635X+6243

DC bias current test system

User Manual

V1.02

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Safety instructions

When using, operating and maintaining this machine, special attention should be paid to the safety precautions described below. Failure to comply with these and other warnings mentioned in this manual will be a serious violation of the safety standards for the design, manufacture and operation of this instrument.

Precautions for Restoration Equipment

The operator should not remove the protective shell of the instrument, only qualified maintenance personnel can be engaged in replacing the components in the machine or internal adjustment. Do not replace any parts when the power cord is plugged into an outlet. Under certain special circumstances, dangerous voltages may still be present even when the power supply is unplugged from the outlet. To avoid injury, be sure to cut off the power supply and take necessary discharge measures before touching the inside of the instrument.

The instrument is grounded

To avoid the risk of electric shock, ground the power cord of the instrument.

Do not work on repairs or internal adjustments, etc. alone

Do not perform internal maintenance or internal adjustment of the machine alone.

Do not replace parts or modify machine functions and construction

Without the authorization of the company, please do not install replacement parts on the machine or carry out any machine modification work, so as not to increase the danger of the machine or cause damage to the machine. When the machine fails, please return the instrument to MicrotestCo., Ltd. for repair by a special person to ensure its safety.

Product warranty limits

MicrotestCo., Ltd. will give a one-year quality guarantee for this product from the date of shipment, but the warranty period of some special components shall be subject to its product specifications and characteristics. During the warranty period, MicrotestCo., Ltd. will be responsible for repairing or replacing the product that has been proven to be defective (the product is good and bad work by MicrotestCo., Ltd.). MicrotestCo., Ltd. guarantees that all the software and hardware designated by the company for use with the instrument can execute its program instructions as long as it is properly installed on the instrument. MicrotestCo., Ltd. does not guarantee that the software and hardware of the instrument will not be interrupted or wronged in operation.

Product Warranty Limitations

The foregoing warranty does not apply to Customer's incorrect or inappropriate use of the Product, or the Customer's unauthorized modification of machinery, repair of machinery, replacement of components or misuse of the Product, or the placement and maintenance of the Product in an environment not specified in the specified conditions.

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Chapter 1 : Precautions

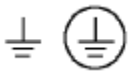
This instrument is not suitable for outdoor use, especially in humid or high dust areas. Improper use may cause electric shock. Before using this testing machine, please read the safety instructions carefully to avoid accidents caused by incorrect or erroneous use.

Safety Symbols

The following safety symbols may appear in this user manual and on the instrument:

: Attention symbol: please read the user manual carefully.

: High voltage hazard symbol: the output terminal may have lethal voltage. Please read the safety instructions in this chapter carefully.

: Protective grounding terminal: before using this testing machine, be sure to ground this terminal to avoid electric shock accidents caused by contact with the machine casing due to leakage.

CAUTION: Warning sign: improper use of the product may cause improper results to the instrument or other objects to be tested.

WARNING: Warning sign: improper use of the product may cause injury or even death.

Electric shock

To prevent electric shock accidents, it is recommended to wear insulated rubber gloves before engaging in testing-related work when using this testing machine.

Sensitive to Electrostatics

The components used in this instrument are highly sensitive to static electricity.

- The work desk surface must be made of conductive material and grounded.
- When not in use, the soldering iron and tools must have their contact points connected to a conductor with a ground connection.
- Maintenance personnel must wear static discharge wrist straps with a leakage resistance of less than 1MΩ.
- Parts or assembly boards must be stored in anti-static sleeves to prevent damage from static electricity.

Grounding

There is a safety grounding terminal on the back panel of this testing machine. Please make sure to properly ground this grounding terminal to prevent the risk of electric shock in case of contact with the outer shell.

635X Power Supply

It is necessary to use a power cord that complies with the local national regulations and an IEC320 connector to connect with this instrument. The user must also ensure that the ground wire is properly grounded. If the power plug is equipped with a fuse, use a 3.15A fuse that complies with safety standards. Before use, make sure it is an AC power source and adjust the power selector switch to 115V/230V to ensure that the machine is used with the local power voltage.

