DELIXI
ELECTRIC
德力西电气

DZ47PLEY-63 NAVIGATOR Series

Residual Current Operated Circuit-Breaker

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:

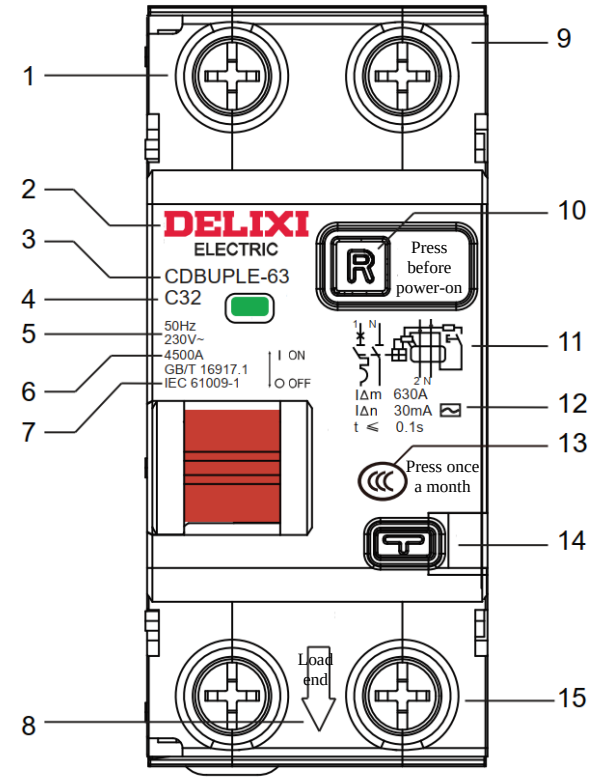
- Do not operate the circuit breaker with your wet hands;
- Do not touch the energized parts during operation;
- Mark sure that the product is de-energized during the maintenance and service;
- Do not use the short circuit method for product testing;

Caution:

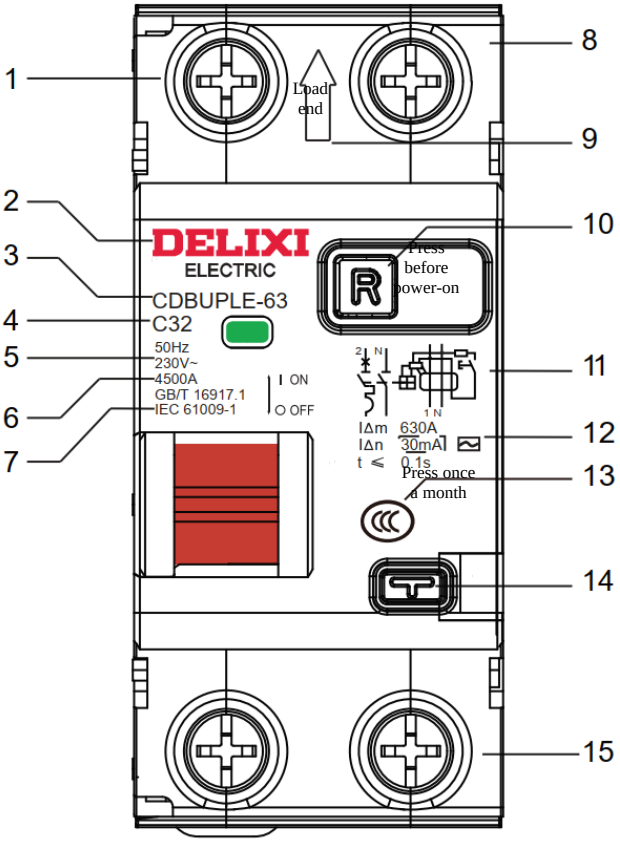
- The installation, maintenance and service shall be performed by the qualified professional;
- Various characteristics of product have been set in factory and cannot be removed or adjusted without permission during operation;
- Please confirm that the rated voltage, rated current, frequency and characteristics of the product meet the operating requirements before use;
- When DZ47PLEY-63 mode adopts upper-inlet wiring method, the wire is led in from the top, and is led out from the bottom; when the lower-inlet wiring method is used, the wire is led in from the bottom, and is led out from the top; please follow the phase sequence when wiring connection, and tighten the wiring screws when the wire inserts into the connecting hole. The wire tightening torque is 2.5N.m to prevent the wire from looseness or being pulled out. The exposed copper wire cannot be out of the wiring terminal;
- This product cannot provide the protection for electric shock hazard caused by simultaneously touching two lines of protected circuit;
- With the protection grade IP20, this product has not dust-proof function; when used in a dusty place, this product shall be installed in a well closed terminal box;
- If found damage or abnormal sound when unpacking, please stop the operation immediately and contact the supplier;
- After the breaking, overload, or short circuit current fault, please eliminate the fault and then power on this product, otherwise this may affect the service life of the product.
- Do not use the insulation resistance megger tester to test the insulation resistance between two phases of the power supply of the product circuit board;
- This product shall be free from rain or water erosion or cannot be fallen off during the operation, storage or transport;
- 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 DZ47PLEY-63 Residual Current Operated Circuit Breaker

