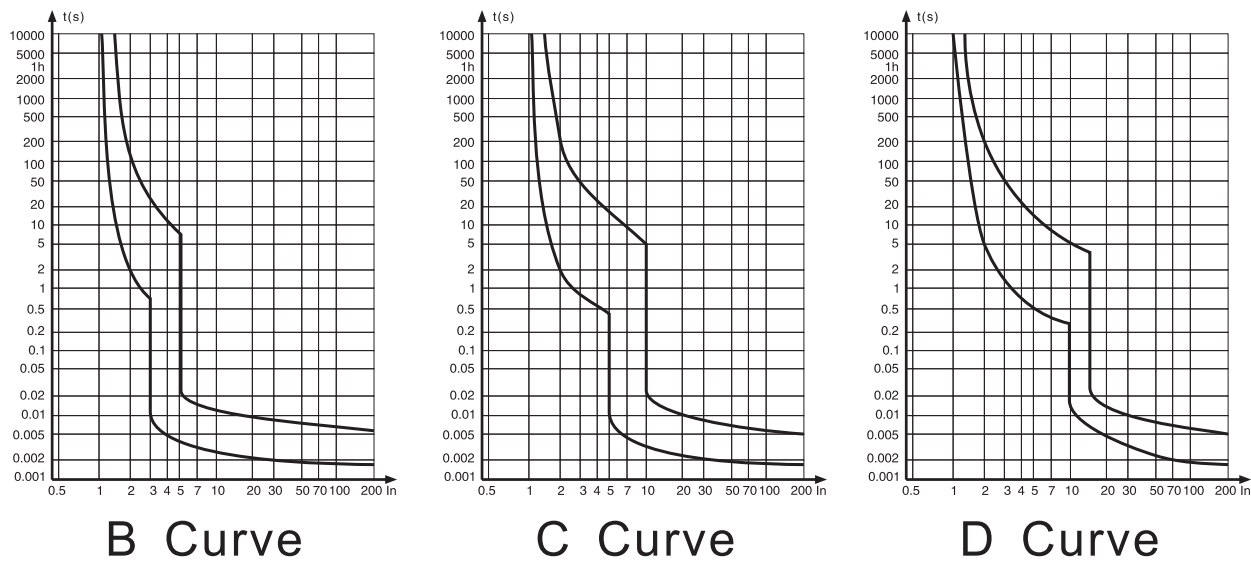
Table 2 Protection characteristics of over current tripping.

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)



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.

