



50Hz-300kHz

Product manual

NJ300S

LCR impedance tester



Accuracy Agility Instrument

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一、 Product introduction

The NJ300S impedance tester, with a high-performance processor and ultra-low power design, is a portable product that is mainly used to measure the performance of the parameters of three basic components (resistance R, capacitive C, inductor L). Products built-in large-capacity lithium-ion battery, small size, light weight, easy to carry, for outdoor, high-altitude special work more convenient. Product display interface and keys clear and simple, at a glance, Chinese and English can be set themselves, easy to use, easy to operate.

main features:

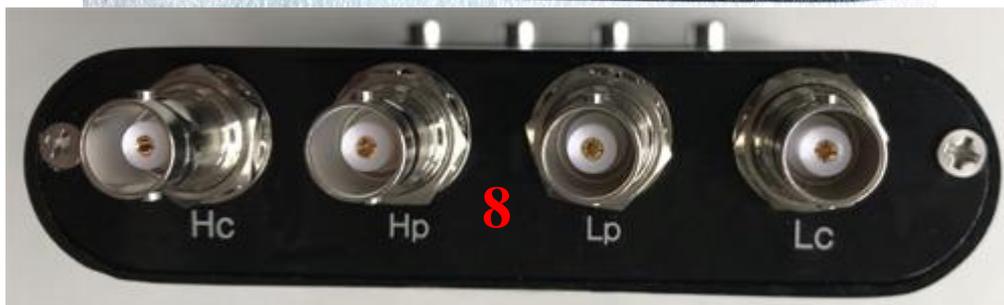
- ①Wide test frequency range, frequency range: 50Hz ~ 300kHz, frequency point is continuously adjustable.
- ②Small size, light weight, easy to carry. Appearance size: 130 * 108 * 31 (mm); net weight: 315g.
- ③Built-in battery, using 2000mAH lithium polymer battery, continuous working time exceeds 4 hours.
- ④High resolution, the measurement result is 6 significant digits.
- ⑤ comes with calibration function, accurate measurement.
- ⑥High cost performance.
- ⑦ Series / parallel mode, level and internal resistance are optional.
- ⑧Resistance to power frequency interference is strong, and the interference degree is prompted.
- ⑨ Automatic gear shift without manual intervention.

二、 Main Specifications

Model		NJ300S
working frequency		50Hz~300kHz
Stepping		10Hz~10kHz
Display		2.4" TFT Resolution 320×240 (QVGA)
Battery capacity		2000mAH (7.4Wh)
Power		<1W
Charging current		400mA
Charging interface		USB(Only as a charging interface)
Auto-shutdown		Always, now, 5 mins to 60 mins (optional)
Measurement parameters		Rs/Xs/Rp/Xp/Cs/Cp/Ls/Lp Z /D/Q/ θ /Vrms/Irms
DC bias		No
Show resolution		6-bit valid value
Measuring speed		Fast, medium, slow.
Measurement accuracy		<0.5% Less than within the measurement range
Connector		BNC
Show range	Z , R, X	0.00001 m Ω ~9999999 M Ω
	C	0.00001pF~9999999F
	L	0.00001nH~9999999H
	D, Q	0.001~99999
	θ (deg)	-179.9~179.9
	Vrms	0.0001mV~999999mV
	Irms	0.0001nA~999999mA
Measuring range	Z	10m Ω ~200M Ω
	C	3fF~3F
	L	0.5nH~600kH
Level	(mVrms)	100, 200, 300, 400, 500, 600, 700, 800, 900, 1000
Output impedance		30 Ω , 100 Ω (Optional)
Model		Automatic, series, parallel (optional)
Test piece		Automatic, resistance, inductance, capacitance, electrolysis (optional)
Calibration function		Open circuit, short circuit (with factory value), load calibration
physical dimension		130*108*31 (mm)
net weight		315g

Operating temperature	5°C~40°C
Atmospheric pressure	860hPa~1060hPa

三、Body description



Key and interface function description

Number	sign	Name	Description
1		Main	Function key, press this key to switch between "measurement", "calibration" and "system" interface; after entering the sub-page, change to "BACK" / "NEXT" function.
2		Left	Different pages correspond to functions.
3		Right	Different pages correspond to functions.
4		OK and on/off	OK; Press and hold (> 5s) to turn on / off.
5		LCD	LCD
6		Trademark	“ 浩蔓 ”
7		LOGO	Brand and product name
8	Hc, Hp Lp, Lc	Measuring port	c: Current; p: Voltage; H: Output; L: Input
9		Charging light	When the product is in standby mode, the charging indicator is on.
10		Charging port	Use Mini-USB interface. Requires > 2A 5V charger.
11		Reset	If there is a product deadlock or other problems, use it to reset the product.

四、Function Description

This product has three basic interfaces: measurement, calibration, and system. "Measurement" and "Calibration" contain sub-interfaces.

By default, the system enters the Main test settings page (Figure 1-1).

1、measuring

(1) Main test settings page

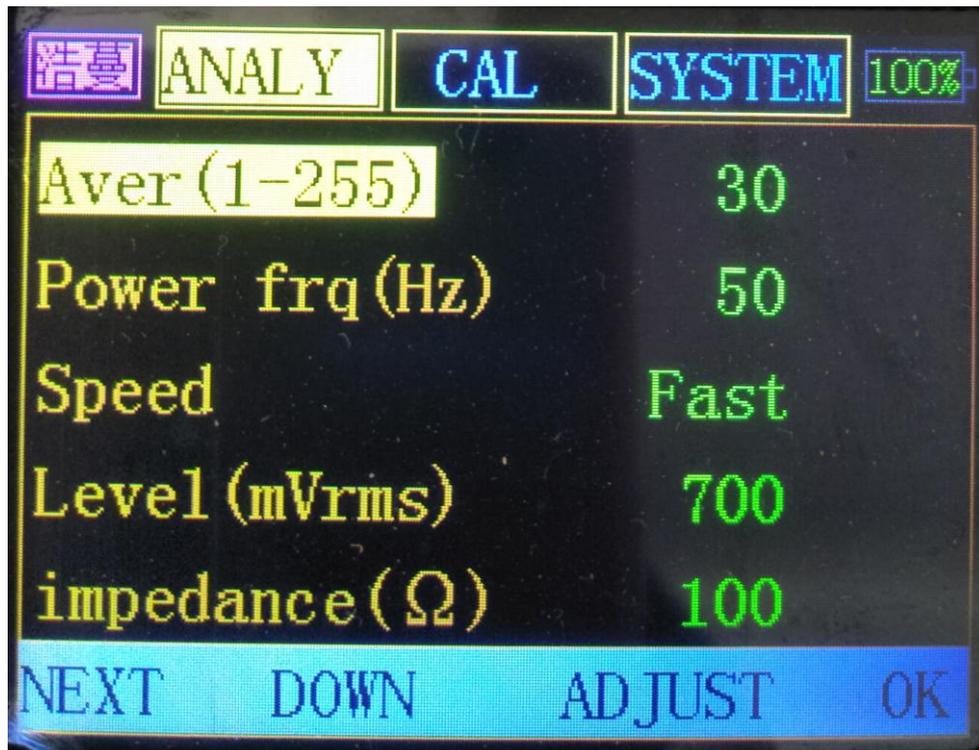


Figure 1-1 Main Settings page (First interface after booting)

Description of five sub-functions

Average: The number of times the last formal measurement result is averaged. The larger the value, the smoother the measured value.

