

LT1/LT2 Digital Bridge Tweezers

Smart electric bridge

User Manual



ALIENTEK

Revision History

Version	Date	Reason
V1.0	2025/06/16	Initial release
V1.1	2025/07/02	Added detailed specifications for parameters: voltage measurement and signal generator
V1.2	202507/08	1. Added instructions for long-press quick parameter adjustment for the signal generator 2. Added instructions for auxiliary parameter adjustment and equivalent model adjustment for the sweep function
V1.3	2025/09/02	Description of Added Parameter Memory Function
V1.4	2025/11/10	New System Settings: Volume Frequency, Warning Pop-up (Version 1.8 and above)
V1.5	2025/12/12	Sweep Mode Now Features HOLD Description Function (Version V1.9 and Above)
V1.6	2026/05/21	Add LT2 product description
V1.7	2026/07/30	Notes on Adding Voltage Withstand Specifications

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Thank you for purchasing this product. In order to fully understand the product features and operating methods, we recommend that you carefully read this manual before use.

Important Notes (Must Read)

Safety Precautions:

- 1、 This device is an electronic measuring instrument. Do not use it in high-voltage live environments.
- 2、 Do not measure unknown signals in live circuits to avoid overvoltage damage to the instrument.
- 3、 Before measuring capacitance, ensure the capacitor is fully discharged; otherwise, it may cause permanent damage to the device.
- 4、 Do not exceed this voltage, as doing so may cause permanent damage to the device.

LT1 Withstand Voltage: 10 V across the entire range

LT2 LCR/Voltage/Sweep Withstand Voltage: 40 V

LT2 Diode/Signal Generator Withstand Voltage: 10 V

How to Measure Correctly?

1. Before measurement, check the screws securing the probe tips to ensure all four screws are tight.
2. During measurement, ensure that the metal probe tips make good contact to minimize contact errors.
3. During measurement, check that the probe arms are parallel and not misaligned to ensure good contact.
4. During measurement, avoid touching the test component, metal probe tips, or screws with your hands.
5. Before testing, please check the test level and test frequency. Measurement results may vary for different components under different test levels and frequencies.
6. The measurement level and test frequency for components can be referenced in the data sheet.
7. To ensure accurate measurement values, please measure components individually and avoid measuring component values online whenever possible.
8. To ensure accurate measurement values, please confirm that the equivalent model is selected correctly. Different equivalent models may also result in inconsistent measurement results.

Important Notes:

1. During charging, the digital bridge may experience some heat generation, which is a normal phenomenon.
2. The buttons are touch-sensitive side buttons; please do not press them too hard to avoid

damaging the buttons.

3. Please do not disassemble the mainboard arbitrarily, as this may cause product damage.
4. Please do not forcefully bend the product, as this may cause product damage.

1, Product Introduction

1.1 Product Overview

1.1.1 LT1 Product Overview

The LT1 Digital Bridge Tweezers are meticulously crafted by Guangzhou Xingyi Electronic Technology Co., Ltd. (Zhengdian Atom), integrating full-featured measurement capabilities into the industry's smallest form factor. It supports LCR parameter measurement, voltage detection, diode testing, continuity testing, and sweep analysis, paired with a 1.14-inch IPS high-definition display and user-friendly interface design, providing electronic engineers with an efficient and precise portable testing solution.

The product features the following key characteristics:

- Compact and elegant design for portability and efficiency
- Supports test voltages of 0.1V/0.3V/0.6V/1.0Vrms
- Supports test frequencies of 100Hz/120Hz/1KHz/10KHz
- Measurement parameters: Rs/Rp/Cs/Cp/Ls/Lp/D/Q/X/Z
- Resistance, capacitance, and inductance measurement functions
- Voltage, diode, and continuity measurement functions
- Supports sweep measurement functionality
- Intelligent device type recognition
- Supports series and parallel equivalent models
- 1.14-inch IPS LCD with crisp and detailed display

1.1.2 LT2 Product Overview

The LT2 Digital Bridge Clamp Meter, meticulously crafted by Guangzhou Xingyi Electronics Technology Co., Ltd. (Zhengdian Atom), builds upon the full-featured measurement capabilities of its predecessor—including LCR parameters, diode testing, continuity testing, sweep analysis, and voltage measurement—while delivering a comprehensive transformation in performance and user experience. The LT2 breaks new ground by supporting a maximum test frequency of 100 kHz and significantly increasing the measurement voltage to 32 V, easily meeting more professional and diverse testing needs. Its appearance and visual appeal have also seen a major leap forward, featuring not only a high-quality CNC-machined housing but also a larger 1.47-inch (320×172 resolution) IPS HD display with a wider viewing angle. With its exquisite craftsmanship and robust performance, the LT2 delivers a new portable testing experience for electronics engineers that is more efficient, precise, and premium.

- The product features the following key characteristics:
- CNC-machined housing for portability and efficiency
- Supports test frequencies of 100Hz, 120Hz, 1KHz, 10KHz, and 100KHz
- Supports test voltages of 0.1V, 0.3V, 0.6V, and 1.0Vrms
- Supports voltage measurements up to 32V, including millivolt-level voltages
- Measurement parameters: Rs/Rp/Cs/Cp/Ls/Lp/D/Q/X/Z
- Resistance, capacitance, and inductance measurement functions
- Voltage, diode, and continuity measurement functions
- Supports sweep measurement
- Intelligent component type recognition
- Supports series and parallel equivalent models
- 1.47-inch IPS 320×172 LCD with crisp and vivid display