Machine Warm-Up

The testing machine can operate normally when the power is turned on, but to achieve the accuracy within the specifications, please preheat the machine for more than 30 minutes after turning it on.

Machine Malfunction

If you notice that the testing machine is malfunctioning, such as a significant difference between the displayed voltage and the set voltage on the voltmeter, or no high voltage output but the high voltage output warning light remains on, please stop using the machine immediately and contact our company or dealer for repair.

Termination of Testing

When the testing machine is not in use, please turn off the power switch.

Placement and Storage

The normal operating temperature and humidity range for this machine is 10 oC~ 40 oC, <80% RH. If it exceeds this range, the operation may be abnormal. The storage temperature and humidity range for this machine is -20 oC ~ 70 oC, 80% RH. To ensure correct testing and safety, do not place the testing machine in an environment with direct sunlight exposure or high temperatures, high humidity, frequent vibration, or excessive dust.

Emergency Handling

In the event of electric shock, combustion of the main unit, or combustion of the test parts, immediately turn off the power and unplug the power cord.

Chapter 2: Instrument Introduction

Features

- LCR + DC Bias test response:
  100Hz~200kHz (6355+6243)
  100Hz~500kHz (6356+6243)

- 635X test voltage: 10mV~2V.
- Basic measurement accuracy of 635X: 0.05%.
- Maximum output current of 6243: 40A.

Introduction

- Multiple-step measurements with up to 8 steps.
- Measurements can be displayed as the absolute value difference (ΔAbs) or percentage difference (Δ%) relative to the nominal value.
- High-precision four-wire measurement fixture with grounding.
- Fixture zeroing (open/short).
- Bar graph display for easy identification of variable components.
- 7-inch LCD color display with 800x480 screen resolution.
- Intuitive user interface with complete measurement functions.

The communication interfaces include:

- RS-232 serial communication port (9600/19200/38400/56000/115200 bps).
- GPIB.
- LAN.
- Handle Interface (remote control interface).

The contents of the 635X package include:

1. LCR meter main unit
2. Power cord
3. Kelvin test lead with clips (100cm length, F423906A)

The contents of the 6243 package include:

1. DC bias source main unit
2. Power cord
3. Ethernet cable
4. Fuse 250V/5A
5. Grounding wire

Optional fixture

1. F6210 DIP 2-wire fixture
2. F6210 DIP 4-wire fixture
3. F6240 DIP 4-wire fixture
4. F6240 SMD 4-wire fixture
5. 6223/6210/6220 connector (short/long)
6. 6243/6240 connector (short/long)
7. BNC + BNC cable.

Frequency Range and Test Frequency Points

Frequency range (Freq).	Test frequency points	resolution
10Hz ≦ Freq ≦ 999.95Hz	10.00Hz、10.05Hz ... 999.95Hz	0.05Hz
1kHz ≦ Freq ≦ 9.9999kHz	1.0000kHz、1.0001Hz ... 9.9999kHz	0.1Hz
10kHz ≦ Freq ≦ 99.999kHz	10.000kHz、10.001Hz ... 99.999kHz	1Hz
100kHz≦ Freq ≦ 200kHz	100.00kHz、100.01kHz ... 200.00kHz	10Hz

Table 2-5-1 Frequency range and test points (6355).

Frequency range (Freq).	Test frequency points	resolution
10Hz ≦ Freq ≦ 999.95Hz	10.00Hz、10.05Hz ... 999.95Hz	0.05Hz
1kHz ≦ Freq ≦ 9.9999kHz	1.0000kHz、1.0001Hz ... 9.9999kHz	0.1Hz
10kHz ≦ Freq ≦ 99.999kHz	10.000kHz、10.001Hz ... 99.999kHz	1Hz
100kHz≦ Freq ≦ 500kHz	100.00kHz、100.01kHz ... 500.00kHz	10Hz

Table 2-5-2 Frequency range and test points (6356).