Power frequency: Choose to measure the AC power supply frequency of the equipment at the site, so that the system can better deal with mains interference.

Speed: The speed of finding the exact value, that is, the choice of measuring speed. When the measured value fluctuates greatly, you can choose a slower speed measurement to improve the stability of the measurement. Loop between "fast", "medium", and "slow".

Level: The effective measured voltage value mVrms loaded on the DUT. 100~1000 (Progress in 100 units)

Internal resistance: the internal resistance of the local LCR device. 30 Euro, 100 Euro optional.

"NEXT": switch between the three main function areas. "ANALY", "CAL", "SYSTEM".

"DOWN": In the five subfunctions in the left column, the loop switches from top to bottom.

"ADJUST": Corresponding setting selection of corresponding sub-function. select the relevant settings of the corresponding sub functions.

"OK": After confirmation, enter the main measurement page to start measurement (Figure 1-2).

(2) main test page



Figure 1-2 main test page

The bottom line of functional instructions corresponds to the four buttons. The upper right corner is the power display.

The main reference font is enlarged and placed on top for easy viewing. During the measurement, when the font color of the main parameter changes to yellow, The displayed value may be the best observation. The lower and middle areas show other parameters.

"BACK": Enter the "main test setting" page (Figure 1-1).

“MODE”: Circuit equivalent mode selection, automatic, series, parallel. The current item is displayed directly above.

“ADJFRQ”: Frequency setting (Figure 1-3). The current frequency is displayed above.

“DUT”: Select the type of measurement part, automatic, resistance, inductance, capacitance, electrolysis. The current item is displayed above

“Interference degree”: Next to the model (see “0.00” next to “AUTO” in Figure 1-2). No unit, pure number. Indicates the intensity of electromagnetic interference at the test site. When the general value is less than 50, it has little influence on the measured value.

(3) Frequency settings page

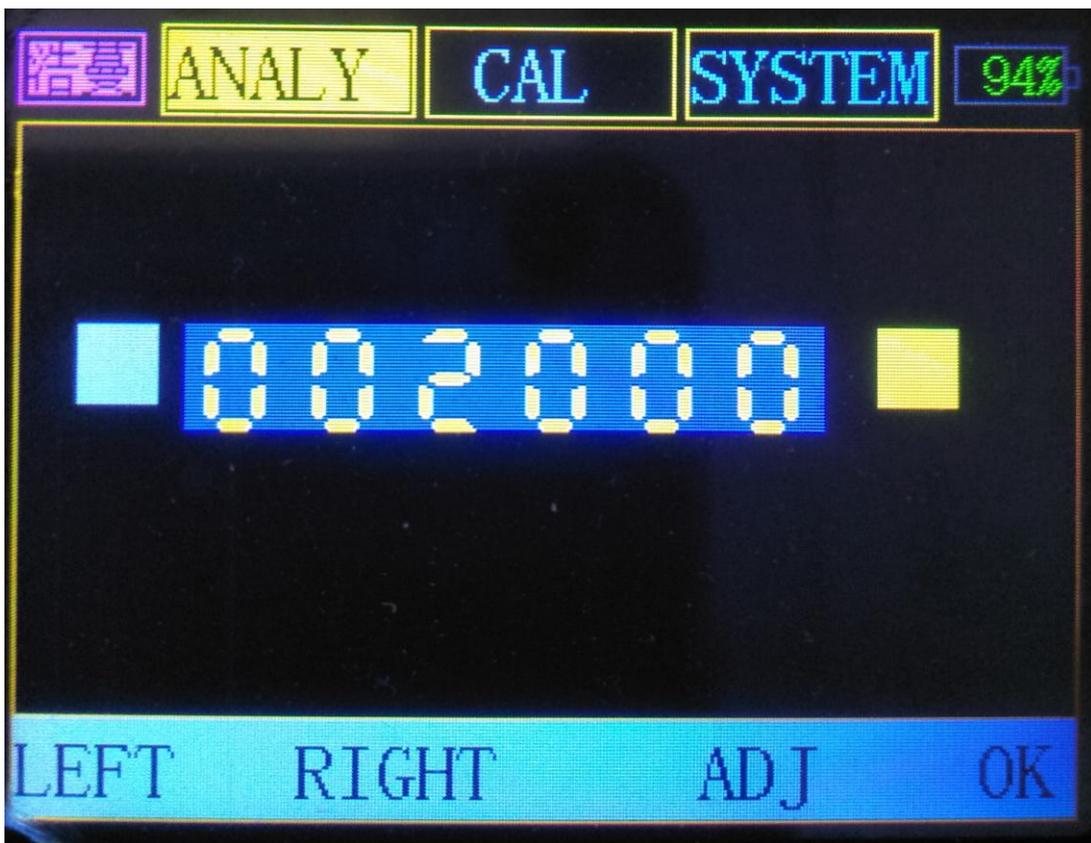


Figure 1-3 frequency setting page

The small yellow box is the current operation position.

"LEFT", "RIGHT": Change the position. Can be moved cyclically.

"ADJ": Set new value. The current bit cycles from 0 to 9 (the highest bit is limited to 0 to 3).

"OK": The new setting frequency is effective.

Press "ADJ" to set the maximum value of 300K when the small yellow box is on the left; press "ADJ" to clear when the small yellow box is on the right.

The minimum frequency is 50 Hz. When setting the frequency, the minimum bit is not adjustable. When the frequency value is an integer multiple of the power frequency (50 / 60Hz) and the last two digits of the frequency display value are 0, the measured value is the most accurate.

The frequency point can be set freely. Due to the limitation of hardware, it is impossible for any point to be effective. When the invalid frequency point value occurs, the system will adjust to the nearest frequency point of the set value. The higher the frequency, the larger the step distance.

