



NB7LE Residual Current Operated Circuit Breaker

1. General

The NB7LE residual current operated circuit breaker is applicable to the circuit with an alternating current of 50Hz, rated-voltage single pole and two lines/two poles 230V, three poles/three poles and four lines/four poles 400V, and a rated current up to 63A; when the human body gets an electric shock or the network leak current exceeds the specified value, the residual current operated circuit breaker can rapidly cut off the power supply in trouble within a very short time for the safety of the human body and the powered equipment. With the function of overload and short circuit protection, the residual current operated circuit breaker can be used to protect the circuit or motor from being damaged by overload and short circuit, and can also be used for not-frequent operational transformation in the circuit under normal condition.

The product meets the standards of IEC 61009-1.

2. Type designation

N	B	7	LE	-	□
					Frame size rated current (32A, 63A)
					Function code (LE: electronic type RCBO)
					Design number
					Miniature circuit breaker
					Company code

3. Technical data

3.1 Main specifications

3.1.1 Graded as follows according to the rated current I_n :

NB7LE-32: 6A, 10A, 16A, 20A, 25A, 32A;

NB7LE-63: 6A, 10A, 16A, 20A, 25A, 32A, 40A, 50A, 63A

3.1.2 Classified as follows according to the type of

instantaneous release: C type (5-10) I_n , D type (10-16) I_n ;

3.1.3 Categorized as follows according to the number of poles

and current circuit: Single pole and two lines (1P+N), two poles (2P), three poles (3P), three poles and four lines (3P+N), four poles (4P) for the NB7LE-32;

Single pole and two lines (1P+N), two poles (2P) for the NB7LE-63;

3.1.4 Graded as follows according to the rated residual operating current $I_{\Delta n}$: 0.03A, 0.1A, 0.3A;

3.2 Technical parameters

3.2.1 Rated short circuit breaking capacity (see Table 1)

3.2.2 Rated residual making and breaking capacity $I_{\Delta m}$: 2,000A;

3.2.3 Rated residual non-operating current: 0.5 $I_{\Delta n}$;

3.2.4 Breaking time of the residual current operating (see Table 2)

3.2.5 Mechanical/Electrical Life

a. Electrical life: no less than 2,000 times

b. Mechanical life: no less than 2,000 times

3.2.6 Insulation shock-resistance voltage performance

a. The impulse voltage with a peak value of 6,000V can be withstood between the various poles connected together and the neutral pole;

b. The impulse voltage with a peak value of 8,000V can be withstood between the various poles connected with the neutral pole and the metal support;

3.2.7 The residual current operated circuit breaker has the capability of withstanding the impact of the surge current with a peak current of 200A (0.5 μ s/100kHz) and 3,000A (8/20 μ s) without causing misoperation;

Table 1 Rated short circuit capacity

Rated current I_n (A)	Number of poles	Rated voltage U_e (V)	Rated short circuit capacity I_{cn} (A)
C type: 6~40	1P+N, 2P	230	6000
C type: 6~32	3P, 3P+N, 4P	400	
C type: 50 63	1P+N, 2P	230	4500
D type: 6~63	1P+N, 2P	230	
D type: 6~32	3P, 3P+N, 4P	400	

Table 2 Maximum breaking time of the residual current operating

I_n A	$I\Delta n$ A	Breaking time when the residual current assumes the following values (s)				
		$I\Delta n$	$2 I\Delta n$	$5 I\Delta n$	5A, 10A, 20A, 50A, 100A, 200A, 500A ^a	$I\Delta t^b$
6~63A	0.03, 0.1, 0.3	0.1	0.05	0.04	0.04	0.04

a. The test of 5A, 10A, 20A, 50A, 100A, 200A, 500A is only performed for the verification of operation, and is not performed for the magnitude of current greater than the lower limit of the over-current instantaneous tripping range.

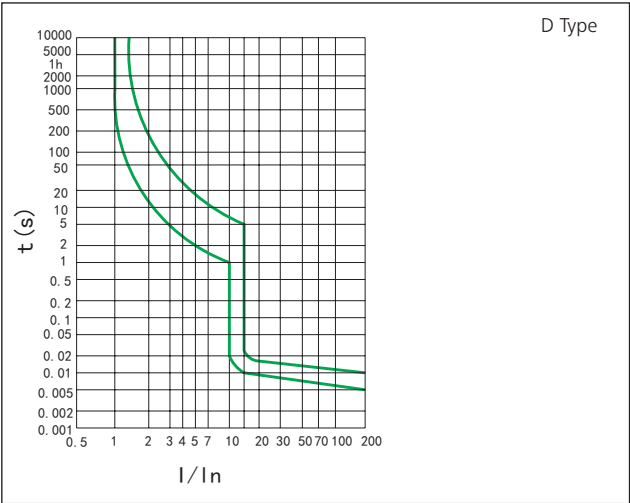
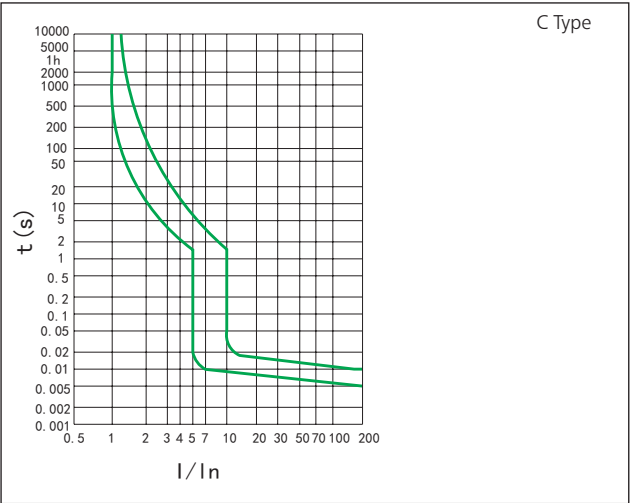
b. The test is carried out for the current with the $I\Delta n$ being equal to the lower limit of the over-current instantaneous tripping range for type C or D.