Test voltage and resolution

Test voltage (Volt).	resolution
0.001V ≦ was ≦ 2.000mV	1mV

Measurement Categories:

- Series Inductance (Ls) Parallel Inductance (Lp)
- Series Capacitance (Cs) Parallel Capacitance (Cp)
- Series Resistance (Rs) Parallel Resistance (Rp)
- Reactance (X) Susceptance (B) (=1/X)
- Impedance (Z) Admittance (Y) (=1/Z)
- Dissipation factor(D) Quality Factor (Q) (=1/D)
- Angle (θ)
- Conductance (G)
- DC Resistance (Rdc)

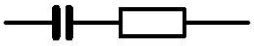
Basic Measurement Functions

Series and Parallel Modes:

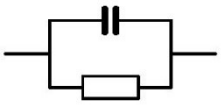
For measuring AC resistance, capacitance, inductance, reactance and admittance, series and parallel equivalent circuit models can be used for measurement.

◆ **C:** Capacitance.

Series mode:



Parallel mode:



Series mode related formula:

$$C_s = C_p(1 + D^2)$$

D = dissipation factor

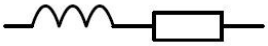
Parallel mode related formula:

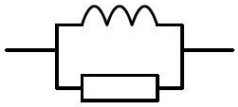
$$C_p = \frac{C_s}{(1 + D^2)}$$

D = dissipation factor

◆ **L:**Inductance。

Series mode: Parallel mode:





Series mode related formula: Parallel mode related formula:

$$L_s = \frac{L_p}{\left(1+\frac{1}{Q^2}\right)}$$

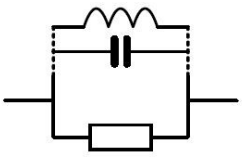
$$L_p = L_s\left(1+\frac{1}{Q^2}\right)$$

Q = Quality Factor Q = Quality Factor

◆ **X:** Reactance.

Series mode: Parallel mode:





Series mode related formula: Parallel mode related formula:

$$R_s = \frac{R_p}{\left(1+Q^2\right)}$$

$$R_p = R_s\left(1+Q^2\right)$$

Q = Quality Factor Q = Quality Factor

- **Resistance (R) and Conductance (G):**

  Resistance is a physical quantity that hinders the flow of charge in a material, that is, the resistance value, measured in "ohms" (Ω).

  Conductance is a measurement value that represents the ability of an object or circuit to transmit current from one point to another, measured in Siemens (S), which is the reciprocal of resistance (G = 1/R).

  - Resistance (R).

    Measurement Type:

    1. Serial mode →Rs
    2. Parallel mode → Rp
    3. DC resistance → RDC

    Related formulas:

$$R = \frac{V}{I} = \frac{1}{G} = Z_s - jX = Z_s - j\omega L = Z_s + \frac{j}{\omega C}$$

$$|Z_s| = \sqrt{(R^2 + X^2)}$$

$$|Z_p| = \frac{RX}{\sqrt{(R^2 + X^2)}}$$

$$R_s = |Z| \cos\theta$$

◆ Conductance (G).

Measurement Type:

Parallel mode → GP

*Conductance is only available for parallel equivalent circuit models.

Related formulas:

$$G_p = \frac{I}{V} = \frac{1}{R} = Y_p - jB = Y_p - j\omega C = Y_p + \frac{j}{\omega L}$$

$$\left|Y_s\right| = \frac{GB}{\sqrt{\left(G^2 + B^2\right)}}$$

$$\left|Y_p\right| = \sqrt{\left(G^2 + B^2\right)}$$

$$G_p = |Y| \cos\theta$$

- **Capacitance (C):**

  Capacitance, also known as electrical capacitance, refers to the amount of electrical charge that can be stored in a given electric potential difference. The unit of capacitance is the farad (F), and it is commonly represented by the symbol "C".