As shown in Figure 1-4, the intended frequency is 101700hz, but the actual frequency is 101695 Hz as shown in Figure 1-5.

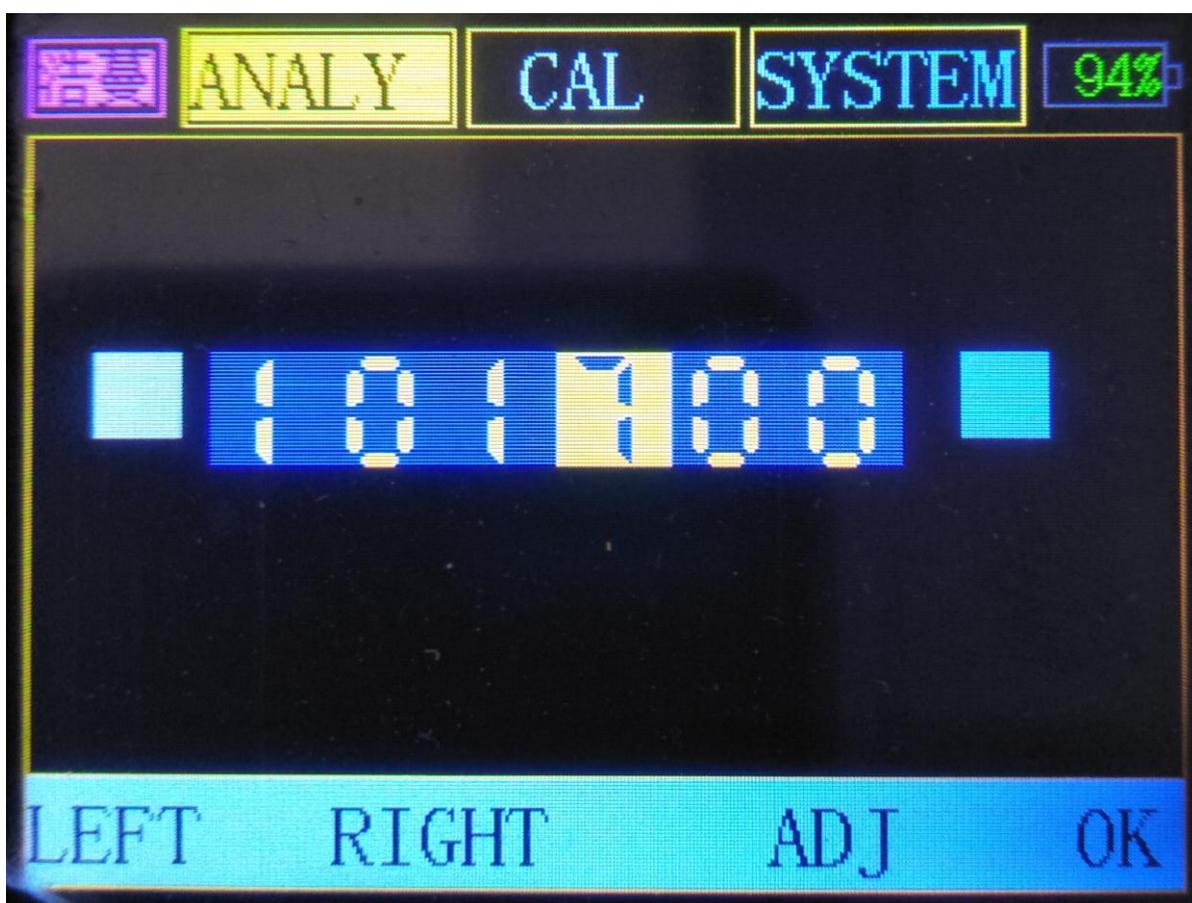


Figure 1-4 frequency setting 1



Figure 1-5 frequency setting 2

2、 Calibration

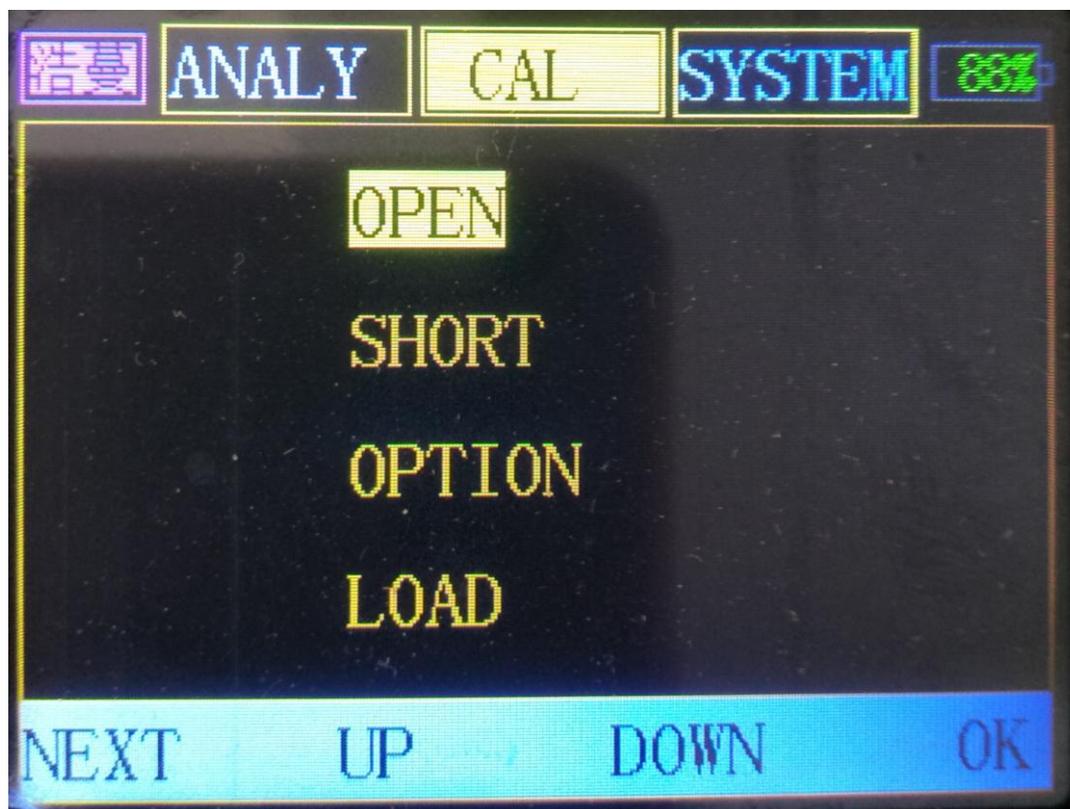


Figure 2-1 calibration page

(1) 、"OPEN": Open calibration. User calibrated open circuit data.

