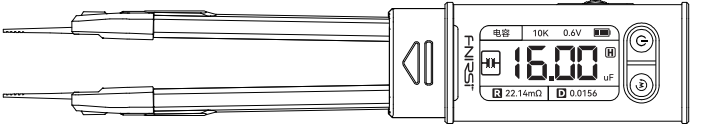
FNIRSI 菲尼瑞斯

LCR-ST2

智能镊子二代产品说明书 V1.2

Intelligent Tweezers II User Manual



目录

CONTENTS

一、安全声明

使用产品前请仔细阅读本用户手册。用户手册中含有安全使用信息，并请妥善保存，以备日后查阅。用户可访问我司网站了解用户手册更新情况。

1.1 用户须知

- 感谢您购买此产品,为了您能更加方便的使用本产品在使用时请按说明书操作。
- 本手册详细介绍了产品的使用方法、注意事项以及相关事项，在使用产品之前，请详细阅读手册，以便发挥产品的最佳性能。
- 不要在易燃、易爆的环境中使用仪器。
- 仪器更换的废旧电池和报废的仪器不可与生活垃圾一同处理请按国家或者当地的相关法律规定处理。

1.2 安全事项

- 本设备为电子测量仪器，请勿用于高压带电环境。
- 请勿测量带电电路中的未知信号，避免过压损坏仪器。
- 测量电容前，请确保电容已完全放电，否则有可能会导致设备永久性损坏。
- 使用电压测量功能的输入电压范围为-30~30V，禁止过压使用。

1.3 安全事项

- 充电时，LCR-ST2可能会出现一定的发热现象，这属于正常现象。
- 拨轮按键为轻触侧按键，按压时请不要大力按压，避免损坏按键。
- 请不要随意拆卸主板，可能导致产品损坏。
- 请不要暴力弯折产品，可能导致产品损坏。

二、产品简介

2.1 产品概述

LCR-ST2是我司最新研发迭代的镊子形LCR电桥，这是一款多功能、便携的测试仪器，支持电阻、电容、电感、和二极管的精密测量，并能测量最大30V的电压。该产品采用先进的测量技术，确保了高精度和高稳定性，同时配备了1.47英寸高清彩屏显示和磁吸功能，增加了使用的便携性。内置300mAH锂电池，提供持久的使用时间，并支持100Hz、120Hz、1KHz、10KHz、100KHz五种频率。其独特的镊子形设计特别适合在狭小空间内进行精细操作，快速测试电子元器件。此外，LCR-ST2还具备扫频功能，能够快速扫描元件全频段参数（100Hz-100kHz），一键获取多频点数据，精准分析元件特性；智能分选功能可以自动分类筛选元器件，大幅提升批量检测效率；双模同显功能支持两种测量模式数据同屏对比，使结果分析更直观。轻便便携的特性，使其成为现场工程师和实验室中不可或缺的高效工具。

2.2 参数介绍

类型	量程	100Hz/120Hz	1KHz	10KHz	100KHz
电容	1mF–22mF	5%±3字	5%±3字	/	/
	1μF–1mF	2%±3字	2%±3字	2%±3字	5%±3字
	1nF–1μF	2%±3字	0.5%±3字	0.5%±3字	5%±3字
	1pF–1nF	/	2%±3字	2%±3字	5%±3字

类型	量程	100Hz/120Hz	1KHz	10KHz	100KHz
电感	1H–10H	5%±3字	5%±3字	/	/
	1mH–1H	2%±3字	2%±3字	/	/
	10μH–1mH	2%±3字	0.5%±3字	0.5%±3字	5%±3字
	1μH–10μH	/	2%±3字	2%±3字	5%±3字