1.2 Specifications

1.2.1 LT1 Specifications

Type	Range	100Hz/120Hz	1KHz	10KHz	Measuring range
Resistance	10mΩ ~ 1Ω	2%±5digits	2%±5digits	2%±5digits	Automatic: 10mΩ ~ 10MΩ Resistance: 10mΩ ~ 10MΩ
	1Ω ~ 1KΩ	1%±5digits	0.5%±5digits	0.5%±5digits	
	1KΩ ~ 1MΩ	1%±5digits	0.5%±5digits	1%±5digits	
	1MΩ ~ 10MΩ	5%±5digits	5%±5digits	---	
Capacitance	1pF ~ 1nF	---	2%±5digits	2%±5digits	Automatic: 50pF~25mF Capacitance: 1pF~25mF
	1nF ~ 1uF	2%±5digits	0.5%±5digits	0.5%±5digits	
	1uF ~ 1mF	2%±5digits	2%±5digits	2%±5digits	
	1mF ~ 25mF	5%±5digits	5%±5digits	---	
Inductance	1uH ~ 10uH	---	2%±10digits	2%±10digits	Automatic: 5uH~25H Inductance: 1uH~25H
	10uH ~ 1mH	2%±5digits	0.5%±5digits	0.5%±5digits	
	1mH ~ 1H	2%±5digits	2%±5digits	2%±5digits	
	1H ~ 25H	5%±5digits	5%±5digits	---	
Measurement parameters	Rs、Rp、Cs、Cp、Ls、Lp、D、Q、X、Z				
Function	AUTO , resistance, capacitance, inductance, diode, buzzer, frequency sweep, voltage, signal generator				
Measurement Model	ESR、EPR				
Test frequency	100Hz/120Hz/1KHz/10KHz				
Test level	0.1V/0.3V/0.6V/1.0Vrms				
Diode	voltage, direction				
Buzzer	<90R				
Voltage measurement	-5V ~ +5V (±0.05V)				
Signal Generator	Square wave: Freq:1Hz~10KHz, Level:0.5V~3.0V, Duty:5%~95% sine wave: Freq:1Hz~100KHz, Level:0.5V~3.0V triangle wave: Freq:1Hz~10KHz, Level:0.5V~3.0V step wave: Freq:1Hz~10KHz, Level:0.5V~3.0V				
Withstand	10 V across the entire range				

Voltage	
Product Model	ATK-PTLT1
Working endurance	≈5H(400mAH)
Screen	1.14' IPS 240*135
Dimension	148*28*17mm
Weight	43g
Interface	TypeC (USB2.0)
Operating temperature	0℃~50℃(humidity≤75%)
Storage temperature	-20℃~60℃(humidity≤75%)

1.2.1 LT2 Specifications

Type	Range	100Hz/120Hz	1KHz	10KHz	100KHz
Resistance	10mR ~ 1R	3%±5	2%±5	2%±5	2%±5
	1R ~ 1K	1%±5	0.5%±5	0.5%±5	0.5%±5
	1K ~ 200K	1%±5	0.5%±5	0.5%±5	1%±5
	200K ~ 1M	1%±5	1%±5	1%±5	/
	1M ~ 10M	5%±10	5%±10	/	/
Capacitance	1pF ~ 20nF	/	2%±5	2%±5	1%±5
	20nF ~ 1uF	2%±5	1%±5	0.5%±5	0.5%±5
	1uF ~ 1mF	2%±5	2%±5	2%±5	2%±5
	1mF ~ 25mF	5%±5	5%±5	/	/
Inductance	1uH ~ 10uH	/	/	2%±5	2%±5
	10uH ~ 1mH	/	0.5%±5	0.5%±5	1%±5
	1mH ~ 1H	2%±5	2%±5	2%±5	/
	1H ~ 25H	5%±10	5%±10	/	/
Measurement parameters	Rs、Rp、Cs、Cp、Ls、Lp、D、Q、X、Z				
Function	AUTO , resistance, capacitance, inductance, diode, buzzer, frequency sweep, voltage, signal generator				
Measurement Model	ESR、EPR				
Test frequency	100Hz/120Hz/1KHz/10KHz/100KHz				
Test level	0.1V/0.3V/0.6V/1.0Vrms				

Diode	voltage, direction
Buzzer	<90R
Voltage measurement	-32V ~ +32V (±10 counts)
Signal Generator	Square wave: Freq:1Hz~10KHz, Level:0.5V~3.0V, Duty:5%~95% sine wave: Freq:1Hz~100KHz, Level:0.5V~3.0V triangle wave: Freq:1Hz~10KHz, Level:0.5V~3.0V step wave: Freq:1Hz~10KHz, Level:0.5V~3.0V
Withstand Voltage	LCR/Voltage/Sweep Withstand Voltage: 40 V Diode/Signal Generator Withstand Voltage: 10 V
Product Model	ATK-PTLT2
Working endurance	≈4.2H(400mAH)
Screen	1.47' IPS 320*172
Dimension	148*28*15.5mm
Weight	50g
Interface	TypeC (USB2.0)
Operating temperature	0℃~50℃(humidity≤75%)
Storage temperature	-20℃~60℃(humidity≤75%)

2, Important Notes (Must Read)

Safety Precautions:

- 1、 This device is an electronic measuring instrument. Do not use it in high-voltage live environments.
- 2、 Do not measure unknown signals in live circuits to avoid overvoltage damage to the instrument.
- 3、 Before measuring capacitance, ensure the capacitor is fully discharged; otherwise, it may cause permanent damage to the device.
- 4、 Do not exceed this voltage, as doing so may cause permanent damage to the device.

LT1 Withstand Voltage: 10 V across the entire range

LT2 LCR/Voltage/Sweep Withstand Voltage: 40 V

LT2 Diode/Signal Generator Withstand Voltage: 10 V

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8. To ensure accurate measurement values, please confirm that the equivalent model is selected correctly. Different equivalent models may also result in inconsistent measurement results.

Important Notes:

1. During charging, the digital bridge may experience some heat generation, which is a normal phenomenon.
2. The buttons are touch-sensitive side buttons; please do not press them too hard to avoid damaging the buttons.
3. Please do not disassemble the mainboard arbitrarily, as this may cause product damage.
4. Please do not forcefully bend the product, as this may cause product damage.