- Panel Introduction



Legends:
1 Inlet terminal
2 Company Logo
3 Product model
4 Trip curve and rated current (see Table 1)
5 Rated voltage and frequency
6 Breaking capacity
7 Reference standard
8 Load end identification
9 N pole identification
10 Reset button
11 Wiring diagram
12 Rated residual making and breaking capacity, rated residual operated current, current leakage operating time
13 Certification mark
14 Test button
15 Outlet terminal



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Normal Operation, Installation and Transport Conditions

●Normal Operation and Installation Conditions

(1) Ambient air temperature

The ambient air temperature is not higher than +70℃, and is not below -35℃, and the average value within 24 hours does not exceed +35℃;

Note: When the residual current operated circuit breaker is used in a place where the ambient air temperature is igher than +70℃ and below -35℃, please contact the manufacturer.

(2) Altitude

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

(3) Atmospheric conditions

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) Installation conditions

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

The installation position shall be vertical, and the inclination angle at each direction shall not exceed 10°; installed at a place where there is no impact, vibration, and rain or snow erosion;

TH35-7.5 steel mounting rail is used for installation.

(5) Pollution level: Level 2;

(6) Installation category: Class III;

(7) Protection grade: IP20 (IP40 if installed in a power distribution box, a power distribution cabinet or tank).

(8) For product with a N pole, please connect the zero line to the pole marked with N when wiring.

● Normal Storage and Transport Conditions

(1) Temperature: -40ºC~+70ºC;

(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	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	Overcurrent instantaneous release type
DZ47PLEY-63	50	6 10 16 20 25 32 40 50 63	230	4500	30 50	15 25	<0.1	630	C, D

- 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	Rated current In A	Test current A	Start state	Test time	Expected result	Remarks	Reference temperature
C, D	≤63	1.13 In	Cold state	t≤1h	Not-trip	--	$+30^{+5}_{0}$°C
C, D		1.45 In	Followed by test	t<1h	Trip	The current rises to the specified value within 5s	
C, D		2.55 In	Cold stage	1s<t<60s (for In≤32A) 1s<t<120s (for In>32A)	Trip	--	
C, D		5 In/10 In	Cold stage	t≤0.1s	Not trip	Turn on the auxiliary switch to supply power	
C, D		10 In/14 In	Cold stage	t<0.1s	Trip	Turn on the auxiliary switch to supply power	