  Measurement Type:

  In-line mode → CS

  Parallel mode → Cp

  Related formulas:

$$Z_s = R + jX = R + j\omega L = R - \frac{j}{\omega C}$$

$$Y_p = G + jB = G + j\omega C = G - \frac{j}{\omega L}$$

$$Q = \frac{\omega L_S}{R_S} = \frac{1}{\omega C_S R_S} \quad \text{(series R, L, C values)}$$

$$Q = \frac{R_P}{\omega L_P} = \omega C_P R_P \quad \text{(parallel R, L, C values)}$$

$$D = \frac{R_S}{\omega L_S} = \omega C_S R_S \quad \text{(series R, L, C values)}$$

$$D = \frac{G_P}{\omega C_P} = \omega L_P G_P \quad \text{(parallel G, L, C values)}$$

- **Inductance (L):**
  Inductance is one of the properties of an electronic circuit or device, referring to the electromotive force (EMF) generated due to electromagnetic induction when the current changes, with the unit of henry (H).

Measurement Type:

1. In-line mode → LS
2. Parallel mode → Lp

Related formulas:

$$Z_s = R + jX = R + j\omega L = R - \frac{j}{\omega C}$$

$$Y_p = G + jB = G + j\omega C = G - \frac{j}{\omega L}$$

$$Q = \frac{\omega L_S}{R_S} = \frac{1}{\omega C_S R_S} \quad \text{(series R, L, C values)}$$

$$Q = \frac{R_P}{\omega L_P} = \omega C_P R_P \quad \text{(parallel R, L, C values)}$$

$$D = \frac{R_S}{\omega L_S} = \omega C_S R_S \quad \text{(series R, L, C values)}$$

$$D = \frac{G_P}{\omega C_P} = \omega L_P G_P \quad \text{(parallel G, L, C values)}$$

- **Reactance (X) and Susceptance (B):**

  Reactance is represented by "X" in AC circuit analysis, and is the imaginary part of a complex impedance. It is used to represent the resistance of inductors and capacitors to the flow of current in AC circuits, similar to how resistance resists the flow of current in DC circuits. In AC circuits, such as in series RLC circuits, capacitors and inductors also create resistance to the flow of current, which is referred to as reactance, and its unit is ohms (Ω).

  Susceptance is the reciprocal of reactance, and is the imaginary part of admittance in power electronics. It can be classified as capacitive or inductive based on its nature. It is the reciprocal of reactance (B=1/X), and its unit is Siemens (S).

  - ◆ Reactance (X).

    Measurement Type:

    Series mode → XS

    *Reactance is only available for series equivalent circuit models.

    Related formulas:

$$X = \frac{1}{B} = |Z| \sin\theta$$

$$|Z_s| = \sqrt{(R^2 + X^2)}$$

$$|Z_p| = \frac{RX}{\sqrt{(R^2 + X^2)}}$$

$$X_s = |Z| \sin\theta$$

◆ Susceptance(B).

Measurement Type:

Parallel mode → Bp

*Susceptance is only available for parallel equivalent circuit models.

Related formulas:

$$B = \frac{1}{X} = |Y| \sin\theta$$

$$|Y_s| = \frac{GB}{\sqrt{(G^2 + B^2)}}$$

$$|Y_p| = \sqrt{(G^2 + B^2)}$$

$$B_p = |Y| \sin\theta$$

- **Impedance (Z) and Admittance (Y):**

  Impedance refers to the combined effect of resistance, inductance, and capacitance in an AC circuit, which impedes the flow of AC current. The unit of impedance is the ohm (Ω).

  Admittance is the term used to refer to the combined effect of conductance and susceptance in an AC circuit. In power electronics, admittance is defined as the reciprocal of impedance, and its unit is the siemens (S).

  - Impedance (Z).

    Related formulas:

$$Z = \frac{E}{I} = \frac{1}{Y}$$

$$Z_s = R + jX = R + j\varpi L = R - \frac{j}{\varpi C}$$

$$|Z_s| = \sqrt{(R^2 + X^2)}$$

$$|Z_p| = \frac{RX}{\sqrt{(R^2 + X^2)}}$$

$$R_s = |Z| \cos\theta$$

$$X_s = |Z| \sin\theta$$

  - Admittance (Y).