3, Quick Start Guide

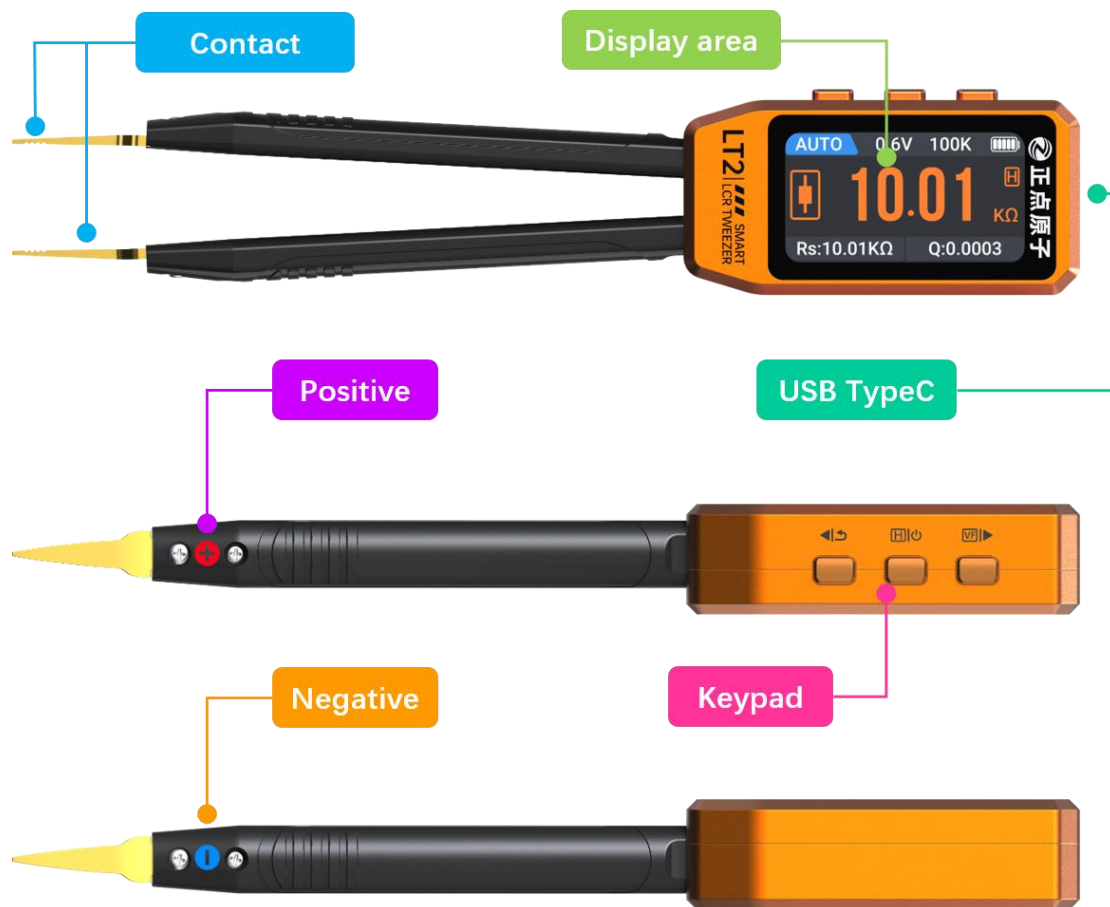
3.1 Structure

3.1.1 LT1 Structure



- Gold-plated contact head: Connects to the device under test and can also serve as a signal output interface
- Display area: 1.14-inch LCD screen with a resolution of 240×135, clearly displaying measurement data
- Indicator light: Charging indicator light
- Positive terminal marking: Positive terminal leg of the bridge tweezers, marked with a red “+” symbol
- USB Type-C interface: Supports charging and data export, compatible with standard Type-C cables
- Button area: Three-button design (left button/middle button/right button) for functional operations and menu navigation
- Negative terminal marking: Negative terminal of the bridge tweezers, marked with a blue “-” symbol

3.1.2 LT2 Structure



- Gold-plated contact head: Connects to the device under test and can also serve as a signal output interface
- Display area: 1.47-inch LCD screen with a resolution of 320×172, clearly displaying measurement data
- Positive terminal marking: Positive terminal leg of the bridge tweezers, marked with a red “+” symbol
- USB Type-C interface: Supports charging and data export, compatible with standard Type-C cables
- Button area: Three-button design (left button/middle button/right button) for functional operations and menu navigation
- Negative terminal marking: Negative terminal of the bridge tweezers, marked with a blue “-” symbol

3.2 Charging Instructions

Power On/Off	Charging Status
Off	1. When charging, the charging indicator light turns on. 2. When fully charged, the indicator light turns off.
On	1. The charging indicator light turns off. 2. The charging status and battery level are indicated by flashing in the upper right corner of the measurement interface.

3.3 Button Functions

Button	Icon	Description
Left		1、 Single click: Switch/adjust 2、 Long press: Return
Middle		1、 Single click: Power on/confirm/HOLD 2、 Long press: Power off
Right		1、 Single click: Switch/adjust 2、 Long press: Switch voltage

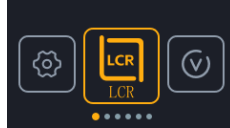
3.4 Quick Start

1、Power On

In the off state, click the middle button “ ” to power on.

2、Select Function

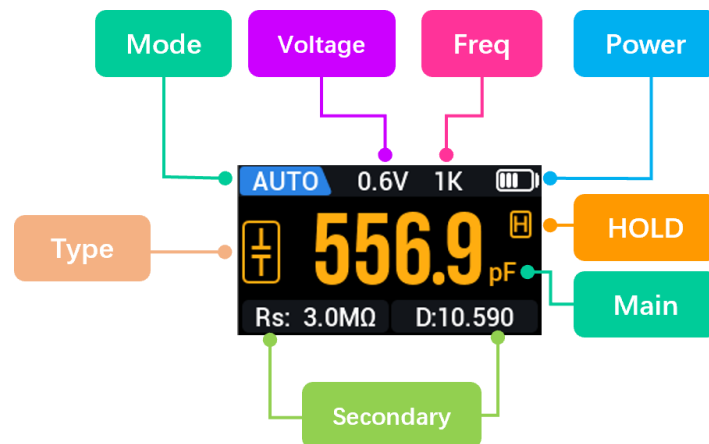
After powering on, the device defaults to the main interface.



You can use the “left and right buttons” to select functions, and click the “middle button” to select the function. Here, we use LCR as an example; simply click the middle button.

3、Measurement

After entering the LCR measurement interface, the measurement interface appears as shown below (for button operations, please refer to Sections 3.3 and 4.3):



In the default “AUTO” mode, use the bridge tweezers with gold-plated contact tips to clamp the component under test, and the device will automatically measure the component type and value.