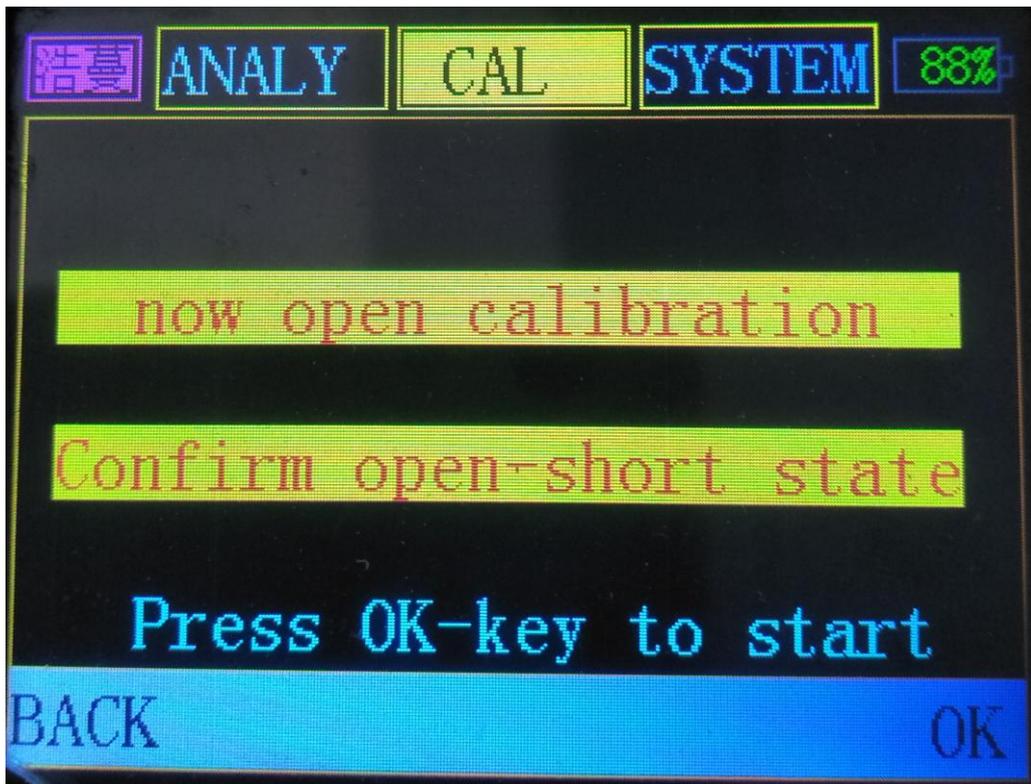


Figure 2-2 Calibration confirmation page

Press the "BACK" key, no calibration; press the "OK" key to start calibration. The calibration process takes a long time, as shown in Figure 2-3. The result prompt after the calibration is completed is shown in Figure 2-4.