    Related formulas:

$$Y = \frac{I}{E} = \frac{1}{Z}$$

$$Y_p = G + jB = G + j\varpi C = G - \frac{j}{\varpi L}$$

$$|Y_s| = \frac{GB}{\sqrt{(G^2 + B^2)}}$$

$$|Y_p| = \sqrt{(G^2 + B^2)}$$

$$G_p = |Y| \cos\theta$$

$$B_p = |Y| \sin\theta$$

- **Quality factor (Q) and Dissipation factor (D):**

The Quality Factor is used to measure the energy consumed by a relative frequency. Generally, the higher the quality factor of a circuit, the better its selectivity.

The Dissipation Factor is the reciprocal of the Quality Factor. It refers to the signal angle loss of a capacitor (or inductor) at a fixed temperature and operating frequency. Due to the phase shift between the applied voltage and generated current, the loss current and energy are dissipated. At this time, the current has two components: one is the charging current (Ic) that is 90 degrees out of phase with the voltage, and the other is the loss current (IR) that is in phase with the voltage. The total current (I) is the sum of these two components. The angle between the total current and the charging current is called the loss angle (δ), and tanδ is called the Dissipation Factor "D", as shown in the figure below:

$$D = \tan\delta = \frac{I_R}{I_c}$$

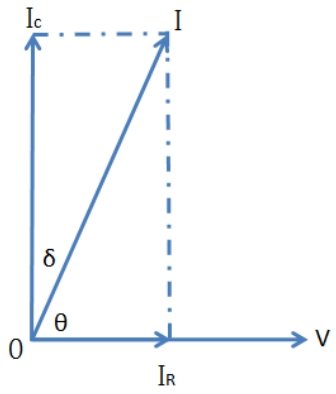


Fig. 2-6-1 Actual capacitor phase change diagram

◆ Quality factor (Q).

Related formulas:

$$Q = \frac{R_P}{\omega L_P} = \omega C_P R_P \qquad \text{(parallel R, L, C values)}$$

$$Q = \frac{\omega L_S}{R_S} = \frac{1}{\omega C_S R_S} \qquad \text{(series R, L, C values)}$$

$$Q = \frac{1}{\tan(90-\theta)^\circ} = \frac{1}{D}$$

◆ Dissipation Factor (D).

Related formulas:

$$D = \frac{R_S}{\omega L_S} = \omega C_S R_S \qquad \text{(series R, L, C values)}$$

$$D = \frac{G_P}{\omega C_P} = \omega L_P G_P \qquad \text{(parallel G, L, C values)}$$

$$D = \tan(90-\theta)^\circ = \frac{1}{Q}$$

- **Angle (θ):**

Angle, the phase angle of impedance (Z), admittance (Y), quality factor (Q), and Dissipation Factor (D) items is measured.

Related formulas:

$$Z_s = R + jX = R + j\omega L = R - \frac{j}{\omega C}$$

$$Y_p = G + jB = G + j\omega C = G - \frac{j}{\omega L}$$

$$Y_p = G + jB = G + j\omega C = G - \frac{j}{\omega L}$$

$$Q = \frac{1}{\tan(90-\theta)^\circ} = \frac{1}{D} \qquad D = \tan(90-\theta)^\circ = \frac{1}{Q}$$