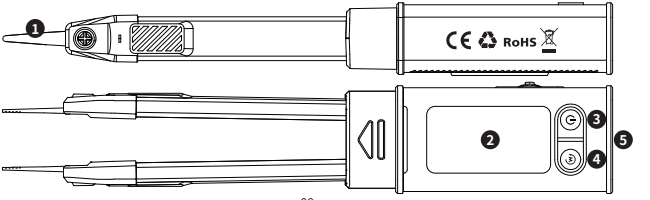
类型	量程	100Hz/120Hz	1KHz	10KHz	100KHz
电阻	1MΩ–10MΩ	5% ±3字	5%±3字	/	/
	1kΩ–1MΩ	1%±3字	0.5%±3字	1%±3字	/
	1Ω–1kΩ	1%±3字	0.5%±3字	1%±3字	5%±3字
	10mΩ–1Ω	2%±3字	2%±3字	2%±3字	5%±3字

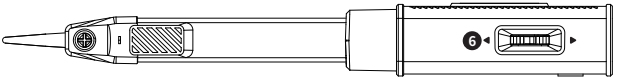
类型	量程	100Hz/120Hz	1KHz	10KHz	100KHz
二极管	导通电压≤0.7V	/			
电压	±30V	/			

产品型号	LCR-ST2	裸机净重	≈60.8g
工作续航	≈3H	充电接口	Type-C
屏幕参数	1.47英寸高清彩屏	工作温度	0℃~50℃(湿度≤75%)
尺寸大小	31*170.7*20.3mm	储存温度	-20℃~60℃(湿度≤75%)

三、快速入门

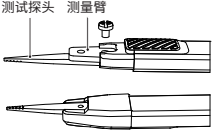
3.1 结构外观



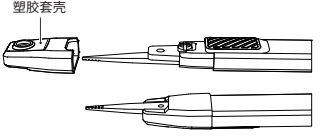


①测试探针　②屏幕　③开关机按钮/锁定数据按键
④菜单按键　⑤充电/数据传输口Type-C　⑥拨轮按键

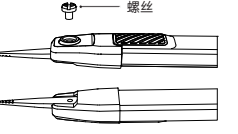
3.2 测试探头安装说明



①将测试探头对齐孔位嵌入测量臂
（测试探头带锯齿的面朝镊子的内侧）

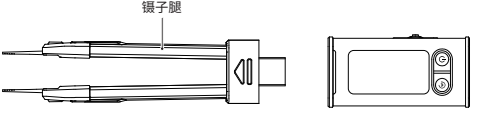


②将塑胶套壳放入测量臂

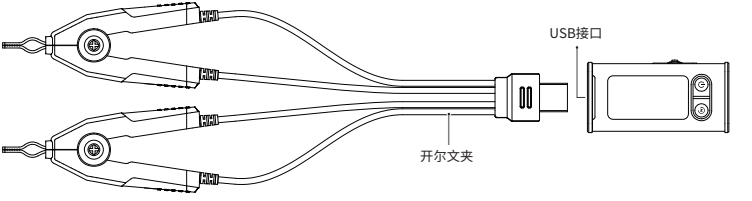


③旋转螺丝安装拧紧
※拆卸同理，测量臂不可拆卸。

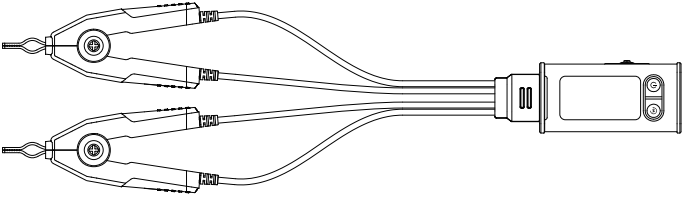
3.3 开尔文测试夹安装说明(高配)



①将镊子腿从主体的USB端拔出



②将开尔文夹的USB接口对准主体的USB端接口



③完成安装

四、操作说明

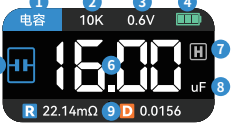
4.1 开关机

・开机：关机状态下，长按 ⏻ ，即可开机。
・关机：任意界面下，长按 ⏻ ，即可关机。

4.2 主界面

主界面用于选择功能，包括五个功能：LCR测试、扫频、分选、电压、设置。可以通过【拨轮按键】选择功能。按下【拨轮按键】可以进入功能界面。在每个功能界面下，长按 ⏻ 即可返回主界面。