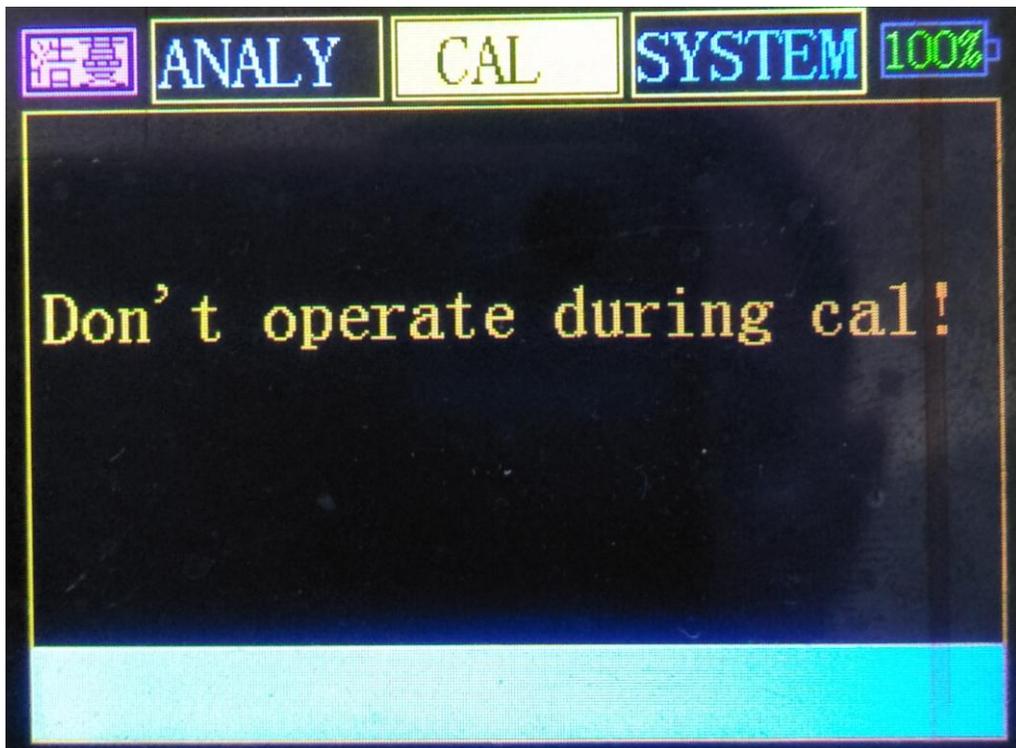


Figure 2-3 Prompt during calibration

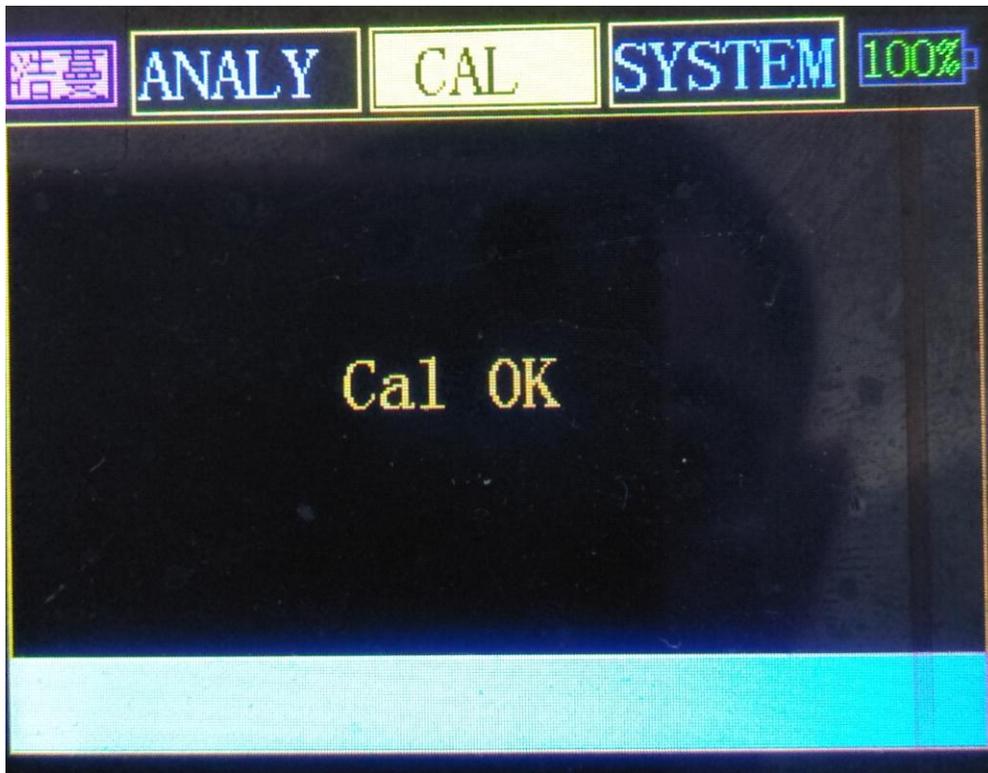


Figure 2-4 Calibration result prompt page

(2)、“SHORT”： short circuit calibration. The user does short circuit calibration by himself. The operation is similar to “OPEN”.

(3)、“OPTION”：“Option”： The user selects the open and short circuit data (the user and the system have open and short circuit data).

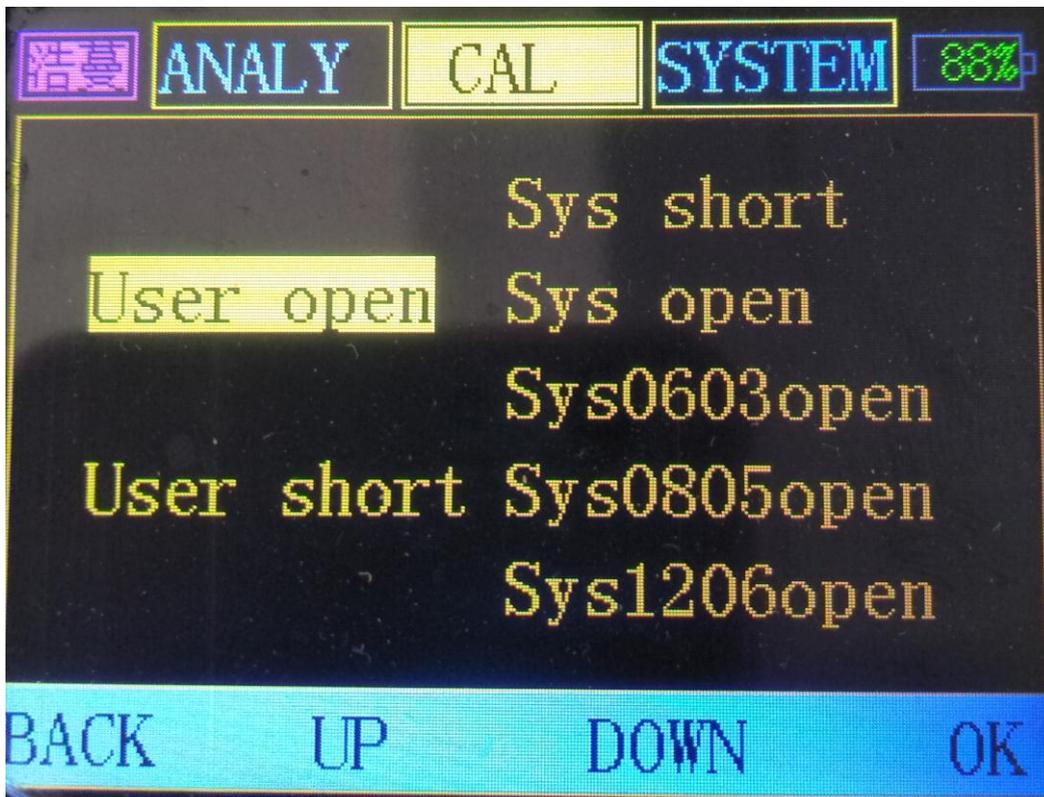


Figure 2-5 Options subpage

User open: Open circuit calibration data made by the user himself.

User short: Short circuit calibration data made by the user himself.

Sys short: the system has short circuit data.

Sys open: the open data of the Kelvin fixture.

Sys0603open: The open data when the opening distance of the patch fixture is 0603 package length.

Sys0805open: Open data when the opening distance of the patch fixture is 0805 package length.

Sys1206open: Open data when the patch fixture opening distance is 1206 package length.

Figure 2-6 shows the appearance of the Kelvin fixture. Figure 2-7 is the patch fixture, the distance between the two needle tip openings at "A" in the figure is the package length. SMD fixtures have better open circuit data than Kelvin fixtures for measurement results.

After selecting a certain item of data and pressing "OK", there will be a prompt as shown in Figure 2-8.