$$R_s = |Z| \cos\theta \qquad X_s = |Z| \sin\theta$$

$$G_p = |Y| \cos\theta \qquad B_p = |Y| \sin\theta$$

Hardware architecture introduction

Main architecture of the LCR-6355 tester

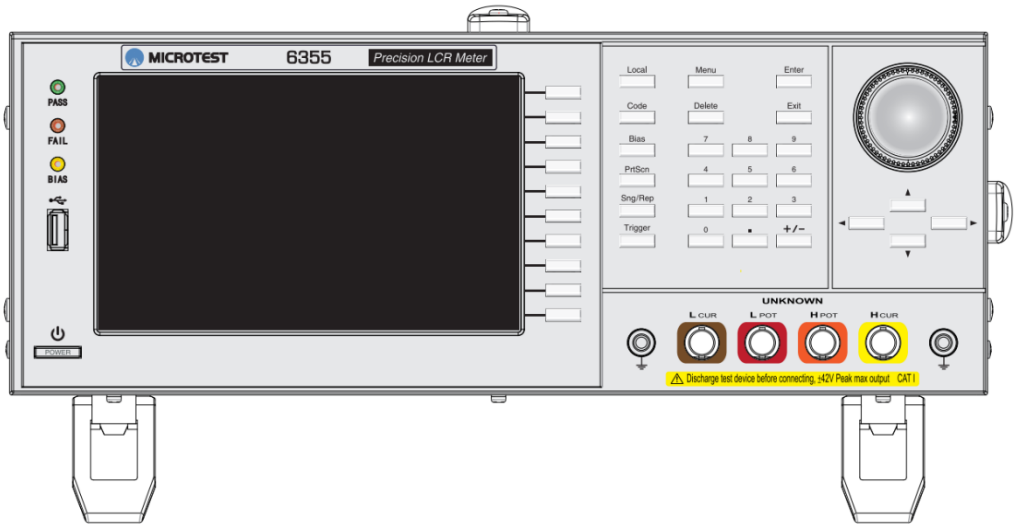


Fig. 2-7-1 Full view of the front of LCR-6355 testing machine

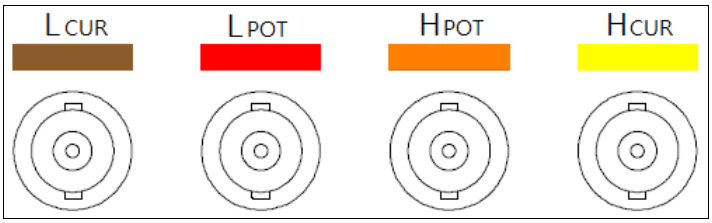
Front Panel Overview:

- **Display:** Resolution 800x480, LED backlit display.
- **PASS/FAIL:** The good/defective product test light can display its test results when the comparison mode is turned on or in multiple test mode.
- **BIAS : When** an external DC bias source machine is connected, the light lights up after pressing the Bias key to indicate that the output is in the output.
- **Function keys:** Select the function on the right side of the screen.
- **Menu:** Switches the screen to the Main Menu page.
- **Local:** When the instrument is in remote control mode, this button can be pressed to unlock the key lock. When the instrument is in remote control mode, the icon appears at the top of the RMT screen.
- **File:** Switch the screen to the File Management page.
- **Sng/Rep: You can switch the** measurement mode in Meter Mode, and you can interactively switch to single trigger mode (Single Trigger) and continuous trigger mode (Repeat Trigger). When the measurement mode is Single Trigger, the icon is displayed at the top of the MAN screen.
- **Trigger:** Measure the trigger key.
  - In Meter Mode, if the measurement mode is Single Trigger, this button

is the measurement trigger button; If the measurement mode is Repeat Trigger, this button is the "Pause/Resume" measurement button, and the icon will be displayed HOLD at the top of the screen when the measurement stops.

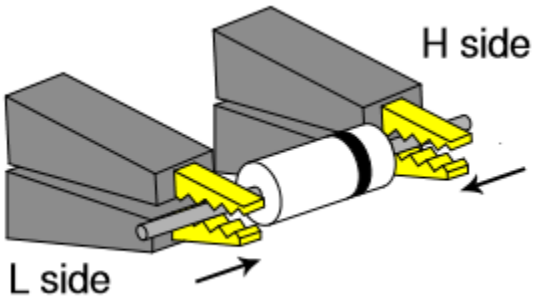
- In Multi-Step Test Mode, this button is the test trigger button, which is pressed to start the test.