▶4.2.1 LCR测量



①**测试档位：**通过 左右拨动【拨轮按键】进行自动(自动识别电阻/电容/电感)、电阻、电容、电感、二极管等测量参数切换。

②**测试频率：** 按下【拨轮按键】切换频率区域，然后通过【拨轮按键】左右拨动切换100Hz、120Hz、1KHz、10KHz、100KHz测试频率。

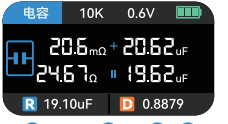
③**测试电压：**按下【拨轮按键】切换电平区域，然后通过【拨轮按键】左右拨动切换0.1V、0.3V、0.6V、1V测试电平。

④**电量**　　⑤**测试档位图标**　　⑥**当前测量参数值显示**　　⑦**HOLD：**短按【电源键】在触发hold与取消hold之间切换。　　⑧**单位**

⑨**测量副参数值：**向左波动【拨轮按键】并停留1s可切换幅参数 R(电阻)、C 电容)、L(电感)、Z(阻抗)；向右波动【拨轮按键】并停留1s可切换幅参数 X(电抗)、D(损耗值)、Q(品质因素)、θ(相位角)。

· 双模型模式

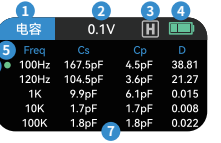
在 LCR 测量界面下点击 进入双模型模式。此模式下,同时显示串并联等效参数,“+”表示串联横式,“‖”表示并联模式,第一个值为等效电阻值(Rs/Rp),第二个值为电容或电感值(Cs/Cp 或 Ls/Lp)。



▶4.2.2 扫频测量

①**测试档位:**通过 左右拨动【拨轮按键】进行电阻、电容、电感等测量参数切换。

②**测试电压:**按下【拨轮按键】切换电平区域,然后通过【拨轮按键】左右拨动切换0.1V、0.3V、0.6V、1V测试电平。



③**HOLD:**短按【电源键】在触发hold与取消hold之间切换。
④**电量**
⑤**菜单栏:**显示以下测量参数信息【通过左右拨动[拨轮按键]和单按 按键可进行切换】:

电感:
- Ls:串联等效电感
- Lp:并联等效电感
- Q :品质因素

电容:
- Cs:串联等效电容
- Cp:并联等效电容
- D :损耗值

电阻:
- Rs:等效串联电阻(ESR)
- Rp:并联等效电阻
- Q :品质因素

⑥**当前测试频率:**指示当前正在测试的频率。
⑦**参数测量区:**测量结果显示区。

▶4.2.3 电压测量

①测量档位

②测量范围

③电量

④显示被测电压正负极

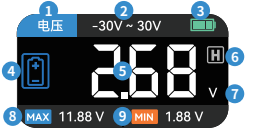
⑤当前测量参数值

⑥HOLD:短按【电源键】在触发hold与取消hold之间切换。

⑦单位

⑧当前测量最大值

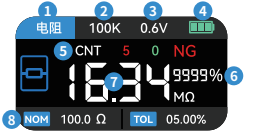
⑨当前测量最小值



▶4.2.4 分选测量

①测试档位:通过 左右拨动【拨轮按键】进行电阻、电容、电感测量参数切换。

②测试频率: 按下【拨轮按键】切换频率区域，然后通过【拨轮按键】左右拨动切换100Hz、120Hz、1KHz、10KHz、100KHz测试频率。



③**测试电压：**按下【拨轮按键】切换电平区域，然后通过【拨轮按键】左右拨动切换0.1V、0.3V、0.6V、1V测试电平。
④**电量**
⑤**测量状态区：**显示测量数据成功（绿色）、失败（红色）的状态及次数
⑥**当前测量参数的公差值**
⑦**当前测量参数值显示**
⑧**测量参数设置：**通过长按【拨轮按键】进行标称值、公差值等测量参数切换，然后按下【拨轮按键】可进行参数设置。

