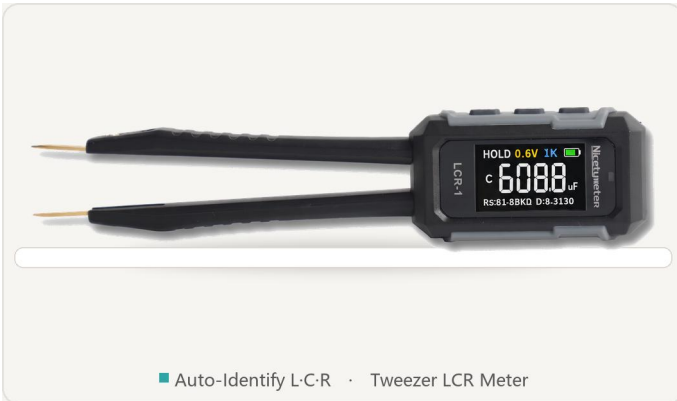
Tweezer LCR Meter

Mini Digital LCR Bridge · Tweezer Measurement

TWEEZER LCR METER · USER MANUAL

Model **LCR-1**



Contents

1	Safety	3
2	Parts and keys	3
3	Parameter description	4
4	Measurement methods	5
5	Settings and calibration	6
6	Low battery and charging	7
7	Firmware upgrade	8
8	Maintenance	8
9	Specifications	9
10	Warranty	11
11	Compliance	11

About this manual

This manual describes the safe operation, functions and specifications of the LCR-1 tweezer LCR meter. It is a mini digital tweezer LCR bridge powered by a lithium-polymer battery with long working and standby time, and a clear OLED display. It automatically identifies resistance, capacitance and inductance and measures their values precisely, with an ultra-wide measurement range and high accuracy. The compact body is easy to carry, and the elastic tweezer arms with detachable gold-plated tips make operation flexible and reliable for various SMD and other LCR measurements. A user calibration learning mode is provided: calibrate against standard resistors as needed, and restore factory settings to return to the factory calibration data.

1 Safety

To avoid possible electric shock, fire or personal injury, read the safety precautions before use.

1. Never apply voltage during measurement and do not measure live circuits; disconnect the power and make sure all capacitors in the circuit are discharged before in-circuit measurement.
2. Discharge capacitors before measuring them.
3. Do not use or store the product for long periods in high-temperature, dusty environments or under direct sunlight.
4. Do not use the product around explosive gas or vapor, or in damp environments.

2 Parts and keys

2.1 Parts description

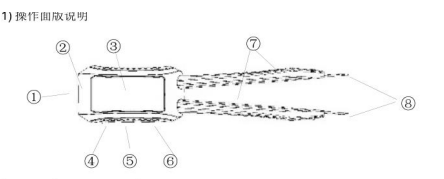


Fig. 1 Parts description

①	TYPE-C port	Connect a data cable for battery charging and PC communication
②	Charging indicator	Stays red while charging; turns blue when the battery is fully charged
③	OLED display	Shows all screens and measured values

④	Power key	Short press to power on, hold 2s to power off; in the measurement screen, short press toggles AUTO, L, C, R, diode and continuity modes; in the settings screen, short press confirms or exits
⑤	Right arrow	In the measurement screen, short press to select the parameter to set (a white frame marks the selection); long press to enter or exit the settings screen; in settings, short press to move down and adjust parameters
⑥	Left arrow	In the measurement screen, short press for HOLD; short press to adjust the framed parameter; long press to switch the test level; in settings, short press to move up and adjust parameters
⑦	Measuring arm	Hold the measuring arm with your fingers during measurement
⑧	Tweezer tips	The left and right tips touch both ends of the component under test

3 Parameter description

The primary and secondary parameters are displayed simultaneously:

Primary	Description	Secondary	Description
L	Inductance	Rs	Equivalent series resistance
C	Capacitance	D	Dissipation factor
R	Resistance	Q	Quality factor
Z	Impedance	X	Reactance

4 Measurement methods

4.1 Measuring resistance

1. Use AUTO mode or select R manually.
2. Touch both ends of the resistor under test with the tweezer tips.
3. Read the value on the display.

> a. Ensure good surface contact when measuring small resistances; surface oxidation affects accuracy. b. If the value exceeds the range, the display shows "OL".

4.2 Measuring capacitance

1. Use AUTO mode or select C manually.
2. Touch both ends of the capacitor under test with the tweezer tips.
3. Read the value on the display.

> a. Discharge the capacitor before measuring to prevent damage to the instrument. b. If the value exceeds the range, the display shows "OL". c. For capacitors above 10μF, 1KHz or 100Hz is suitable; for capacitors below 10nF, 1KHz or 10KHz is suitable.

4.3 Measuring inductance

1. Use AUTO mode or select L manually.
2. Touch both ends of the inductor under test with the tweezer tips.
3. Read the value on the display.

> a. For inductors above 50mH, 1KHz or 100Hz is suitable; for inductors below 50μH, 1KHz or 10KHz is suitable. b. Due to frequency limits, results for multilayer chip inductors are for reference only and cannot meet accuracy requirements.

4.4 Diode test

Switch to the diode mode, touch the anode and cathode of the diode with the tweezer tips, and read the polarity direction and voltage.

> a. Judge the diode polarity by matching the diode symbol direction on the display with the actual part held by the tips. b. The measured forward voltage is for reference only; the range is Vf 0.1V~0.6V — beyond this the display shows OL. For higher measurement demands, use a professional diode tester.

4.5 Continuity test

Switch to the continuity mode and touch the two points under test with the tweezer tips; the buzzer sounds when the path is conductive. Observe the reading on the display.