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

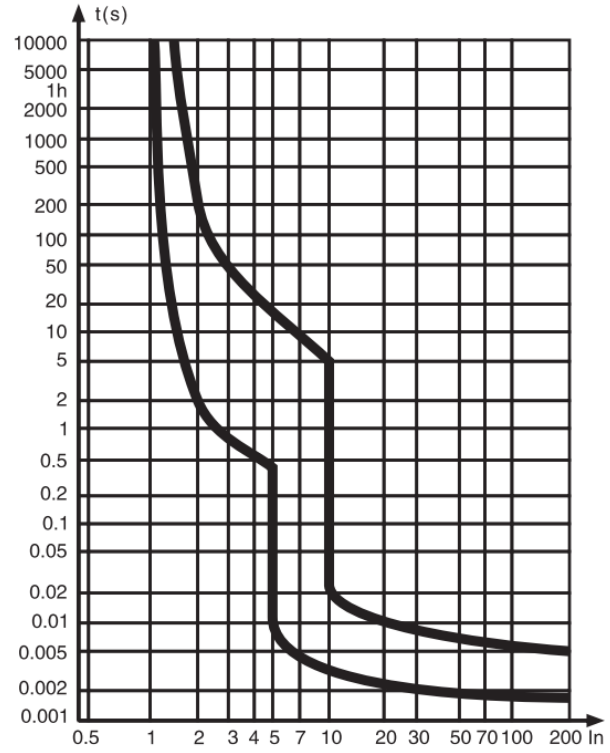


Fig. 1 C type thermal/electromagnetic trip characteristics curve

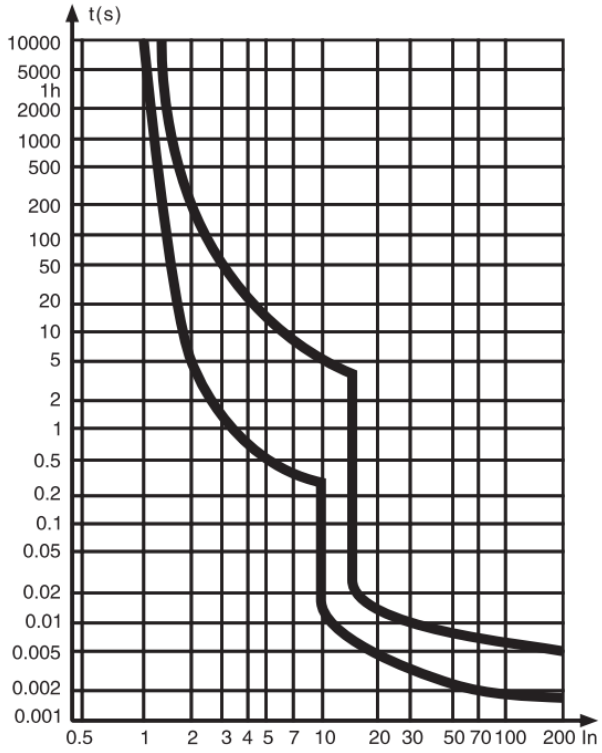


Fig. 2 D type thermal/electromagnetic trip characteristics curve

Structure Features and Working Principle

This residual current operated circuit breaker primarily consists of zero sequence current transformer, electronic component board, release, contact operating mechanism, and plastic shell.

The working principle is shown in Fig. 3. In case of electric leakage or personal electric shock in circuits, when the residual operating current reaches the set value of the operating current, a signal will be generated from the secondary coil of the zero sequence current transformer (induced voltage) to open the residual current operated circuit breaker after amplification by the electronic line, thereby cutting off the power supply for electric leakage protection.