▶4.2.5 系统设置
长按【菜单按键】 进入系统设置和返回主界面，左右拨动【拨轮按键】切换一级菜单和二级菜单，按下【拨轮按键】进入和选定该选项。
系统设置包含:

设置项	功能	参数选项
系统语言	切换系统显示语言	中文、英文
测量速度	切换测量的速度	快、慢
启动界面	设定开机启动界面	主菜单、LCR、扫频、分选、电压
屏幕方向	调整屏幕的方向	自动、右手、左手
屏幕亮度	屏幕亮度调节	屏幕亮度调节范围为:10%~100%
音量设置	切换系统音量大小	音量调节范围为:0%~100%

设置项	功能	参数选项
自动关机	无操作自动关机	从不/5分钟/15分钟/30分钟
校准	校准测量参数值	短路/1Ω/10Ω/100Ω/1KΩ/10KΩ/100KΩ/1MΩ/10MΩ/开路/10V
关于	查看系统信息	查看型号及版本号
恢复出厂设置	恢复到出厂的系统设置	取消/确认

五、固件升级

- 在关机状态下先按住波轮按键不放，然后再按下电源键进入固件升级页面。
- 使用带有数据传输的数据线接入设备和电脑。
- 电脑将会自动出现弹窗文件夹，将固件拖入文件夹即可。
- 固件升级完成将会自动重启。

六、注意事项

- 测量确保镊子尖端与被测件接触良好，避免接触不良导致测量误差。
- 请勿带电测量，防止仪器损坏，测量电压时不得超过30V。

・不建议在线测量，由于外部PCBA连接属性，在线测量值仅供参考，无精度保证。
・自动档支持测量电阻、电容、电感，且自动测量出的元器件类型仅供参考，特殊情况下有可能出现误判。

七、生产信息

产品名称：智能镊子2代
品牌/型号：FNIRSI/LCR-ST2
生产商：深圳市菲尼瑞斯科技有限公司
地址：广东省深圳市龙华区大浪街道伟华达工业园C栋西侧8楼
服务热线：0755-28020752

服务邮箱：support@fnirsi.com
商务邮箱：business@fnirsi.com
官方网站：www.fnirsi.cn
执行标准：SJ/T 10298-1991

八、保修说明

※此页为保修卡基本凭证，请妥善保管

感谢您选择本公司产品，本产品自销售之日起计保修期。在产品保修期内，凡按照产品使用，说明书安装使用。于正常环境、条件使用之下，因原物料及加工过程中之瑕疵而导致故障，可依据本保修条款的内容享受无偿维修服务，本保修卡请用户妥善保存，以作保修凭证，丢失恕不补发。

以下情况将实施有偿维修服务：

- 不能出示有效保修卡原件；
- 产品安装不符合产品要求、标准和相关规范造成的损坏；
- 超过保修期。
- 产品安装环境中相关配件不符合产品要求、标准和相关规范造成的损坏；
- 用户对产品使用不当、保管不妥或擅自拆机、私自维修等原因造成的损坏；

1.Safety Statement

Please read this user manual carefully before using the product. The manual contains important safety information and should be kept properly for future reference. Users can visit our company website to check for updates to the user manual.

1.1 User Notice

- Thank you for purchasing this product. To ensure convenient usage, please operate the device according to the instructions in this manual.
- This manual provides detailed information on product operation, precautions, and related matters. Please read it carefully before use to achieve optimal performance.

- Do not use the device in flammable or explosive environments.
- Used batteries and discarded units must not be disposed of with household waste. Please follow national or local regulations for proper disposal.

1.2 User Notice

- This device is an electronic measuring instrument. Do not use it in high-voltage live environments.
- Do not measure unknown signals in live circuits to avoid overvoltage damage to the instrument.
- Before measuring a capacitor, ensure it is fully discharged; otherwise, permanent damage to the device may occur.
- The input voltage range for the voltage measurement function is -30 V to +30 V. Do not exceed this limit.

