

Note: Before powering on, ensure that the wiring is correct and verify the flexibility of the handle operation.

6 Maintenance

- RCBO shall be inspected periodically while in operation.
- After the RCBO trips due to overload or short-circuit current, the fault should be cleared first before restoring the breaker to the closed (ON) position.

7 Fault Analysis and Troubleshooting

Table 2 Fault Analysis and Troubleshooting Examples

Fault Phenomenon	Cause analysis	Troubleshooting Methods and Preventive Measures
Handle won't close	Short circuit exists in the circuit	Check the circuit, eliminate the fault then resume operation
	Large residual current exists in the circuit	Check the circuit, eliminate the fault then resume operation
Frequently Trips	Residual current value in the circuit reaches the operating range of the RCBO	Check the circuit, eliminate the fault then resume operation Select RCBO with higher rated residual operating current
No trip when pressing the test button	Loose terminal connections	Tighten the terminal screws
	Test button failure	Replace the product
Terminal temperature is too high	Loose terminal connections	Tighten the terminal screws
	The cross-sectional area of the selected wire is too small	Select wire with suitable cross-section area

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8 Warranty Period, Environmental Protection, and Other Legal Regulations

8.1 Warranty period

Under normal storage and transportation conditions, and if the product packaging or the product itself is intact, the warranty period is 36 months from the date of manufacture.

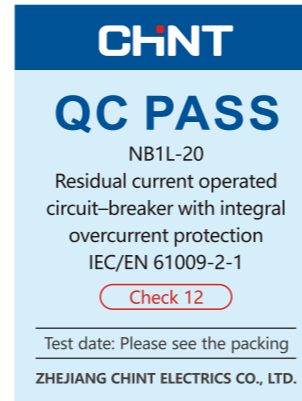
The following situations are not covered under the warranty:

- 1) Damage caused by improper use, storage, or maintenance by the user.
- 2) Damage resulting from disassembly, repair, or maintenance performed by unauthorized personnel or organizations not assigned by the company.
- 3) Products that have exceeded the warranty period.
- 4) Damage caused by force majeure or unforeseen external factors.

8.2 Environmental Protection

To protect the environment, when disposing of this product or its components, please handle them as industrial waste according to proper procedures. Alternatively, deliver them to a recycling station for classified disassembly, recycling, and reuse in compliance with relevant national regulations.

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NB1L-20
Residual current operated circuit-breaker with integral overcurrent protection
User Instruction

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NB1L-20
Residual current operated circuit-breaker with integral overcurrent protection (RCBO)

User Instruction

Standard: IEC/EN 61009-2-1

Safety Warning

- 1 The product can only be installed and maintained by professionals.
- 2 Installation in any damp, condensed-phase environment with inflammable and explosive gas is forbidden.
- 3 When the product is being installed or maintained, the power must be switched off.
- 4 You are prohibited from touching the conductive part when the product is operating.
- 5 It is strictly prohibited to test the performance of the product by the direct contact of the hot wire against the grounding device or the direct short circuit of the hot wire and the neutral wire.
- 6 The protection features of the product are set by the manufacturer. It is not allowed to open or adjust the circuit breaker at will.
- 7 It is prohibited to let children play with the product or the package.
- 8 Foreign matter should be prevented from falling into the product. Install the product in a wellsealed terminal box.
- 9 Do not install the product in places where gaseous media can corrode metals and damage insulation.
- 10 Tighten the wiring screws when installing the product to prevent wires from loose or being pulled out. Select wires strictly according to instructions and connect them to proper power supply and load.
- 11 The product cannot protect against the danger of electric shock caused by touching both wires of the protected circuit at the same time.
- 12 The product must be wired correctly in strict accordance with the wiring diagram.
- 13 The product is not suitable for the direct starting of high-inductive and high capacity loads, such as fans, electric motors, electric heating equipment, capacitor cabinets, etc.

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1 Purpose of Use

The NB1L-20 series residual current operated circuit breaker is applicable to circuits with frequency of AC 50/60 Hz, rated voltage up to 230V/240V and rated current up to 20A. It provides overload, short circuit and leakage protection, and can also be used for infrequent switching of the circuit under normal circumstances.

2 Normal Use, Installation, Transportation, and Storage Conditions

2.1 Usage conditions:

Operating ambient temperature: -35°C to +70°C; the average temperature over 24 hours should not exceed +35°C. The reference temperature for the residual current circuit breaker is 30°C.

-Altitude: The altitude of the installation site does not exceed 2000m.

-Pollution Level: 2.

-Protection Degree: IP20.

-Installation Category: Class II, III.

2.2 Installation conditions:

In accordance with safety guidelines, the external magnetic field at the installation site should not exceed 5 times the geomagnetic field. The residual current circuit breaker should be installed vertically, in a location free from the shaking, shock and vibration.

2.3 Transportation and storage conditions: During the transportation and storage, the RCBO must not be dropped, exposed to rain or subjected to corrosive gases.

3 Key Technical Parameters and Performance

No.	Parameters/Performance	Specification
1	Rated voltage (Un)	1P+N, AC230V/240V
2	Rated current (In)	6A, 10A, 13A, 16A, 20A
3	Instantaneous release type	B, C
4	Rated residual operating current (IΔn)	Type AC: 0.03A Type A: 0.03A
5	Short-circuit breaking capacity (Ics)	6,000A

4 Outline and Installation Dimensions (Figure 1 below)

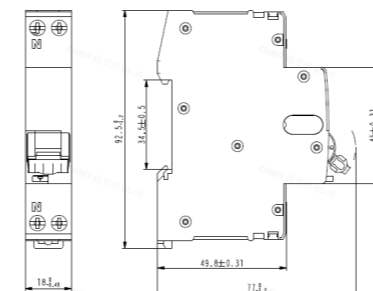


Fig. 1 Outline and Installation Dimensions (unit:mm)

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5 Installation, Commissioning and Operation

5.1 Before installation, check whether the RCBO marking is consistent with the working conditions used; the ON and OFF status indication is shown in Figure 2 below.

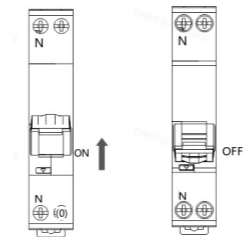


Fig. 2 ON and OFF Status Indication

5.2 Use TH35-7.5 type DIN rail, mounting and dismantling as shown in Fig. 3 and Fig. 4 below.

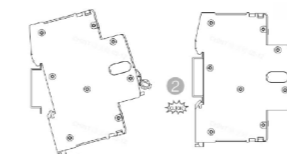


Fig. 3 Schematic Diagram of Mounting

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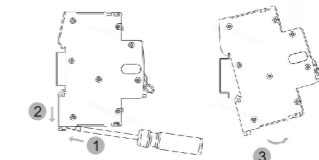


Fig. 4 Schematic diagram of dismantling

5.3 The copper wire and strip lengths are as shown in Figure 5 below.

Table 2 Cross-sectional area requirements for copper wires

Rated Current In(A)	Cross-Section area of copper wire mm ²
6	1
10	1.5
13	2.5
16	4
20	6

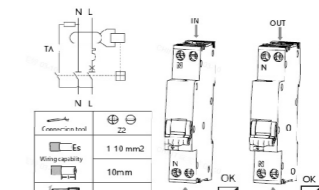


Fig. 5 Wiring Schematic Diagram

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