Figure 2-6 Kelvin fixture

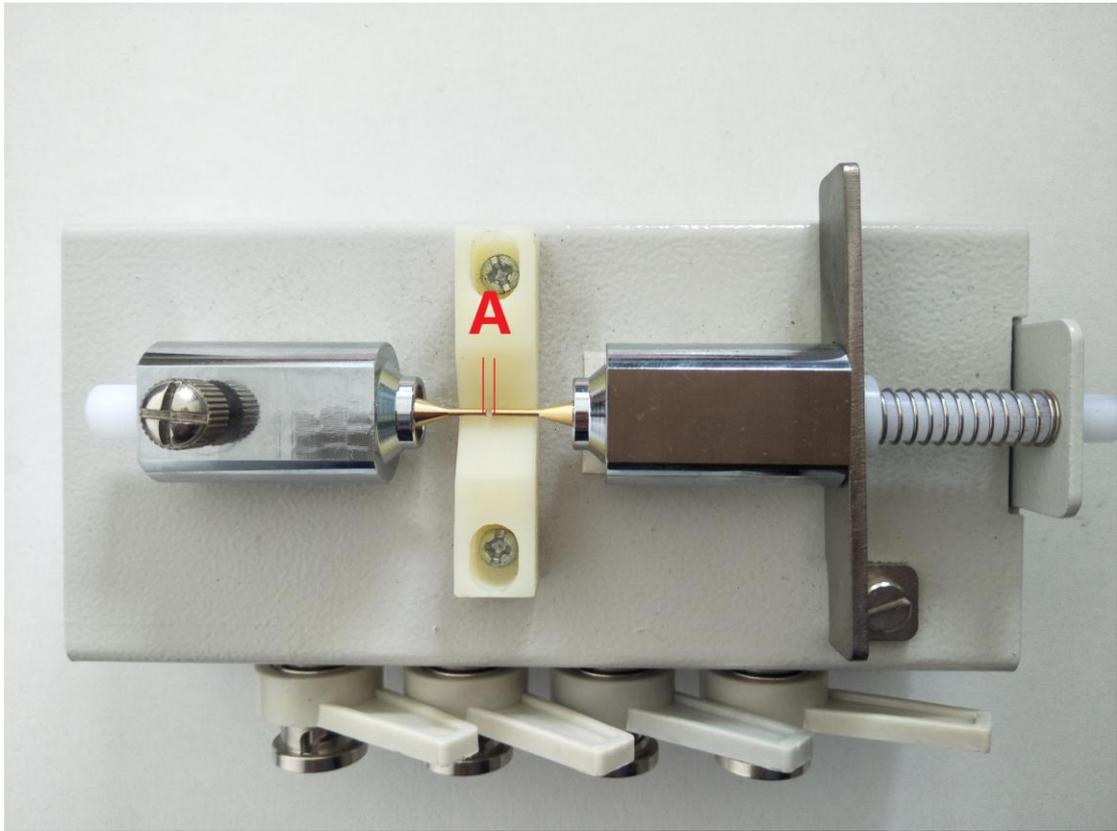


Figure 2-7 SMD fixture

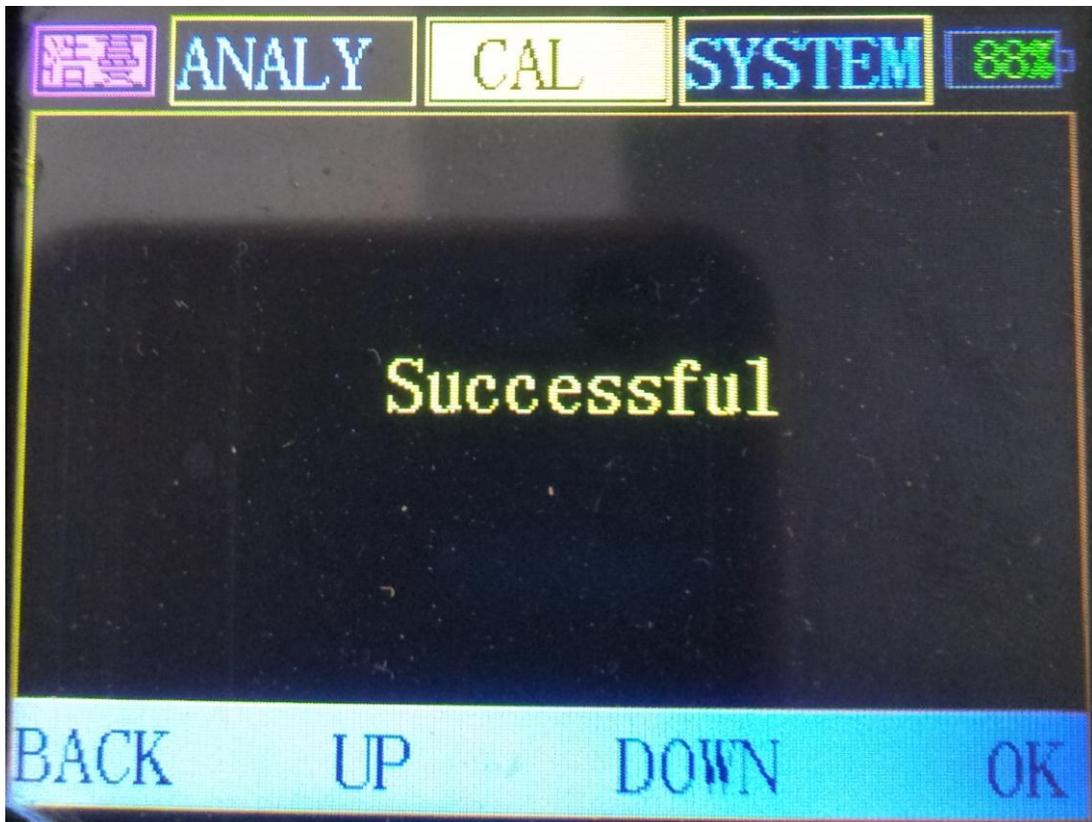


Figure 2-8 Confirmation prompt

(4)、“LOAD”: Load calibration. When the user has higher requirements on the measurement accuracy, the user can calibrate the measured value by himself. After calibration, the measured value near the “calibration resistance” value will be more accurate. (Here “calibrated resistance” means standard parts, such as resistance, inductance, capacitance)