1.3 Safety Precautions

・During charging, the LCR-ST2 may become slightly warm. This is a normal condition.
・The dial button is a light-touch side key. Do not press it with excessive force to prevent damage.
・Do not disassemble the mainboard arbitrarily, as this may cause product damage.
・Do not bend the product forcefully, as this may cause product damage.

2. Product Introduction

2.1 Product Overview

The LCR-ST2 is the latest generation tweezer-type LCR meter developed by our company. It is a multifunctional and portable testing instrument that supports precise measurement of resistance, capacitance, inductance, and diodes, as well as voltage measurement up to 30 V. Equipped with advanced measurement technology, the LCR-ST2 ensures high accuracy and

stability. It features a 1.47-inch high-definition color display and magnetic attachment design, enhancing ease of use and portability. A built-in 300 mAh lithium battery provides long operating time, and the instrument supports five test frequencies: 100 Hz, 120 Hz, 1 kHz, 10 kHz, and 100 kHz.

Its unique tweezer-style design is especially suitable for fine operations in confined spaces, allowing quick testing of electronic components. In addition, the LCR-ST2 offers a sweep function that can rapidly scan component parameters across the full frequency range (100 Hz–100 kHz) and obtain multi-frequency data with a single press, enabling accurate component characterization. The intelligent sorting function automatically classifies and filters components, greatly improving batch testing efficiency. The dual-mode simultaneous display feature allows two measurement modes to be shown on the same screen for direct comparison, making result analysis more intuitive. With its lightweight and portable design, the LCR-ST2 is an indispensable high-efficiency tool for both field engineers and laboratory applications.

2.2 Specifications

Type	Range (Hz)	100Hz/20Hz	1KHz	10KHz	100KHz
Capacitance	1mF–22mF	5%±3 digits	5%±3 digits	/	/
	1μF–1mF	2%±3 digits	2%±3 digits	2%±3 digits	5%±3 digits
	1nF–1μF	2%±3 digits	0.5%±3 digits	0.5%±3 digits	5%±3 digits
	1pF–1nF	/	2%±3 digits	2%±3 digits	5%±3 digits

Type	Range (Hz)	100Hz/120Hz	1KHz	10KHz	100KHz
Inductance	1H–10H	5%±3 digits	5%±3 digits	/	/
	1mH–1H	2%±3 digits	2%±3 digits	/	/
	10μH–1mH	2%±3 digits	0.5%±3 digits	0.5%±3 digits	5%±3 digits
	1μH–10μH	/	2%±3 digits	2%±3 digits	5%±3 digits

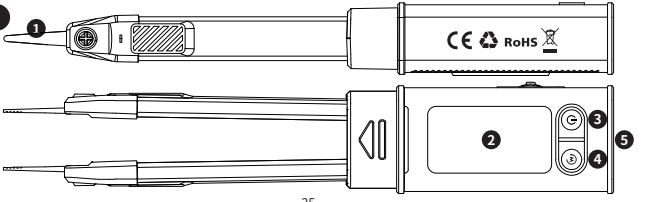
Type	Range (Hz)	100Hz/120Hz	1KHz	10KHz	100KHz
Resistance	1MΩ–10MΩ	5%±3 digits	5%±3 digits	/	/
	1kΩ–1MΩ	1%±3 digits	0.5%±3 digits	1%±3 digits	/
	1Ω–1kΩ	1%±3 digits	0.5%±3 digits	1%±3 digits	5%±3 digits
	10mΩ–1Ω	2%±3 digits	2%±3 digits	2%±3 digits	5%±3 digits

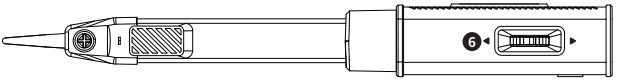
Type	Range (Hz)	100Hz/120Hz	1KHz	10KHz	100KHz
Diode	Forward Voltage ≤ 0.7V	/			
Voltage	±30V	/			