> Due to parallel capacitance in in-circuit measurement, in-circuit continuity results are for reference only and must not be used as the criterion of open or short.

5 Settings and calibration

5.1 Settings

Long-press the right arrow to enter the settings screen. Short-press the left or right arrow to select the menu item, then press the power key to confirm — the selected item turns yellow. Adjust its value with the left or right arrow and press the power key to confirm and exit.

To leave the settings screen, long-press the right arrow to exit or power off.

5.2 Calibration

When calibration is required, follow the steps below. Calibration covers 0Ω, 1Ω, 10Ω, 100Ω, 1KΩ, 10KΩ, 100KΩ, 1MΩ, 10MΩ and OPEN — 10 points in total, individually or all together.

1. Enter the settings screen, select the calibration menu and short-press the power key to enter; the menu turns yellow and the display prompts to wait for calibration.
2. Short-press the right arrow to select the calibration point; the corresponding value appears in the middle column on the right of the screen.
3. Firmly contact both ends of the standard resistor with the tweezer tips and press the left arrow once; the screen shows "calibrating".
4. Wait patiently for about 20 seconds. When finished the buzzer beeps once and the screen shows "calibration successful"; if the calibration value is wrong, the buzzer beeps twice and the screen shows "calibration failed".

> a. Use chip carbon-film resistors as standard resistors — never wire-wound resistors. b. For 0Ω calibration, short the two tweezer tips firmly together. c. For OPEN calibration, keep the tweezer tips open with nothing connected. d. To return to the factory calibration data, restore factory settings.

6 Low battery and charging

When one red bar appears on the battery symbol at the top-right of the display after long use, charge the battery promptly. If use continues, when the battery reaches the shutdown voltage the buzzer beeps "beep…beep…beep…" in advance and the instrument powers off automatically.

1. Connect the instrument to a DC 5V adapter or a computer USB port with a TYPE-C cable to start charging.

2. While charging the indicator stays red; when fully charged it turns blue.

> Do not exceed the DC 5V charging voltage.

7 Firmware upgrade

1. With the instrument off, hold the left arrow and then press the power key; "USB-Boot" appears on the display.
2. Connect to a computer with a TYPE-C cable; an LCR meter disk appears.
3. Drag the prepared upgrade file into the LCR meter disk; the upgrade runs automatically.
4. The display returns to the measurement screen when the upgrade succeeds.

8 Maintenance

Do not open or attempt to repair the product or modify its circuit.

Clean the case with a damp cloth and mild detergent; do not use abrasives or solvents. Dust or moisture in the test terminals may affect reading accuracy.

When the tweezer tips are worn, oxidized or damaged, they can be replaced by the user:

1. Remove the four screws of the tweezer tips (screw type 3.5PM2×3) with a suitable tool.
2. Fit the new tweezer tips.
3. Tighten the screws.

9 Specifications

9.1 General specifications

Item	Specification
Display	OLED
Range	Auto
Test rate	1 reading/second
Data hold	Yes
Languages	Chinese, English
Screen orientation	Left, right
Volume	0%~100%
Backlight brightness	10%~100%
Auto power-off	Off, 5~120 minutes
Calibration	0Ω~10MΩ, OPEN
Factory reset	Yes
Firmware upgrade	Yes
Low battery indication	Yes

9.2 Mechanical specifications

Item	Specification
Dimensions	146×30×18mm
Weight	37g
Battery	Lithium-polymer rechargeable 3.7V 400mAh
Material	ABS
Warranty period	One year

9.3 Environmental specifications

Item	Specification
Operating temperature	0~40℃
Operating humidity	<75%
Storage temperature	-20~60℃
Storage humidity	<80%

9.4 Technical parameters

Function	Range	100Hz accuracy	1KHz accuracy	10KHz accuracy
Resistance	1MΩ~10MΩ	5%±5	5%±5	---
	1KΩ~1MΩ	1%±5	0.5%±5	1%±5
	1Ω~1KΩ	1%±5	0.5%±5	0.5%±5
	10mΩ~1Ω	3%±5	3%±5	3%±5
Capacitance	1mF~20mF	5%±5	5%±5	---
	1μF~1mF	2%±5	2%±5	2%±5
	1nF~1μF	2%±5	0.5%±5	0.5%±5
	1pF~1nF	---	5%±5	5%±5
Inductance	1H~60H	5%±5	5%±5	---
	1mH~1H	2%±5	2%±5	2%±5
	10μH~1mH	2%±5	0.5%±5	0.5%±5
	1μH~10μH	---	5%±5	5%±5

> Measuring range — resistance: auto 10mΩ~10MΩ, resistance mode 10mΩ~10MΩ; capacitance: auto 50pF~5mF, capacitance mode 1pF~20mF; inductance: auto 5μH~60H, inductance mode 1μH~60H.

9.5 Basic parameters

Item	Specification
Parameters	L, C, R, D, Q, Rs, Z, X
Modes	Auto, resistance, capacitance, inductance, diode, continuity
Frequency	100Hz, 1KHz, 10KHz
Level	0.1V, 0.3V, 0.6V

10 Warranty

This product is covered by a one-year warranty from the date of purchase. The warranty does not cover damage caused by accidents, negligence, misuse, modification, contamination or abnormal operating conditions.

11 Compliance

11.1 Waste disposal and environmental protection (WEEE)

This product must not be disposed of as unsorted municipal waste. To minimize potential pollution to the environment and risks to human health, separate this product from other waste and recycle it responsibly through an authorized local recycling facility.

11.2 Directives and standards

This product complies with the relevant EU directives and standards for CE certification.

Notes