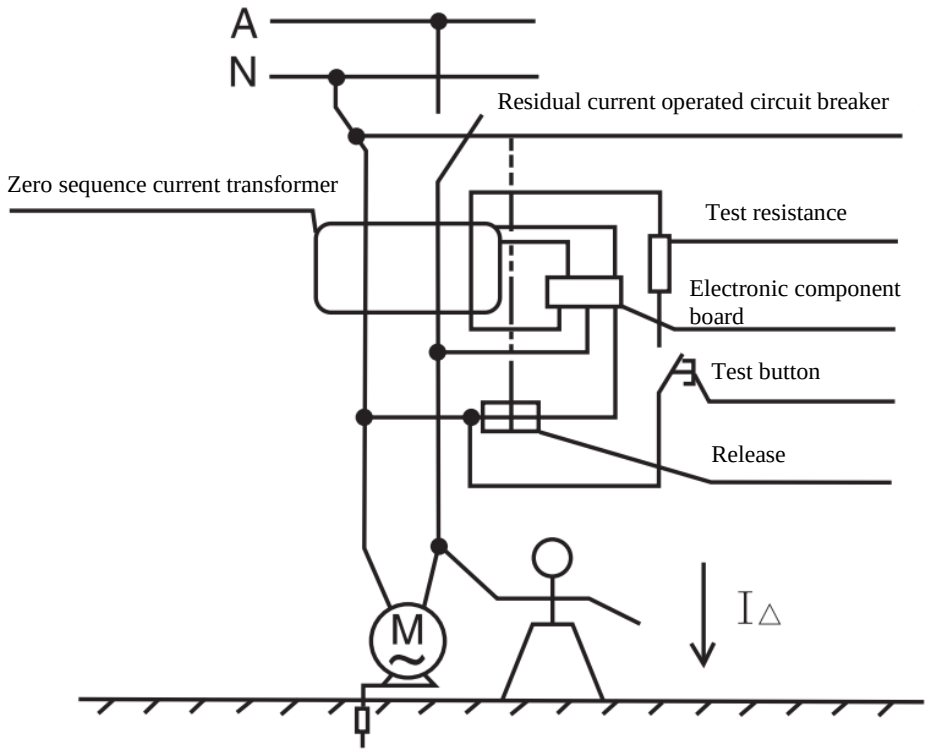


Fig. 3 Working schematic diagram of this residual current operated circuit breaker

Outline and Installation Dimensions

The outline and installation dimensions of DZ47PLEY-63 are shown in Fig. 4.

Unit: mm

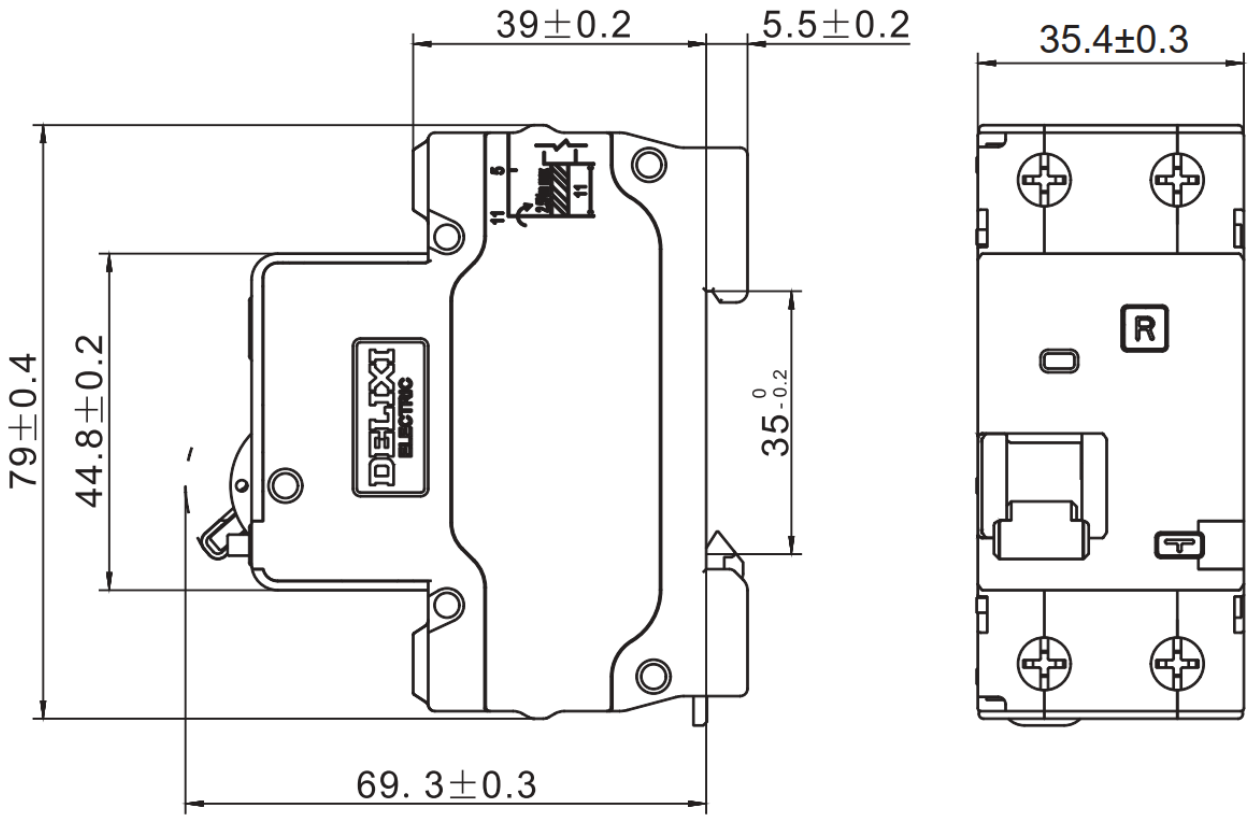


Fig. 4

Product Accessories

There are six different accessories in the circuit breaker, including OF auxiliary contact, MX+OF shunt release, SD alarm contact, MV overvoltage release, MN undervoltage release, and MVMN overvoltage and undervoltage release. 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) The input end shall be connected to the power supply, and the output end shall be connected to the load.