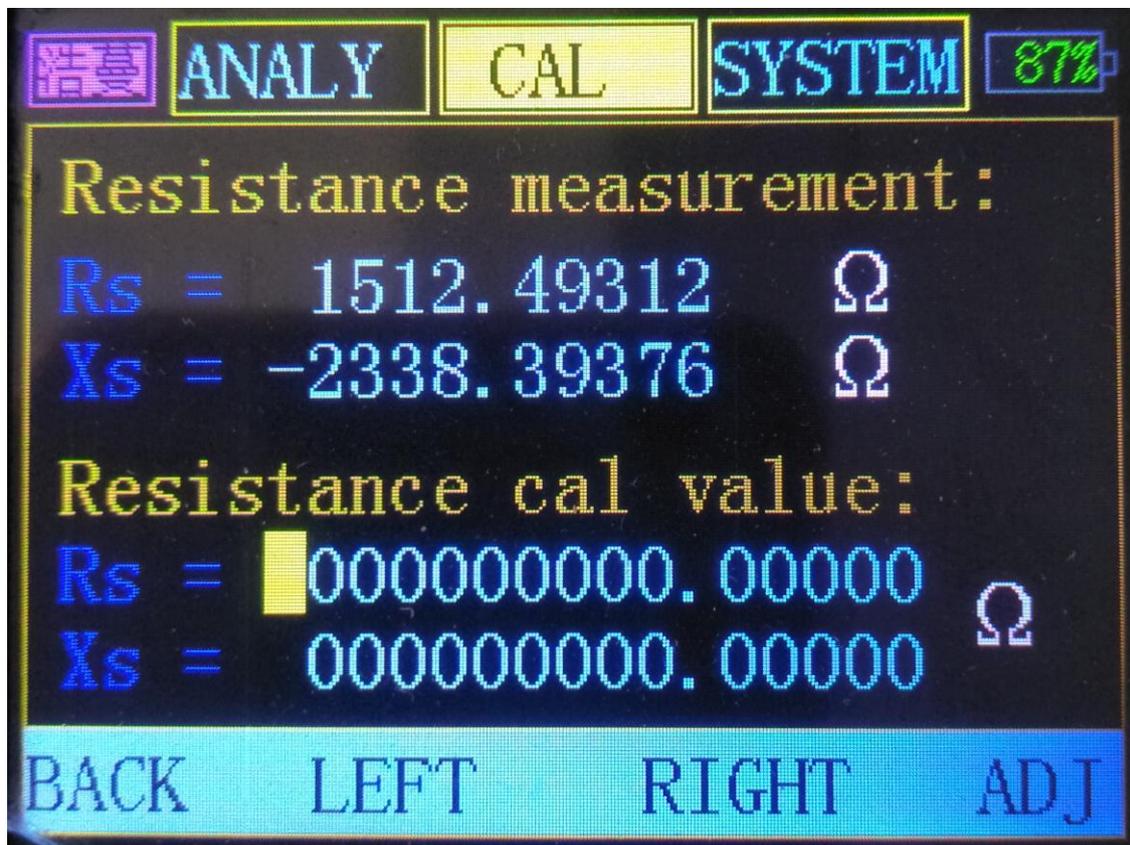


Figure 2-9 Load options

Calibration steps:

- (a) Do open short circuit calibration.
- (b) Clamp the standard resistor correctly.
- (c) Enter the main test setting (Figure 2-10) and set the relevant parameters (general default value).
- (d) Press “OK” to enter the main measurement (Figure 2-11), and press “ADJFRQ” to set the frequency. After the frequency setting is completed, the system measures immediately.
- (e) When the color of the main measurement parameter turns yellow, press “BACK” to the main measurement setting page, then press this “NEXT” to switch to the calibration surface (Figure 2-12), and finally enter the “LOAD” page (Figure 2-13).

The above "Resistance measurement" in Figure 2-13 is the current measured value of the equipment for "calibration resistance".

The following two parameter values of "Resistance cal value" in Figure 2-13 need to be manually filled in with the true value of this "calibration resistance".

(f) When the small yellow box is adjusted to the last bit of Xs, press "RIGHT" again to start the calibration.

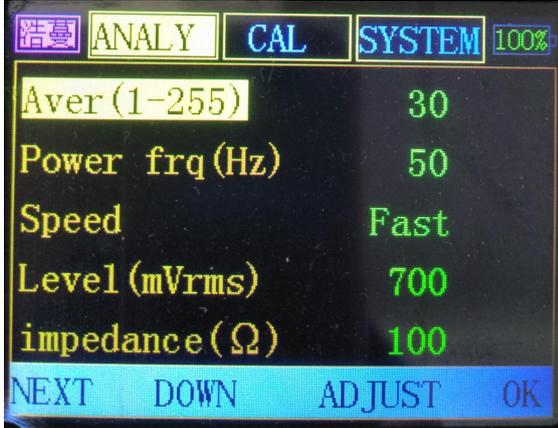


Figure 2-10 main test setting



figure 2-11 main test page

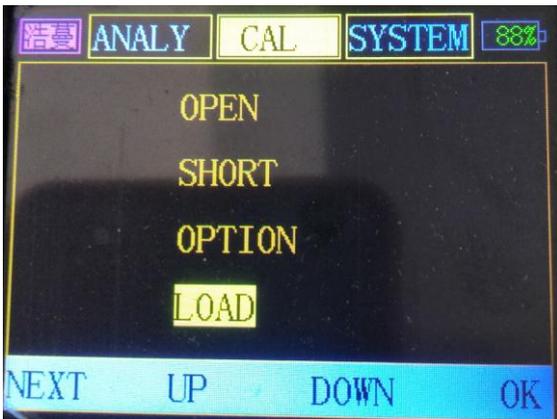


Figure 2-12 calibration page

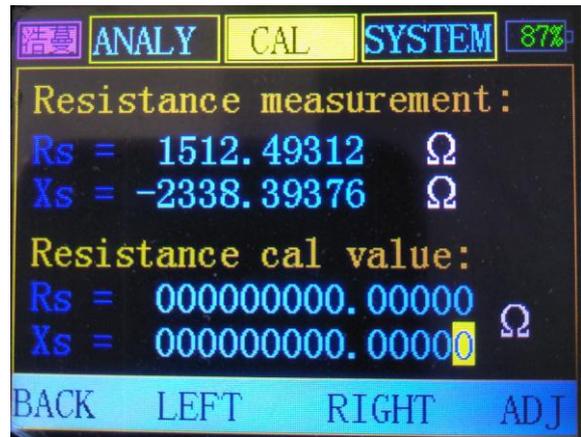


figure 2-13 load calibration page

Note: the load calibration value can store 20 sets of data in total. When the limit is exceeded, the previous value is overwritten.

Effective condition of calibration value:

a. The parameter setting (level, internal resistance, frequency) during measurement must be completely consistent with the parameter setting during calibration;

b. The impedance value of the tested part and the impedance value of the "calibration resistance" used in the calibration shall not be too different.