Important notes:

1. When using the LCR function for testing, ensure that the metal probe tips make good contact to minimize contact errors.
2. When using the digital bridge, keep the probe arms parallel to minimize contact errors.
3. During measurement, avoid touching the component under test, the metal probe tips, or the screws with your hands.
4. In “AUTO” mode, automatic type recognition has a range interval; please refer to “1.2 Product Parameters” for verification.
5. If the “AUTO” measurement results do not match the standard component values, click the “left button” to switch to the corresponding range for measurement.
6. In “AUTO” mode, only three types can be automatically distinguished: resistors, capacitors, and inductors.

Reference measurement results are shown as follows:



Example measurement results (illustration for reference only)

3.5 How to replace tweezers heads



- Step 1: Remove the fixed screws.
- Step 2: Install the spare gold-plated contact head. When tightening the screws, do not tighten them completely at first.
- Step 3: Manually adjust the gold-plated contact head slightly to the left and right. Make sure that the contact head is aligned with the center of the tweezers.
- Step 4: Tighten the screws to complete the installation.

4, Function Description

4.1 Power On/Off

Power on/off operations are as follows:

- **Power on:** In the power off state, click the “middle button. ”
- **Power off:** In any interface, long press the “middle button ” for more than 1 second.

4.2 Main page

The main page is used to select functions, including five functions: LCR measurement, voltage measurement, signal generator, sweep measurement, and system settings.

Interface Introduction:



Button operations:

- Left button  : Click to switch options to the left.
- Middle button  : Click to confirm and enter the function interface.
- Right button  : Click to switch options to the right.

4.3 LCR measurement

The main functions of the LCR include:

- AUTO : Automatic measurement mode, automatically identifies resistance, capacitance, and inductance
- R : Resistance measurement mode
- C : Capacitance measurement mode
- L : Inductance measurement mode
- D : Diode and buzzer mode

What is the difference between AUTO and R, L, C?

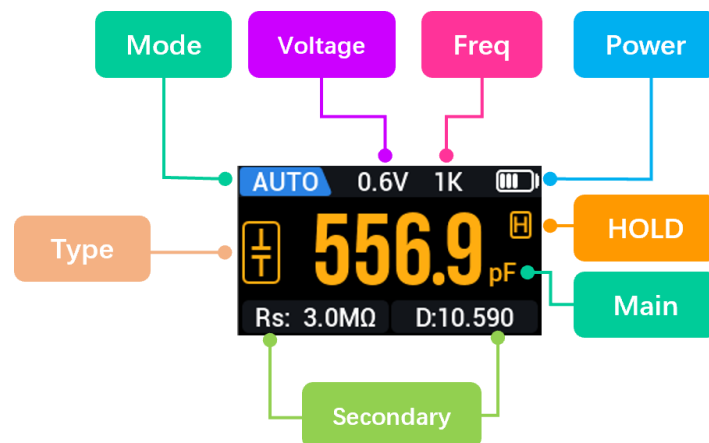
AUTO mode can automatically identify the type of the measured component (resistance, inductance, or capacitance), making it suitable for most standard measurement scenarios. However, please note the following limitations:

1.Measurement range: The measurement range of AUTO mode is smaller than that of the individual R, L, or C modes.

2.Type misidentification: AUTO mode is suitable for quickly screening standard components, but in complex conditions (such as parallel components or interference), it may not accurately identify the type.

Recommendation: If a wider measurement range and higher identification accuracy are required, manually switch to the corresponding R (resistor), L (inductor), or C (capacitor) mode for re-measurement.

Interface introduction (measurement values are for reference only):



- Mode: Current mode
- Voltage: Current test level, unit: Vrms
- Frequency: Current test frequency, unit: Hz
- Power: Power display area
- Type: Type of device under test, currently automatically recognized type or type in the current mode, with 5 types: R/L/C/D/BEEP
- HOLD: Data hold function, lights up to hold and record data

- Main parameters: Current measurement values and units, with multiple display values: Rs/Rp/Cs/Cp/Ls/Lp, full-range automatic range recognition. The “s” denotes series equivalent model parameters, and the “p” denotes parallel equivalent model parameters. For more information on equivalent models, please refer to Section 4.8. Current measurement value: 556.9 pF
- Secondary Parameters: There are two secondary parameter values. The first is fixed as the equivalent resistance value, where Rs denotes the series equivalent resistance value and Rp denotes the parallel equivalent resistance value. The second secondary parameter is: Q/D/X/Z (switchable via shortcut keys). For more information on equivalent models, please refer to Section 4.8.

Button operations:

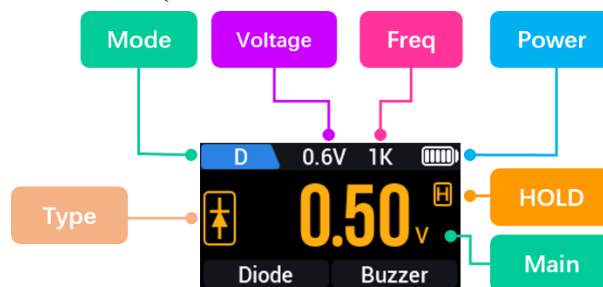
- Mode switching: Click the “left button 

4.4 Diode Buzzer

In addition to LCR functionality, the digital bridge also supports diode and buzzer functions.

- Diode function: Measures diode forward voltage and identifies diode direction
- Buzzer function: Buzzer mode function; when the resistance value is less than 90R, the buzzer sounds
- When in diode mode, the device automatically identifies diodes and continuity

Diode interface introduction (measurement values are for reference only):



- Mode: Current mode, D indicates diode on/off
- Voltage: Current test level, unit: Vrms
- Frequency: Current test frequency, unit: Hz

- Power: Power display area
- Type Direction: Diode type, used to identify the direction of the diode
- HOLD: Data hold function, lights up to hold and record data
- Main Parameter: Current measurement value and unit, current measurement value is 0.5V

The diode mode can automatically identify the direction of the diode, which is indicated by the “type identifier,” as shown in the figure below:



Bottom positive, top negative

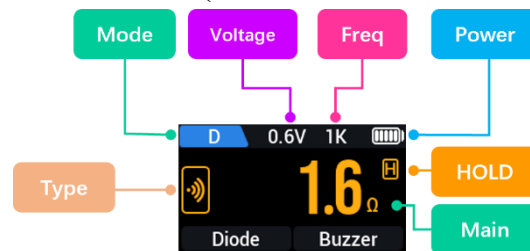


Top positive, bottom negative

Important note:

When measuring diodes, try to keep the test voltage at a high level. If the test voltage is lower than the diode's forward voltage value, the device will not be able to measure the diode's forward voltage.

