Tweezer LCR Meter

TFT Display · 100kHz Sweep · Signal Generator

TWEEZER LCR METER · USER MANUAL

Model **LCR-1+**



■ LCR · Voltage · Sweep · Signal Generator 4-in-1

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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 rechargeable lithium-polymer battery for extended working and standby time, with a clear and intuitive 1.47-inch TFT color display. It automatically identifies resistance, capacitance and inductance and measures their values precisely, with test frequencies up to 100KHz and sweep measurement support. In addition to traditional LCR measurement it also provides diode and continuity tests, ±32V DC voltage measurement and a signal generator output. The compact body is easy to carry, and the elastic tweezer arms with

detachable gold-plated tips make operation flexible and reliable for factory SMD, repair, education and R&D scenarios.

1 Safety

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

1. Never measure voltages above the rated range, to avoid damage to the instrument and personal injury.
2. Do not measure live circuits in LCR measurement; discharge capacitors under test before measuring.
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 Operation

2.1 Display description



Fig. 1 Display

①	Frequency	Press KEY4 to switch the measurement frequency

②	Level	Press KEY3 to switch the measurement level
③	Mode / function	Press KEY2 to switch the measurement function
④	Battery	Yellow = low battery; lightning = charging; green = fully charged
⑤	Data save	Short-press KEY1 to hold the current reading and save it to the record file, which can be downloaded and analyzed on a computer
⑥	Unit	Shows the unit of the current reading
⑦	Speed	Long-press KEY3 to change the measurement speed: S slow, M medium, F fast
⑧	Model	A: auto mode, P: parallel equivalent mode, S: series equivalent mode
⑨	Type symbol	Shows the symbol of the current measurement function
⑩	Reading	Shows the primary parameter value
⑪	Secondary value	Shows the secondary parameter value
⑫	Secondary value	Shows the secondary parameter value

2.2 Key operation

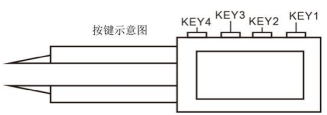


Fig. 2 Keys

Screen	Action	KEY4 Freq	KEY3 Level	KEY2 Func	KEY1 Power
Measurement	Long press	Settings	Speed	Function	Power off

Measurement	Short press	Frequency	Level	Null (REL)	HOLD
Settings	Long press	Exit	---	---	Power off
Settings	Short press	Cancel	Up	Down	Confirm

2.3 LCR measurement

1. Press KEY2 to select the LCR function mode.
2. Press KEY3 to select the test level; 0.6V is recommended.
3. Press KEY4 to select the frequency; 1KHz is recommended.
4. Touch the device under test with both tweezer tips and read the value when it stabilizes.

> a. Ensure good surface contact when measuring small resistances; surface oxidation affects accuracy. b. Discharge capacitors before measuring to prevent damage to the instrument. c. Use high frequency for small capacitors and low frequency for large ones; high frequency for small inductors and low frequency for large ones; 1K for resistors. d. The tweezers are a two-wire measurement, so contact resistance is not negligible — make good use of the null (REL) function. e. Nulling is unnecessary for impedances above 1Ω and capacitances above 1nF.

2.4 Diode and continuity 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; switch to the continuity mode and the buzzer sounds when the path is conductive.

> 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~0.9V —

beyond this the display shows OL. For higher measurement demands, use a professional diode tester.

2.5 DC voltage measurement

1. Press KEY2 to switch to voltage measurement; the display shows a range of -32V~+32V.
2. Touch the voltage under test with both tweezer tips.
3. Read the voltage on the display; the polarity is identified automatically by the type symbol.

a. Never exceed the rated input range at the tweezer tips, or the device may be damaged. b. The device cannot identify AC voltage — do not apply AC. c. Never apply voltage in the LCR measurement modes.

2.6 Sweep measurement

In sweep mode you can observe component parameters at different frequencies for frequency-response analysis.

1. Press KEY2 to switch to the sweep function.
2. Press KEY4 to select capacitance, resistance or inductance.
3. Touch the component under test with both tweezer tips and read the parameters on the display.



Fig. 3 Sweep measurement

3 Signal generator

Besides traditional LCR measurement, the device provides a signal generator output with seven waveforms: sine, square, triangle, staircase, half-wave, full-wave and noise. The sine wave reaches 100KHz; the other waveforms reach 10KHz.

1. Press KEY2 to switch to the signal function, then press KEY1 to confirm.
2. Press KEY1 to select the waveform, then press KEY2 or KEY3 to change the waveform type.
3. Adjust the signal frequency, amplitude and duty cycle in the same way.
4. When the settings are complete, both tweezer tips output the configured waveform.

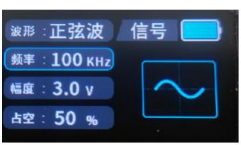


Fig. 4 Signal output

4 System settings

Long-press KEY4 to enter or exit the system settings screen.