- **PrtScn:** Press this button to save the screen to the USB flash drive.
  When using this function, please insert a USB flash drive, the picture is in BMP format.
  The support specification of the pendrive is FAT32 format, and the capacity is less than 64GB.
  6355 whose picture save path is ("\6355_LCR\Screen\").
  6356 has a picture save path of ("\6356_LCR\Screen\").
- **Code:** Reserved key, no function.
- **Delete:** Edit the delete key.
- **Exit:** Exit/Return key to return to the previous page.
- **Enter:** Confirm key to confirm the edited value or selection.
- **Knob:** You can fine-tune the voltage/frequency item in Meter Mode, select the item, and press the Enter key to start the wheel fine-tuning.
- **D-pad:** Select a menu item or parameter.
- **Number keys:** Enter numeric values when providing editing.
- **Measuring terminal :**
  The LCUR receives the test current source and connects the negative terminal (-) of the DUT.
  The LPOT voltage measures the negative terminal and connects the negative terminal of the DUT (-).
  The positive terminal of the HPOT voltage measurement is connected to the positive terminal (+) of the DUT.
  HCUR provides a test current source connected to the positive (+) of the DUT.

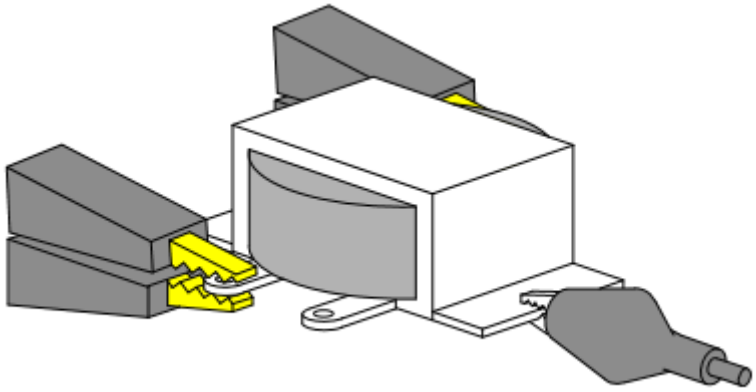


The picture above is the 6355 four-wire measurement joint, please connect the four-wire measuring fixture head at the end of the fixture Test Line here.

1. Before attaching the fixture, make sure to discharge the object to be tested.
2. Depending on the color, connect the fixture terminal to the BNC terminal on the front panel.
3. Connect the object to be measured to the fixture, if the object to be tested is directional, connect the fixture clamp H side to the positive end of the DUT, and at the same time connect the fixture clamp L side to the negative end of the DUT, please make sure that the fixture clamp position is as close as possible to the body of the DUT.



4. If the DUT has a housing shield and is not attached to either fixture clamp, attach this enclosure to earth to reduce noise effects.



LCR-6355 tester rear panel architecture

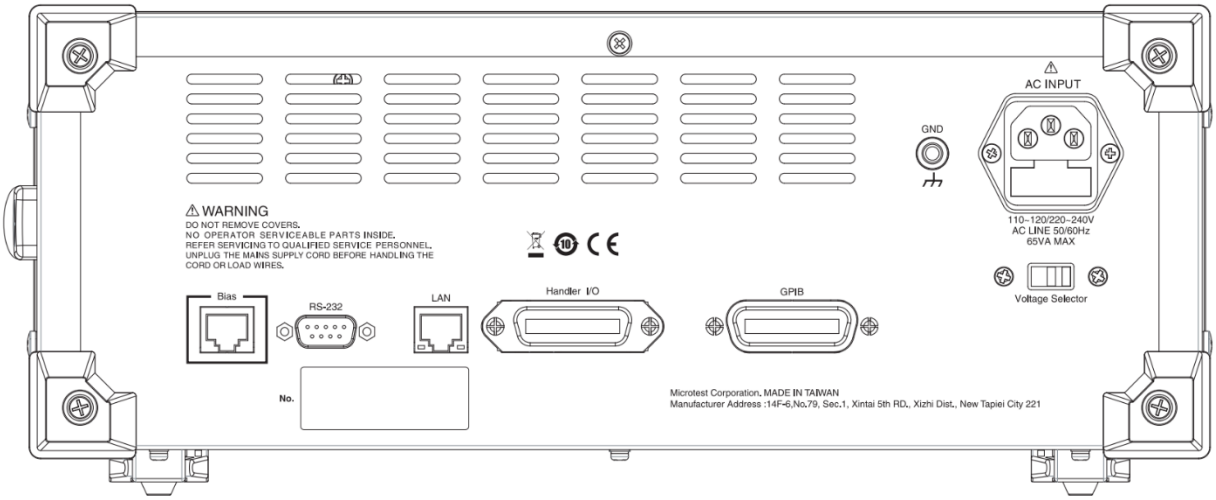


Fig. 2-7-2 Full view of the back of LCR-6355 testing machine

LCR-6355 back mating instructions: (Please refer to Figure 2-7-2).