Introduction to the on/off interface (measurement values are for reference only):



- Mode: Current mode, D indicates diode on/off
- Voltage: Current test level, unit: Vrms
- Frequency: Current test frequency, unit: Hz
- Power: Power display area
- Type: Type of device being tested, currently buzzer mode indicator
- HOLD: Data hold function, lights up to hold and record data
- Main parameter: Current measurement value and unit, current measurement value is 1.6R

Button operations (same as LCR):

- Mode switching: Click the “left button ”
- Voltage switching: Long press the “right button ”
- Frequency switching: Click the “right button ” (LT2 is not supported)
- Data hold: Click the “middle button ”
- Return: Long press the “left button ”

4.5 Voltage Measurement

In addition to traditional LCR testing capabilities, the LT1/LT2 digital bridges incorporate DC voltage measurement functionality, allowing users to measure component parameters and voltage on a single device, thereby improving testing efficiency.

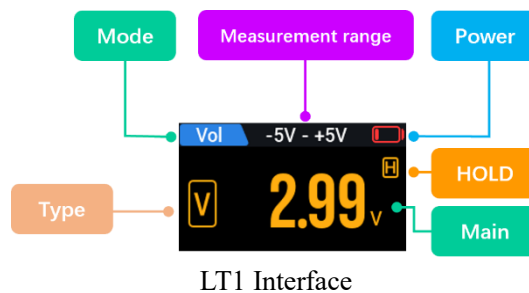
Voltage measurement range:

- LT1: -5V to +5V ($\pm 0.05V$)
- LT2: -32V to +32V (10 counts)

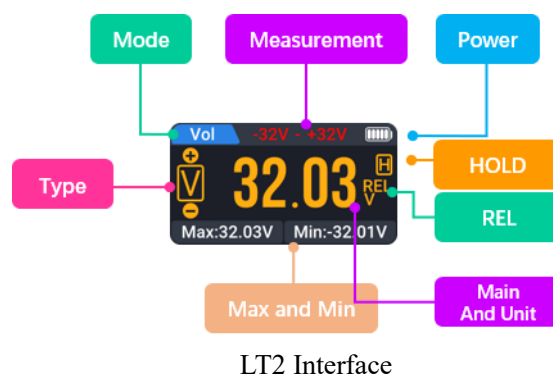
Note:

- **Never exceed the rated voltage, as this may cause permanent damage to the equipment.**
- **Before measuring voltage, it is recommended to first enter the voltage measurement page before starting the measurement.**
- **Voltage measurement is prohibited in other modes.**

Interface Overview (measurement values are for reference only):



- Mode: Current mode
- Measurement range: Voltage measurement range: -5V to +5V
- Power: Power display area
- Type: Current measurement type
- HOLD: Data hold function, lights up to hold and record data
- Main parameters: Current measurement value and unit, current measurement value is 2.99V



- Mode: Current mode
- Measurement range: Voltage measurement range: -32V to +32V
- Power: Power display area
- Type: Current measurement type
- HOLD: Data hold function, lights up to hold and record data
- REL: The reset function is now enabled. When the reset function is turned on, this message will be displayed.
- Main parameters: Current measurement value and unit, current measurement value is 32.03V

Button operations:

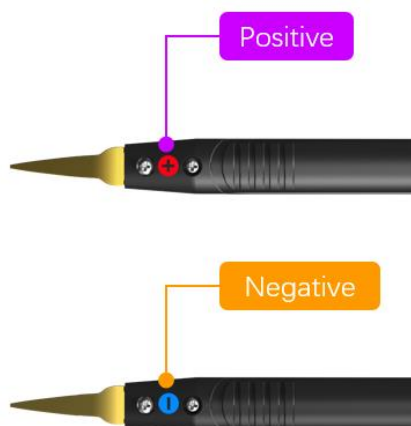
- Data hold: Click the “middle button” 
- Return: Long press the “left button” 
- REL Reset Function: Right-click  (Supported only on LT2)

The LT2 supports the “REL” function, which is a zero-reset function that conveniently eliminates residual voltage readings. The procedure is as follows: First, short-circuit the two measurement leads to ensure stable contact. After the voltage reading stabilizes, click the “Right Button” ; the device will automatically zero out the residual reading.

Notes:

- 1.If the “REL” indicator is not lit, it means the “REL” function is not enabled.
- 2.This function does not have a memory feature; parameters are not automatically saved when you exit the voltage interface or power off the device.
3. The zero-reset function has an effective range of ± 0.5 V.

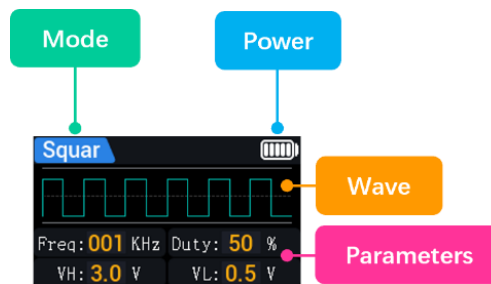
When measuring voltage, pay attention to the positive and negative terminals of LT1. The positive and negative terminals are marked on the tweezers' legs, as shown in the figure below:



4.6 Signal Generator

The LT1/LT2 digital bridge not only has LCR parameter measurement capabilities, but also has a built-in multifunctional signal generator that supports square wave, sine wave, triangle wave, and step wave outputs to meet diverse testing needs and provide more convenience for electronic testing. The sine wave frequency supports up to 100 kHz, while the square wave, triangle wave, and step wave support up to 10 kHz.