3、system message

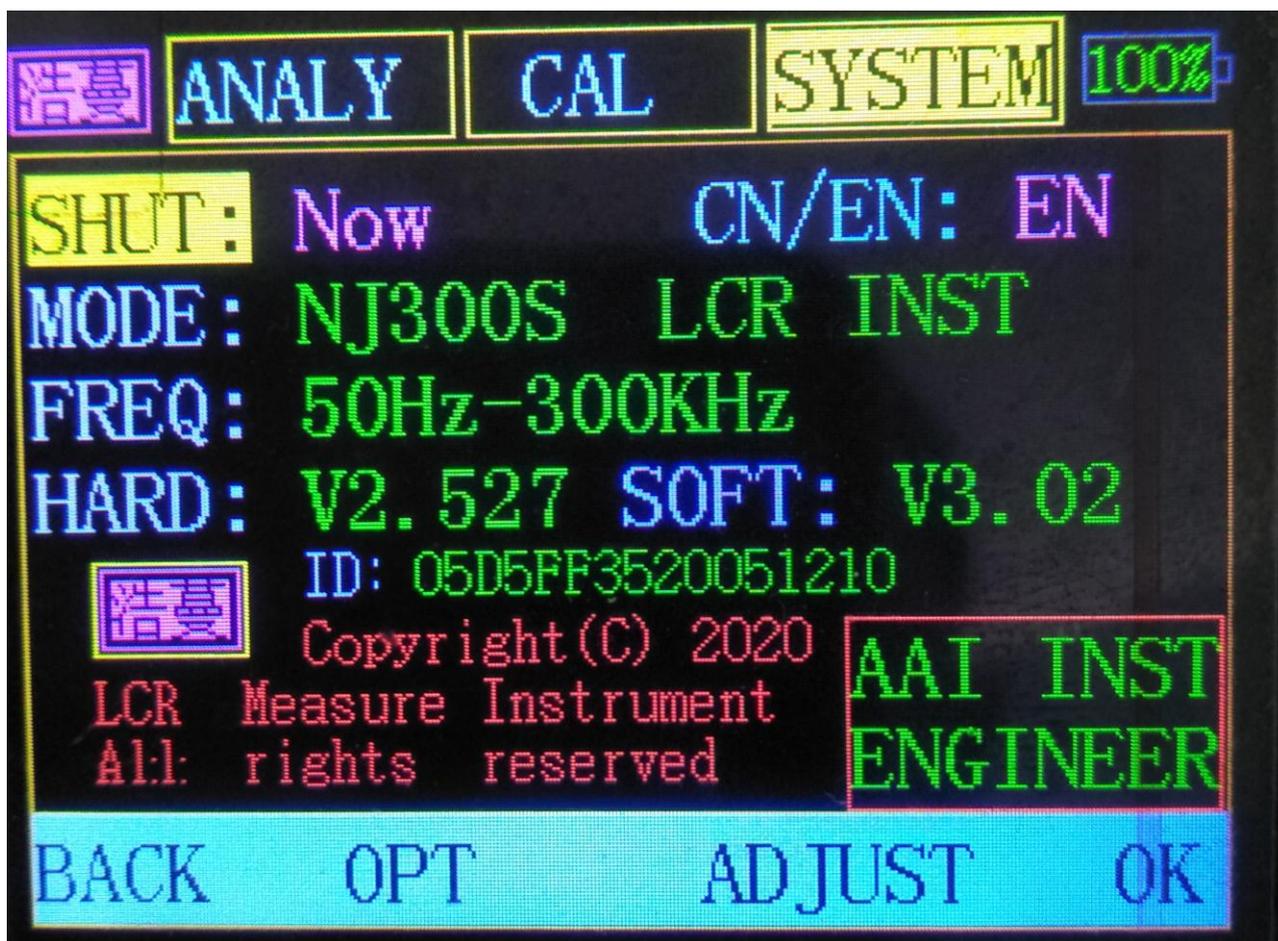


Figure 3-1 System information page

The system information mainly displays the product related information, such as model, frequency range, version, etc.

OPT: switch between the two functions "Shutdown" and "Language";

ADJUST: selection of corresponding function parameters.

note:

SHUT(Automatic shutdown):Always, Now, 5 mins, 10 mins, after 30 mins, 60 mins. Only when the option is in "SHUT", select "Now" and press "OK" to shut down immediately. When other items are selected, related functions are automatically saved and activated.

ID number: The device is uniquely coded, one machine, one number, not repeated.

4、 Usage intention

In order to use the measured value more accurately, please turn on the machine for preheating for a few minutes before each use, and then do the open short circuit calibration. The tested part shall be close to the instrument as much as possible, and the state of calibration and measurement shall be consistent as much as

possible.

Self provided Kelvin fixture: purchase instructions, BNC male pin, regular manufacturer standard head. Otherwise, the main hole will be damaged greatly and the contact will be poor, which will affect the measurement accuracy and accuracy.

5、Anti-interference

When the frequency value is an integer multiple of the power frequency (50 / 60Hz), the measured value is superior to other frequency points. In the disturbed environment, the even multiple of the power frequency is better than the odd multiple of the frequency. That is to say: the measured value of odd frequency multiplication point is more susceptible to environmental interference. Even if the system has done anti-interference related processing, it cannot be completely shielded when the interference is large. (Please refer to the previous "Interference Degree" for the size of environmental interference)

五、Safety requirements

1、Charge

This unit is not equipped with a charger. Please use a 5V charger for mobile phones or tablet computers with a current of more than 1a. After the product battery is low, please charge it in time to avoid damaging the battery.

In addition, the electric quantity indication of the product is schematic, especially when charging, the error will be relatively obvious. In this case, as long as the error is not very large (about 15%), it is normal, not the product or battery is damaged, please know.

2、Storage

Since the product contains a lithium polymer battery, please turn off the product and store it when fully charged. If it is not used for a long time, it is recommended to charge it every 3 months to avoid battery damage due to lack of power.

This charging port uses a USB socket, but it is not a USB communication interface. At the same time, connecting the USB port of the computer will produce interference signals, affecting the normal operation of the product.

3、transport

When transporting, please make shock-proof and drop-proof packaging. Contains batteries, it is recommended to transport by land or water.

六、Matters needing attention

1. In order to ensure the accuracy of measurement and calibration, please preheat the product for at least 5 minutes before measurement, especially for calibration, it is best to preheat for more than 20 minutes. After preheating, the calibration parameters can be more accurate.

2. When the battery is powered, the internal noise of the product is the smallest, so it is recommended to measure under battery power. Especially when doing calibration operations, it is strongly recommended to perform under battery power. When the charger is connected, if the quality of the charger is not good, there will be some noise.

3. Please do not connect the computer USB charging port to charge, the signal of the USB port will seriously interfere with the working state of the product, resulting in serious inaccurate product measurement.

4. Please use better quality fixtures.

5. Before measurement and calibration, please make sure that there is no strong interference signal around to avoid the inaccurate measurement result caused by interference.

6. Charge the battery in time after being under power to avoid long-term power shortage.

7. The interface is BNC. Since copper has a relatively lower strength than other metals, please protect it as carefully as possible to avoid falling and bump damage.

8. In the case of strong interference, unconventional operation, and unknown bug of software, a crash may occur (power may be consumed until the battery is exhausted after the crash). At this time, please directly reset the product to

avoid damage to the battery. If the battery is exhausted, the battery is extremely lack of power, the current will be large when charging, and the charger with small supply current will be short-circuit protected, but please continue to charge Until the battery can be charged normally.

七、 After-sale service

After the product is sold, AAI will provide free repair or replacement within two years due to problems with its own defects.

Provide technical support for life

八、 contact us

AAI promises to provide technical support for life. If you have any questions or needs during the use of the product or this instruction, please contact :

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