Item	Options
Language	Chinese, English
Screen orientation	Auto, right-hand, left-hand
Backlight brightness	10%~100%
Volume	0%~100%

Auto power-off	Never, 5, 30, 60 or 120 minutes
Measurement speed	Slow, medium, fast
Measurement model	Auto, series, parallel
Secondary parameter	Auto, Z, X, P
Function selection	Tick the functions to enable: LCR, diode, voltage, sweep, signal
Calibration	OPEN, short, resistance, voltage
Factory reset	Restore factory settings

5 Calibration

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

1. Enter the settings screen, select the calibration menu, and press KEY2 or KEY3 to select the calibration point.
2. Firmly contact both ends of the standard source with the tweezer tips and press KEY1 to start calibration.
3. Wait patiently for about 20 seconds. When finished the buzzer beeps once and the screen shows "success"; if the calibration value is wrong, the buzzer beeps twice and the screen shows "failure".

> a. Use chip carbon-film resistors as standard resistors — never wire-wound resistors. b. For short calibration, ensure the tweezer tips are firmly shorted and keep away from interference sources. c. For OPEN calibration, keep the tweezer tips open with nothing connected. d. Do not connect the charging cable or Bluetooth adapter during

calibration. e. To return to the factory calibration data, restore factory settings.

6 Firmware upgrade

1. With the instrument off, hold KEY4 and then press KEY1; "Bootloader" appears on the display.
2. Connect to a computer with a TYPE-C cable; a USB disk appears.
3. Drag the prepared upgrade file into the USB disk; the upgrade runs automatically.
4. The display returns to the measurement screen when the upgrade succeeds.

7 Extended functions

The instrument provides PC-software (host) support: open the measurement screen, connect to a computer with a USB data cable and start the host software to adjust functions and display colors according to personal preferences.

8 Sorting mode

1. In resistance, capacitance or inductance measurement, long-press KEY2 and KEY3 together to enter sorting mode.
2. In sorting mode, long-press KEY4 to set the nominal value and tolerance.
3. According to the set nominal value and tolerance, measurements are automatically judged PASS or FAIL and counted.

9 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.

10 Specifications

10.1 General specifications

Item	Specification
Display	1.47-inch TFT
Range	Auto
Test rate	1 reading/second
Data hold	Yes
Languages	Chinese, English
Screen orientation	Auto, 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

10.2 Mechanical specifications

Item	Specification
Dimensions	145×29×14mm
Weight	50g
Battery	Lithium-polymer rechargeable 3.7V 300mAh
Material	CNC aluminum alloy
Warranty period	One year

10.3 Environmental specifications

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

10.4 Technical parameters

Function	Range	100Hz	1KHz	10K	100K
Resistance	1MΩ~10MΩ	5%±5	5%±5	---	---
	1KΩ~1MΩ	1%±5	0.5%±5	1%±5	5%±5

	1Ω~1KΩ	1%±5	0.5%±5	1%±5	5%±5
	0Ω~1Ω	---	---	--	---
Capacitance	1mF~20mF	5%±5	5%±5	---	---
	1μF~1mF	2%±5	2%±5	2%±5	5%±5
	1nF~1μF	2%±5	0.5%±5	1%±5	5%±5
	1pF~1nF	---	2%±5	2%±5	5%±5
Inductance	1H~60H	5%±5	5%±5	---	---
	1mH~1H	5%±5	1%±5	2%±5	---
	10μH~1mH	---	0.5%±5	0.7%±5	5%±5
	1μH~10μH	---	3%±5	3%±5	5%±5

Measuring range — resistance: auto and resistance mode 0Ω~10MΩ; capacitance: auto 50pF~5mF, capacitance mode 1pF~20mF; inductance: auto 50μH~60H, inductance mode 1μH~60H; voltage: DC 32V, range ±0.1V~±32V, accuracy 0.5%±2.

10.5 Basic parameters

Item	Specification
Parameters	L, C, R, D, Q, Rs, Z, X, P
Functions	Auto, resistance, capacitance, inductance, diode/continuity, voltage measurement, sweep, signal output
Frequency	100Hz, 120Hz, 1KHz, 10KHz, 100KHz
Level	0.1V, 0.3V, 0.6V
Signal	Sine, square, triangle, staircase, half-wave, full-wave, noise

10.6 Parameter description

The primary and secondary parameters are displayed simultaneously:

Primary	Description	Secondary	Description
L	Inductance	D	Dissipation factor
C	Capacitance	Q	Quality factor
R	Resistance	Z	Impedance
V	Voltage	X	Reactance
P	Phase angle		

11 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.

12 Compliance

12.1 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.

12.2 Directives and standards

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

Notes