Interface Overview (measurement values are for reference only):



- Mode: Current mode
- Power: Battery level display area
- Waveform diagram: Waveform display area
- Parameter area: Adjustable parameter area

Parameter Area Introduction:

- Freq: Waveform frequency
- Duty: Waveform duty cycle (this parameter is only available for square waves)
- VH: Waveform maximum voltage level, maximum value: 3.0V
- VL: Waveform minimum voltage level, minimum value: 0.5V

Button operations:

- Return: Long press the “left button ” or click the “middle button ”
- Switch modes and parameters: Click the “left button ” or click the “right button ”
- Confirm: Click the “middle button ”

The signal generator interface has four states:

- **Mode switching state:** Use the left and right buttons to switch modes, such as square wave, sine wave, etc.
- **Parameter selection state:** Use the left and right buttons to switch parameter options, such as frequency, high level, low level
- **Parameter digit selection state:** Use the left and right buttons to switch which

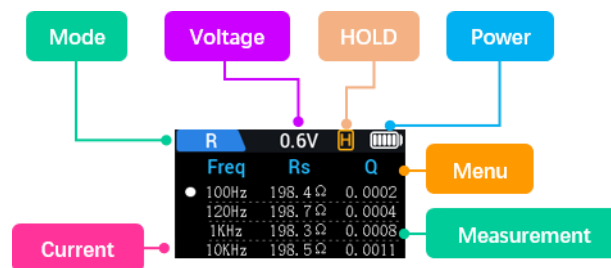
digit to adjust, such as units, tens, hundreds

- **Parameter adjustment state:** Use the left and right buttons to adjust the parameter value; the left button decreases by one, and the right button increases by one
- **Long press for quick value adjustment:** Holding down the left or right button allows for quick value adjustment.

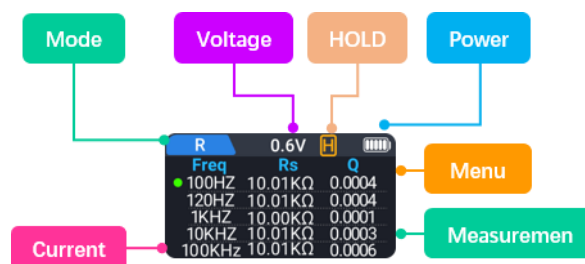
4.7 Sweep Frequency Measurement

The LT1 digital bridge not only provides accurate LCR measurement capabilities, but also supports practical sweep frequency testing, offering four standard frequency points of 100 Hz, 120 Hz, 1 kHz, and 10 kHz, enabling users to quickly analyze the frequency characteristics of components.

Interface Overview (measurement values are for reference only):



LT1 Interface



LT2 Interface

- **Mode:** There are three modes available in this function: R/L/C
- **Voltage:** Current test level, unit: Vrms
- **HOLD:** Data hold function (holds display only, does not save data)
- **Power:** Power display area
- **Menu:** Displays measurement parameter information, where: Rs indicates ESR and ESRESP modes, and Rp indicates ESP mode
- **Current test frequency:** Indicates the current test frequency
- **Parameter measurement area:** Measurement result display area, where Freq is fixed and cannot be changed

Button operations:

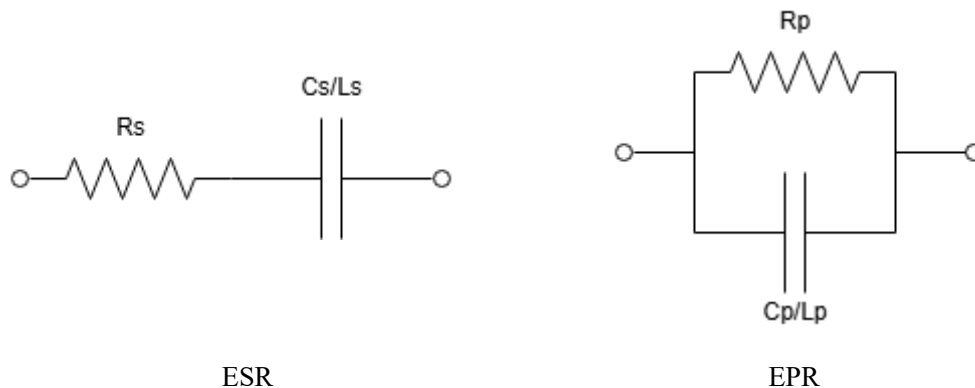
- Return: Long press the “left button ”
- Mode switch: Single click the “left button ”
- Voltage switch: Long press the “right button ”
- Data hold: Click the “middle button ”

4.8 Equivalent Model ESR/EPR

Why are different equivalent models needed?

In reality, measured components such as inductors and capacitors are not ideal components. They often exhibit non-ideal characteristics at high frequencies or under certain operating conditions—such as loss, stray inductance, and resistance. These non-ideal behaviors cannot be adequately described using a single “capacitance” or “inductance” value, so we need a more comprehensive circuit model to describe them. This is the significance of equivalent models:

Using a simple circuit composed of ideal components to approximate the behavior of actual devices at the measurement frequency.



- ESR series model: The device is regarded as consisting of a main value (L/C) and a series loss resistance R_s (i.e., ESR). This model is suitable for components with low Q values ($Q < 10$), low impedance, and low loss, or high-frequency capacitors and low-frequency inductors.
- EPR Parallel Model: The device is modeled as consisting of a primary value (L/C) and a parallel loss resistance R_p (i.e., EPR). This model is suitable for components with high Q values ($Q > 10$), high impedance, and high loss, or high-frequency inductors and low-frequency capacitors.

Important Note:

For the same actual component, the values of C_s and C_p (or L_s and L_p), as well as R_s and R_p , calculated using different models will be different. They are simply two different mathematical equivalent representations of the component's impedance characteristics at a specific test frequency. Selecting the wrong model may result in displayed

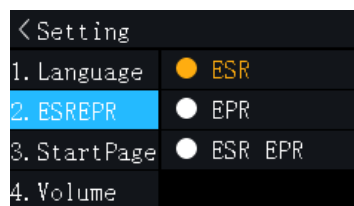
capacitance/inductance values and their loss parameters that do not align with expected or standard measurement conditions. Users must select the appropriate equivalent model based on the type and application of the component being measured.

How to select an equivalent model?

1. Shortcut key selection

In the LCR measurement interface (AUTO, R, C, L), press and hold the “right button ” for 1 second, then click the “left button ” to quickly switch models.