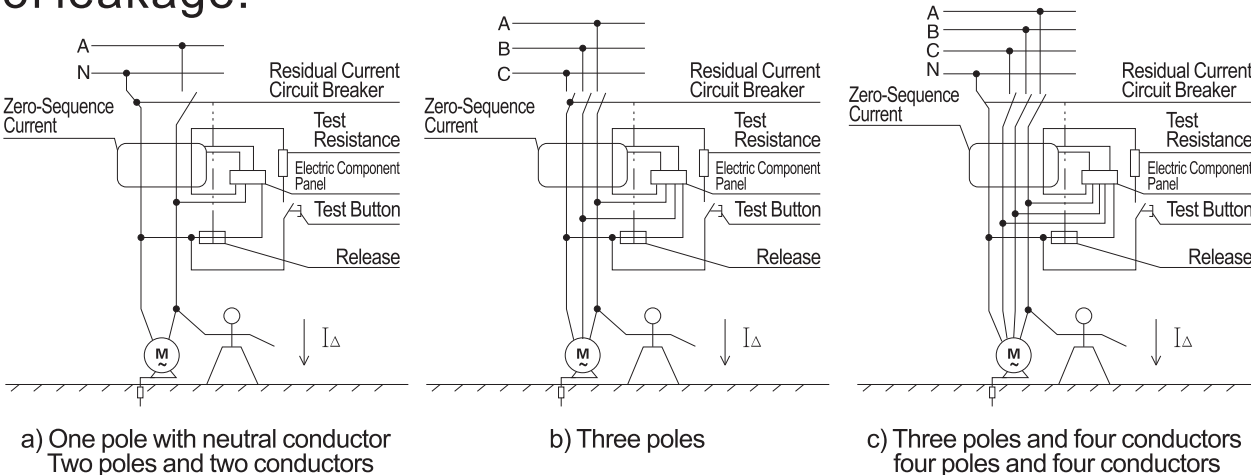


Fig 4 Diagram of RCBO working principle

Overall Dimensions of Installation

CDB6LEi Overall dimensions of installation Unit: mm

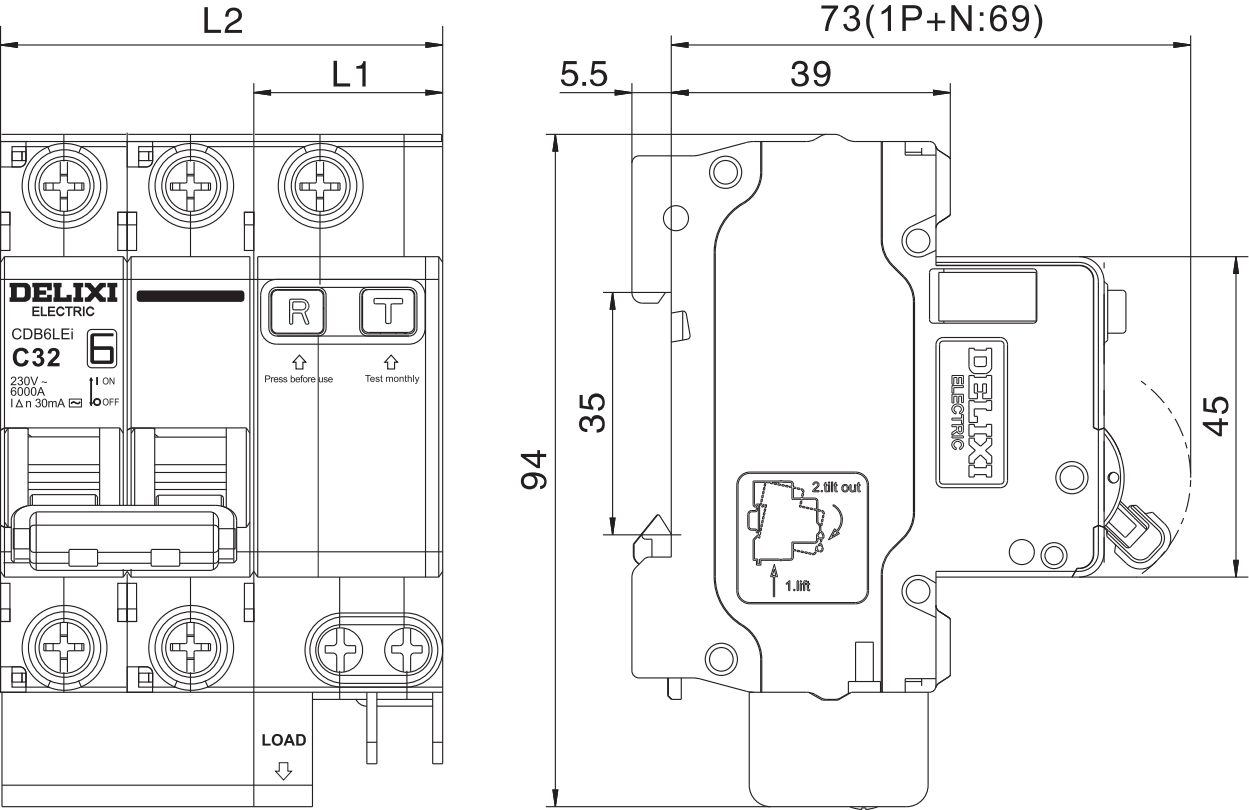


Fig 5

		L1 (mm)	L2 (mm)
1P+N	32A	26.4	44.5
1P+N	63A	35.9	53.8
2P	32A	26.4	62.2
2P	63A	35.9	71.6
3P	32A	35.4	89.0
3P	63A	53.5	107.0
3P+N	32A	44.4	98.0
3P+N	63A	71.1	124.7
4P	32A	44.4	115.7
4P	63A	71.1	142.5

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 of the residual current operated circuit breaker several times after power on to check whether the operation is reliable.
- When the handle moves upward and the indication window shows red color, it indicates the circuit is connected; when the handle moves downward and the indication window shows green color, it indicates the circuit is disconnected.
- During installation, stick and fix the residual current operated circuit breaker in the mounting rail. Ensure it won't loose or drop. Pull the retainer when it is required to dismounting the residual current operated circuit breaker.

The working reference temperature of the residual current operated circuit breaker is $+30^{+5}_0$ °C. In case of change of ambient temperature, the rated value shall be corrected according to the temperature correction factor (see table 4); if multiple residual current operated circuit breakers are installed in an enclosed cabinet simultaneously, the rated current shall be multiplied by the derating factor 0.8 due to appropriate temperature rise in the cabinet.

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

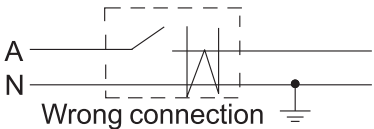
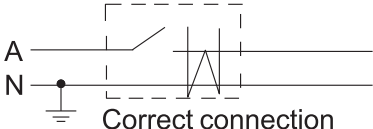
Maintanance

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.

Failure Analysis and Troubleshooting

Residual current operated circuit breaker failure analysis and troubleshooting See table 5.

Table 5 Failure Analysis and 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  A N Wrong connection	Connect ground wire to the neutral line at the power supply side of the residual current operated circuit breaker Residual current operated circuit breaker  A N Correct connection
	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 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

Unpacking Inspection

After unpacking, the user must check whether the product is intact, whether the exposed metal is rusty and whether the product is defective due to improper transportation or custody. In case of above phenomenon, do not use the product and timely contact the supplier.

DELIXI
ELECTRIC

**Certificate
of
qualification**

DELIXI ELECTRIC LTD

Product: RCBO

Type: CDB6LEi

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

Standard: GB/T16917.1

Inspector:

01

Date of production: See box label

DELIXI ELECTRIC LTD