(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	6	10	16, 20	25	32	40, 50	63
Sectional area of wire mm^2	1	1.5	2.5	4	6	10	16

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

(7) 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, push the circuit breaker upwards to make the upper part of the circuit breaker leave from the mounting rail for removal, or 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

Temperature (℃) / Rated current value (A)	-35	-20	-10	0	10	20	30	40	50	60	70
6	8.20	7.35	7.10	6.84	6.57	6.29	6	5.69	5.37	5.02	4.63
10	12.18	13.09	12.54	11.95	11.34	10.69	10	9.26	8.45	7.56	6.78
16	21.36	19.77	19.07	18.35	17.60	16.82	16	15.13	14.22	13.23	12.21
20	25.68	24.49	23.66	22.80	21.91	20.98	20	18.97	17.89	16.73	15.68
25	32.40	30.72	29.67	28.57	27.43	26.24	25	23.69	22.30	20.82	19.56
32	41.18	39.19	37.86	36.49	35.05	33.56	32	30.36	28.62	26.84	25.12
40	51.94	49.24	47.54	45.77	43.93	42.01	40	37.88	35.64	33.24	30.86
50	65.34	61.89	59.70	57.43	55.06	52.59	50	47.27	44.36	41.26	38.12
63	83.72	79.22	76.26	73.17	69.94	66.56	63	59.22	55.19	50.84	46.76

- Maintenance

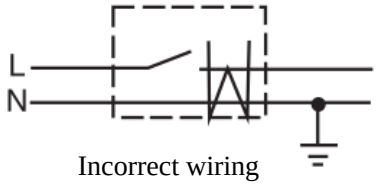
After the residual current operated circuit breaker is running for some time, please check it regularly (monthly). In the power-on state, press the test button and check whether the residual current operated circuit breaker can work reliably. If failed to work normally, please stop the operation and replace it immediately

Fault Analysis and Troubleshooting

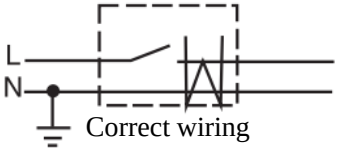
The fault analysis and troubleshooting of the residual current operated circuit breaker see Table 5.

Table 5 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 the grounding of the zero line at the load side of the residual current operated circuit breaker</td><td>The zero 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
 

Incorrect wiring</td><td>Connect the ground wire to the zero line of the power side of the residual current operated circuit breaker

Residual current operated circuit breaker
 

Correct wiring</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</td><td>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><td>Replace the wire</td></tr>
<tr><td>Failure to operate</td><td>Failure to operation is caused by not connecting the zero line of the residual current operated circuit breaker</td><td>Only the phase line of the residual current operated circuit breaker is connected, but the zero line is not connected</td><td>Connect the zero line at the power side</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.

Customer service hotline: 400-826-8008

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 1: To order DZ47PLEY-63 top inlet, C type, rated current 16A, rated residual operating current 30mA, 100 units.

Please specify: To order DZ47PLEY-63 top inlet, C16, 30mA, 100 units.

Example 2: To order DZ47PLEY-63 bottom inlet, C type, rated current 16A, rated residual operating current 30mA, 100 units.

Please specify: To order DZ47PLEY-63 bottom inlet, C16, 30mA, 100 units.

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Certificate

DELIXI ELECTRIC LTD

Name: Residual Current Operated Circuit-Breaker

Model: DZ47PLEY-63/DZ47PLEY-63R

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

Standard: GB/T 16917.1

Inspector: Check 06

Production date: See label on inner box

DELIXI ELECTRIC LTD
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Customer Service hotline: 400-826-8008

www.delixi-electric.com
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