2. Modify from settings, go to: “Settings” -> “2. Equivalent Model,” as shown in the figure below:



How to view the equivalent model on the measurement interface?

In LCR mode:



- ESR Mode: In this mode, the main parameters are Rs/Cs/Ls
- EPR Mode: In this mode, the main parameters are Rp/Cp/Lp
- ESR EPR Mode: In this mode, both series and parallel equivalent parameters are displayed. “+” indicates the ESR series mode, and “||” indicates the EPR parallel mode. The first value is the equivalent resistance value (Rs and Rp), and the second value is the capacitance or inductance value (Cs/Ls or Cp/Cs). The secondary parameters remain consistent with the ESR mode.

In sweep mode:



Note: ESR EPR mode displays ESR parameters.

- ESR mode : In this mode, the main parameters are Rs/Cs/Ls.
- EPR mode : In this mode, the main parameters are Rp/Cp/Lp.
- ESR EPR mode : This mode is consistent with ESR mode.

Button operations:

- Return : Long press the “left button ”
- Mode switch : Single click the “left button ”
- Voltage switch : Long press the “right button ”
- Model Switch: Long-press the “Right Button ” for 1s and hold + Click the “Left Button ”
- Sub-parameter Switch: Long-press the “Right Button ” for 500ms and hold + Click the “Middle Button ”

Important Note:

Since this interface cannot simultaneously display series-parallel equivalent models, in the “ESR EPR” model, ESR data is displayed. Please note this when switching models.

4.9 Data Hold and Recording

The LT1/LT2 digital bridge supports real-time data freeze and automated storage functions, enabling users to capture critical measurement results and retain records. By clicking the “middle button ,” the screen reading is instantly locked, and the data is automatically saved to a USB drive, providing complete traceability support for subsequent analysis.

- Data Hold: Clicking the “middle button ” in the measurement interface freezes the current screen measurement value, with an “H” icon displayed on the screen. At this point, measurement is paused, and the reading remains unchanged.
- Data Logging: Each time data hold is triggered, the system automatically generates a record, with data stored in CSV format in the root directory of the USB drive under the filename “HISTORY.csv”

Important Note:

The data hold and recording functions are supported in the following modes: AUTO, R, C, L, D, Beep, and voltage measurement. **Does not support sweep measurement functionality.**

When the “H” icon is lit, it indicates that the system is currently in “data hold” mode, as shown in the diagram below:



LCR

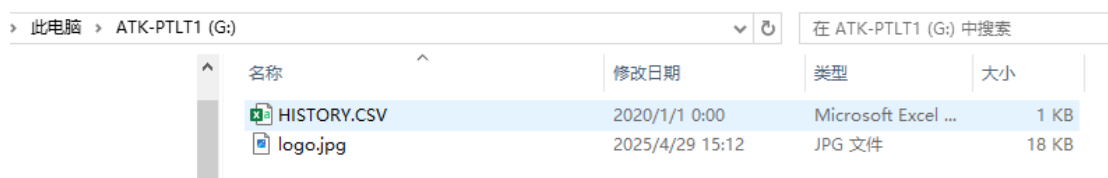
Voltage

How to view recorded data?

- Turn on the device.
- Connect the device to the computer's USB port using a Type-C cable.
- Open “This PC” and find the removable disk “ATK-PTLT1” as shown in the figure below:



- Open the disk, find the “HISTORY.CSV” file in the root directory, and open it.



Example display (the following data is for reference only):

	A	B	C	D	E	F	G	H	I
1	Type	Frequency	Level(Vrms)	Value	Rs(R)	Q	D	Z(R)	X(R)
2	R	10000	0.6	100.0KΩ	100.0KΩ	0	465455	100.0KΩ	214.8mΩ
3	R	100	0.6	1.001KΩ	1.001KΩ	0	20138	1.001KΩ	49.7mΩ
4	R	1000	0.6	1.007Ω	1.007Ω	0.0007	1382	1.007Ω	0.7mΩ
5	C	1000	0.6	379.2uF	158.2mΩ	2.6523	0.377	448.5mΩ	419.7mΩ
6	C	100	0.6	4.39mF	33.5mΩ	10.838	0.0923	364.1mΩ	362.6mΩ
7	L	1000	0.6	45.9uH	14.3mΩ	20.125	0.0497	289.0mΩ	288.6mΩ
8	L	1000	0.6	50.32mH	57.16Ω	5.5306	0.1808	321.3Ω	316.1Ω
9	V	-	-	-0.22V	-	-	-	-	-
10	V	-	-	-3.51V	-	-	-	-	-

Note: Data records only record series equivalent model values.

Table parameter description:

- Type: Measurement type
- Frequency (Hz): Test frequency
- Level (Vrms): Test level
- Value: Measurement value
- Rs (R): Series equivalent resistance value
- Q: Quality factor
- D: Damping factor
- Z(R): Total impedance value
- X(R): Reactance value

4.10 Smart Left/Right Hand

The LT1/LT2 digital bridge automatically recognizes the user's hand grip posture (left/right hand operation) through its built-in sensor and dynamically adjusts the screen display direction. Whether operated with the left or right hand, measurement data is always clearly presented in an ergonomic direction, providing a natural and smooth operating experience.

The LT1/LT2 digital bridge offers three selection options: automatic, left hand, and right hand. These can be modified through “Settings” -> “7, Screen Direction” as shown in the figure below:

<Setting	
5. Backlight	● AUTO
6. PowerOff	● Left
7. LeftRight	● Right
9. Default	

Mode Introduction:

- Auto : Automatically detects and identifies left and right hands, dynamically adjusting the screen display orientation.
- Left: Fixed left-hand display effect.
- Right : Fixed right-hand display effect.

Important Note :

When the screen display effect is set to left-hand mode, the functions corresponding to the buttons also require mirrored operations.