Model	LCR-ST2	**Net Weight**	≈60.8g
Battery Life	≈3H	**Charging Port**	Type-C
Display	1.47" HD Color Screen	**Operating Temperature**	0℃ ~ 50℃ (⩽75% RH)
Product Size	31*170.7*20.3mm	**Storage Temperature**	-20℃ ~ 60℃ (⩽75% RH)

3. Quick Start

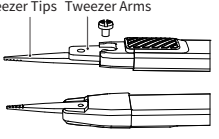
3.1 External View



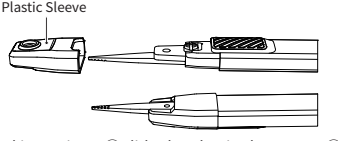


①Tweezer Tips ②Display Screen ③Power On/Off & Hold Button
④Menu Button ⑤Type-C Charging / Data Port ⑥Rotary Knob

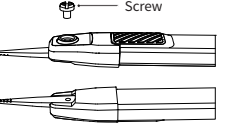
3.2 Test Probes Installation Instructions



①Align the tweezer tip with the hole and insert it into the tweezer arm.(Ensure the serrated side of the tip faces the inner side of the tweezers.)

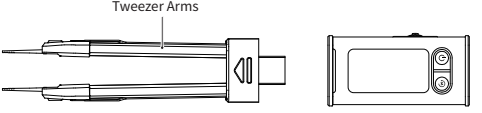


②Slide the plastic sleeve onto the tweezer arm.

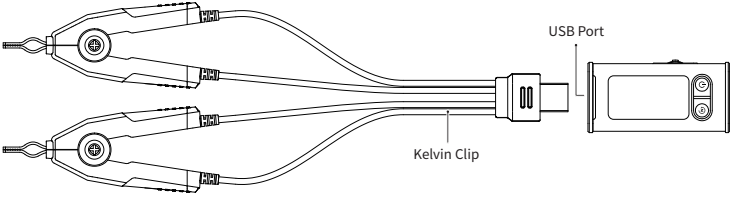


③Rotate the screw to secure and tighten it.
※To remove, reverse the procedure.The tweezer arms are non-removable.

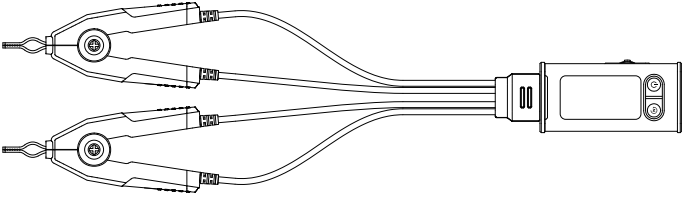
3.3 Kelvin Clip Installation Instructions (Plus Version)



①Remove the Tweezer Arms from the main body' s USB port.



②Align the Kelvin Clip' s USB connector with the main body' s USB port



③Complete the installation

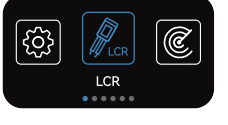
4. Operation Instructions

4.1 Power On / Off

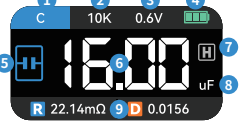
- Power On: In the power-off state, long press ⏻ to turn on the device.
- Power Off: In any interface, long press ⏻ to turn off the device.

4.2 Main Interface

The main interface is used to select functions, including five functions: LCR Measure, Sweep, Sorting, Voltage, Settings. Use the【Rotary Knob】to select a function. Press the【Rotary Knob】to enter the selected function interface. In any function interface, long press ⏻ to return to the main interface.



▶4.2.1 LCR Measurement



① **Test Mode:** Toggle the【Rotary Knob】left or right to switch between Auto (automatic recognition of R/C/L), Resistance, Capacitance, Inductance, and Diode.

② **Test Frequency:** Press the【Rotary Knob】to enter the frequency area, then toggle the knob left or right to switch between 100Hz, 120Hz, 1kHz, 10kHz, 100kHz.

③**Test Voltage:** Press the【Rotary Knob】to enter the voltage area, then toggle left or right to switch between 0.1V, 0.3V, 0.6V and 1V.