3.2.8 Over current protection characteristic (see Table 3)

Test	Type	Test current	Initial state	Time limit for tripping or not tripping	Expected result	Test environment temperature	Remarks
a	C, D	1.13In	Cold state	t≥1h	No tripping	30℃~35℃	The current is rising within 5s
b	C, D	1.45In	Right after test a	t<1h	Tripping		
c	C, D	2.55In	Cold state	1s<t<60s (In≤32A) 1s<t<120s (In>32A)	Tripping		
d	C	5In	Cold state	t≥0. 1s	No tripping		The power supply is turned on by closing the auxiliary switch
	D	10In					
e	C	10In	Cold state	t<0.1s	Tripping		The power supply is turned on by closing the auxiliary switch
	D	16In					

Note: The terminology "Cold state" means that the test is performed at the base calibration temperature with no load prior to the test.

3.2.9 For the tripping performance diagram, see Fig 1

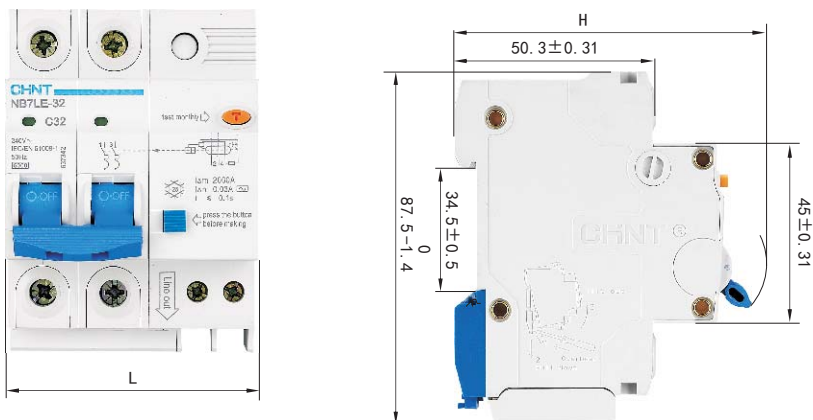


3.2.10 Wiring: suitable for the connection of leads of less than 16mm^2 (see Table 4); wiring method: screw hold-down with a torque of:
Not less than $0.8\text{N}\cdot\text{m}$ and not greater than $1.2\text{N}\cdot\text{m}$ for the M4 screw
Not less than $1.5\text{N}\cdot\text{m}$ and not greater than $2.0\text{N}\cdot\text{m}$ for the M5 screw

Table 4 Nominal cross-sectional area of the copper conductor

Rated current I_n (A)	Nominal cross-sectional area of the copper conductor (mm^2)
6	1
10	1.5
16, 20	2.5
25	4
32	6
40, 50	10
63	16

4. Overall and mounting dimensions (mm)



Poles	H (mm)	L (mm)	
		NB7LE-32	NB7LE-63
1P+N	78 ⁰ _{-1.2}	45 ⁰ _{-0.74}	54 ⁰ _{-0.74}
2P	80 ⁰ _{-1.2}	63 ⁰ _{-0.74}	72 ⁰ _{-0.74}
3P	80 ⁰ _{-1.2}	90 ⁰ _{-1.4}	-
3P+N	80 ⁰ _{-1.2}	99 ⁰ _{-1.4}	-
4P	80 ⁰ _{-1.2}	117 ⁰ _{-1.6}	-

5. Ordering information

- 5.1 When ordering the goods, the user shall indicate the following items:
- 5.1.1 Types and names of products, for example, NB7LE series residual current operated circuit breaker
 - 5.1.2 Instantaneous tripping type and rated current, for example, C25;
 - 5.1.3 Number of poles: for example, 2P;
 - 5.1.4 Rated residual operating current: for example, 0.03A;
 - 5.1.5 Quantity on order, for example, 50 units;
- 5.2 Example for ordering: NB7LE-32 residual current operated circuit breaker, 2P, 0.03A, C25, 50 units.