4.11 Customize startup logo

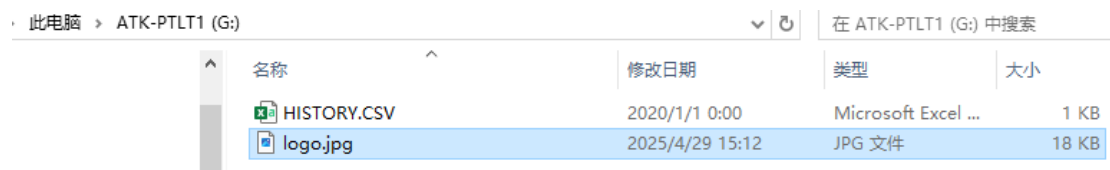
The LT1/LT2 digital bridge supports user-defined startup logos. You can set your company logo, brand image, or personalized image as the device startup screen. By simply importing a file, you can replace the default startup interface to meet brand display or personalization needs, enhancing product recognition and professional image.

How to customize the startup logo?

- Turn on the device.
- Connect the device to the computer's USB port using a Type-C cable.
- Open “This PC” and locate the removable disk labeled “ATK-PTLT1,” as shown in the figure below:



- Open the disk, and you will see the “logo.jpg” image in the root directory.



- Name the required image “logo.jpg” and copy it to the USB drive.

Important notes:

- 1.If “logo.jpg” does not exist on the disk, the startup image will not be displayed by default.
- 2.The startup image must be strictly named “logo.jpg”.
- 3.The startup image only supports the JPG format. If the format is incorrect, it will not be displayed by default at startup.
- 4.The resolution of the startup image must be less than or equal to the screen resolution; images with a resolution higher than the screen resolution will not be displayed at startup.

4.12 Magnetic attachment function

The LT1/LT2 digital bridge adopts an innovative magnetic attachment design with a built-in strong magnet on the back that can be easily attached to metal shelves, cabinets, and other iron surfaces for quick installation and flexible layout. It can be securely fixed without tools, effectively freeing up desktop space and

optimizing work area utilization, making it particularly suitable for use in compact laboratories or production line environments.



4.13 Firmware Upgrade

The LT1/LT2 digital bridge supports convenient firmware upgrade services to keep your device running at peak performance and equipped with the latest features. With a simple USB flash drive upgrade, you can easily obtain official releases of feature enhancements, performance improvements, and new feature extensions to ensure that your device is always in top condition.

Friendly reminder: You can obtain the latest firmware from the [resource link](#) or contact us.

Note: Do not disconnect the USB cable during the firmware update process!

The firmware upgrade procedure is as follows:

- Enter firmware upgrade mode: In the powered-off state, first press and hold the “right button ,” then press and hold the “middle button ” until the firmware upgrade interface appears. As shown in the figure below:

```
LT2 Firmware Update V1.0
Version :
File    :
Progress :
Status  :No file *.ATK
```

- Connect LT1 to the computer's USB port using a Type-C data cable.
- Open “This PC” and locate the removable disk “ATK-PTLT2” as shown in the figure below:



- Copy the upgrade file (ending with .atk) to the root directory of the USB flash drive to automatically upgrade.

If the copy is successful, the device will automatically update the firmware. Wait for the firmware update to complete. The update process is shown in the figure below:

```

LT2 Firmware Update V1.0
Version   :V1.0 -> V1.0
File      :LT2_V1.0.atk
Progress  : 377.4K - 52%
Status    :
  
```

4.14 Param Memory

The LT1/LT2 Digital Bridge features parameter memory, automatically saving user-defined operating modes and measurement parameters for direct use upon next startup without repeated configuration.

Supported Parameters for Memory:

- LCR Function: Measurement Mode, Test Frequency, Test Voltage, subparameter
- Signal Generator: Waveform Type, Frequency, High Level, Low Level, Duty Cycle
- Sweep Mode: Measurement Mode, Test Voltage

Enable or disable this feature under “Settings” -> “8. Parameter Memory” as shown below:

```

<Setting
5.Backlight  ● OFF
6.PowerOff   ● ON
7.LeftRight
8.ParamMem
  
```

4.15 System Settings

Function	Description	Default	Range
1. Language	Set the display language of the interface	Chinese	Chinese English
2. Equivalent Model	Set the display parameters of the LCR interface model	ESR	ESR EPR ESR EPR
3. Startup page	Set the startup page	Main page	Main page LCR Voltage Signal Sweep
4. Volume	Set system volume level <i>Note: The volume of the buzzer cannot be adjuste</i>	Medium	Off Low Medium High
5. VolFreq	Set System Audio Frequency	High	Low Medium High
6. Backlight	Set screen backlight brightness (higher levels indicate brighter backlight)	LT1: 6 LT2: 10	1-10
7. PowerOff	Set auto shutdown time	5 minutes	Off 5 minutes 10 minutes 15 minutes 20 minutes 30 minutes
8. LeftRight	Refer to Section 4.10	Auto	Auto Left Right
9. Param Memory	Refer to Section 4.14	OFF	OFF ON
10. Factory Reset	Confirm that the device will shut down after the reset and will take effect after a reboot <i>Note:</i> <i>1. This function will only reset the parameters in the settings</i> <i>2. Factory reset will not reset the system language</i>		

11. Warning	Enable safety alert messages	ON	OFF ON
12. System Information	Device model and software/hardware version number		
13. User Manual	Display a QR code linking to product documentation; scan to view product-related materials		

5, Frequently Asked Questions

For answers to frequently asked questions, please refer to the online documentation:

<http://www.openedv.com/ATK-Prod/ATK-PTLT1/index.html>

6, Warranty Terms

1. Service Period

Guangzhou Xingyi Electronic Technology Co., Ltd. guarantees the quality of its products. If the machine malfunctions within 7 days of purchase under normal use, customers may choose to return the product or request warranty service (returns are only accepted if the product is in resalable condition). A one-year warranty is provided (excluding damage caused by human error).

2. The purchase date is determined by the date on the sales invoice or receipt issued by the seller. For online purchases, the transaction screenshot may be used as proof.

3. The following situations are not covered by the free warranty service:

- (1) Any damage caused by human error, unauthorized modifications, or repairs.
- (2) Damage caused by exceeding the machine's operating limits.

7, Others

1、Download

Link: <http://www.openedv.com/docs/tool/niezidianqiao/LT1.html>

2、Website

Download : www.alientek.com/download

Company : www.alientek.com

Aliexpress : www.aliexpress.com/store/1102909571

3、Contact US

E-mail : fae-smt@alientek.com

The logo consists of the word "ALIENTEK" in white, bold, uppercase letters, centered within a blue rounded rectangular background.