④ **Battery Indicator** ⑤ **Mode Icon** ⑥ **Primary Measurement Value Display**

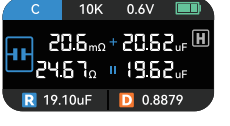
⑦ **HOLD:** Short press the【Power Button】to toggle between Hold and Release. ⑧ **Unit**

⑨ **Secondary Measurement Value:** Toggle the【Rotary Knob】left and hold for 1s to switch to R (Resistance), C (Capacitance),

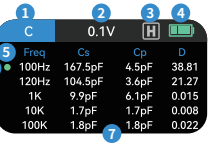
L (Inductance), Z (Impedance). Toggle the【Rotary Knob】right and hold for 1s to switch to X (Reactance), D (Dissipation Factor), Q (Quality Factor), θ (Phase Angle).

・Dual Equivalent Mode

In the LCR measurement interface,press the to enter Dual Equivalent Mode. In this mode, the instrument displays both series and parallel equivalent parameters. The "+" indicates the series equivalent circuit, while " ‖ " indicates the parallel equivalent circuit. The first value represents the equivalent resistance (Rs/Rp), and the second value represents the capacitance or inductance (Cs/Cp or Ls/Lp).



▶4.2.2 Sweep Measurement



①**Test Mode:** Toggle the【Rotary Button】left or right to switch between measurement parameters such as Resistance, Capacitance, and Inductance.

②**Test Voltage:** Press the【Rotary Button】to switch to the voltage level field, then toggle the【Rotary Button】left or right to select the test level: 0.1V, 0.3V, 0.6V, or 1V.

③**HOLD:** Short press the【Power Button】to toggle between HOLD and release.

④**Battery Level**

⑤**Menu Bar:** Displays the following measurement parameter information.【You can switch items by toggling the [Rotary Button] left/right and pressing it once】:

Inductance:

・Ls: Equivalent Series Inductance ・Lp: Equivalent Parallel Inductance ・Q: Quality Factor

Capacitance:

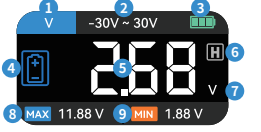
・Cs:Equivalent Series Capacitance ・Cp:Equivalent Parallel Capacitance ・D: Dissipation Factor

Resistance:

・Rs:Equivalent Series Resistance Resistance (ESR) ・Rp: Equivalent Parallel Resistance ・Q: Quality Factor

⑥ **Current Test Frequency:** Indicates the frequency currently being used for the measurement.

⑦ **Measurement Display Area:** Displays the measurement results.



▶4.2.3 Voltage Measurement

① **Measurement Mode**

② **Measurement Range**

③ **Battery Level**

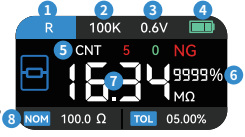
④**Polarity Display:** Shows the positive and negative polarity of the measured voltage.

⑤**Current Measurement Value**

⑥**HOLD:** Short press the【Power Button】to toggle between HOLD and release.

⑦**Unit** ⑧ **Current Max Value** ⑨ **Current Min Value**

▶4.2.4 Sorting Measurement



①**Test Mode:** Toggle the【Rotary Button】left or right to switch measurement parameters (Resistance, Capacitance, Inductance).

②**Test Frequency:** Press the【Rotary Button】to switch to the frequency field, then toggle the【Rotary Button】left or right to select the test frequency: 100Hz, 120Hz, 1kHz, 10kHz, or 100kHz.

③**Test Voltage:** Press the【Rotary Button】to switch voltage range, then rotate left/right to select the test level: 0.1V, 0.3V, 0.6V, or 1V.

④**Battery Level**
⑤**Measurement Status Area:** Displays the status and count of measurement results: success (green) or failure (red).
⑥**Tolerance of Current Measurement Parameter**
⑦**Current Measurement Value Display**
⑧**Measurement Parameter Settings:** Long press the【Rotary Button】to switch measurement parameters such as nominal value and tolerance, then press the【Rotary Button】to adjust the selected parameter.

▶4.2.5 System Settings
Long press the【Menu Button】to enter System Settings or return to the main interface. Rotate the【Rotary Button】left/right to navigate through primary and secondary menus, then press the【Rotary Button】to enter or select the desired option. The System Settings include:

Setting Item	Function	Parameter Options
System Languages	Switch the system display language	Chinese, English
Measurement Speed	Switch the measurement speed	Fast, Slow
Startup Interface	Set the Power-On Startup Interface	Main Menu, LCR, Sweep, Sorting, or Voltage
Screen Orientation	Adjust the screen orientation	Auto, Right-Handed, Left-Handed
Screen Brightness	Adjust screen brightness	Range: 10% – 100%
Volume Settings	Adjust system volume	Range: 0% – 100%

Setting Item	Function	Parameter Options
Auto Power Off	Automatic power off on inactivity	Never / 5 min / 15 min / 30 min
Calibration	Calibrate measurement values	Short Circuit / 1Ω / 10Ω / 100Ω / 1KΩ / 10KΩ / 100KΩ / 1MΩ / 10MΩ / Open Circuit/ 10V
About	View system information	View Model and Version Number
Factory Reset	Restore factory system settings	Cancel / Confirm

5.Firmware Upgrade

- With the device powered off, press and hold the Rotary Button, then press the Power Button to enter the Firmware Upgrade interface.
- Connect the device to a computer using a data cable that supports data transfer.
- A folder window will automatically pop up on the computer; drag and drop the firmware file into this folder.
- The device will automatically reboot after the firmware upgrade is complete.

6.Precautions

- Ensure the tweezer tips make good contact with the component under test to avoid measurement errors caused by poor connection.
- Do not perform live voltage measurements to prevent damage to the device; the test voltage must not exceed 30V.
- Online measurement is not recommended. Due to the characteristics of external PCBA connections, the measured values are for reference only and accuracy is not guaranteed.
- The Auto mode supports measurement of resistance, capacitance, and inductance. The detected component type in auto mode is for reference only and may be misidentified under special circumstances.

7.Contact Us

Product Name: Intelligent Tweezers II
Model: LCR-ST2
Manufacturer: Shenzhen FNIRSI Technology Co., Ltd.
Address：8th Floor, West Side, Building C, Weihua Da Industrial Park, Dalang Street, Longhua District, Shenzhen, Guangdong, China
Tel: 0755-28020752
Service Email: support@fnirsi.com
Business Email: business@fnirsi.com

Website: www.fnirsi.com
Standard Implemented: SJ/T 10298-1991

http://www.fnirsi.com/

8. Warranty Information

※This page is the basic warranty card. Please keep it.

Thank you for choosing our company's products. The warranty period of this product starts from the date of sale. During the product warranty period, if the product is installed and used in accordance with the product manual and used in normal environment and conditions, and the fault is caused by defects in the original materials and processing, you can enjoy free repair services according to the content of this warranty clause. Please keep this warranty card properly as a warranty certificate. No reissue will be issued if it is lost.

The following situations will incur paid repair services

- Failure to present a valid original warranty card;
- Damage caused by improper installation not complying with product requirements, standards, or related regulations;
- Damage caused by accessories in the installation environment that do not meet product requirements, standards, or related regulations;
- Damage caused by improper use, poor maintenance, unauthorized disassembly, or unauthorized repairs;
- Warranty period has expired.

保修卡

产品型号	LCR-ST2	**数量**		**渠道商名称** (购买商店)	
联系方式		**发票号** (订单号)		**渠道商地址**	
购买时间	**年**	**月**	**日**		

客户姓名:	**地址:**	**联系方式:**	**故障说明:**

Warranty Card

Product Model	LCR-ST2	**Qty.**		**Distributor Name** (where to buy)	
Contact		**Invoice Number** (Order Number)		**Address**	
Purchase Date (as per invoice)	**Year**	**Month**	**Day**		

User Name:	**Address:**	**Contact:**	**Fault Description:**

下载用户手册&应用软件
Download User manual&APP&Software