1. **AC INPUT: Enter the power outlet, please confirm whether the input supply voltage is 110V** or 220V before connecting the plug, and be sure to turn the power switch at **Voltage Selector** to the correct voltage position (110V/220V).
2. **RS-232:** RS-232 serial port interface.
3. **GPIB:** GPIB communication interface.
4. **LAN: LAN** network communication interface.
5. **Handler I/O:** Remote control interface.
6. **Bias :** Plug in the network cable to connect 6243.

Precautions before powering on the device

Before operating the LCR tester, you must first ensure that there is sufficient and stable AC voltage to supply each device in the automatic testing system.

Chapter 3: Instrument Operation Instructions operate

Main Menu

Press **the menu** control key, and the screen will enter the main menu screen.

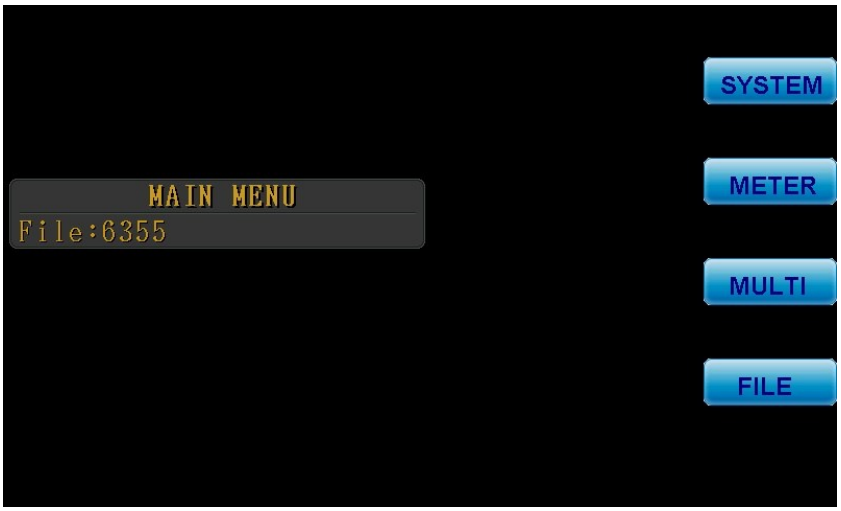


Fig. 3-1-1 Main Menu screen

- SYSTEM: Enter the System Setup screen.
- METER: Enter meter mode.
- MULTI: Enter the Multi-Step Mode.
- FILE: Enter the File Management screen.

System setup

Press the Menu control key to the main menu screen, and then select **SYSTEM** to enter the system setting screen.



Figure 3-2-1 System Setup screen (1/2).

1. **Trigger delay :** Set the trigger delay time, set the range 0~5000, the unit is mS.

2. **Compare Mode Beep:** Set the time when the comparison function is turned on in Meter Mode, and you can use the Select function key to make a selection.

   a. **OFF:** Turns off the tone.

   b. **NG**: As long as one item is out of the set range (FAIL), an alert sound is sounded.

   c. **OK:** The alert sound will only sound if all the items for which the comparison is enabled are within the set range (PASS).

3. **Multi Step Mode Beep**: Multi-step test mode, test result prompt sound setting, can be selected using the Select function key.

   a. **ON:** Turn on the sound.

   b. **OFF:** Turns off the sound.

4. **Handler Interface**: Set the Handler Interface function to turn on/off, you can use the Select function key to make a selection.
   a. **ON:** Turn on the Handler Interface feature.
   b. **OFF:** Turn off the Handler Interface feature.

5. **GPIB Address**: Set the GPIB mailing address, set the range 1~30.

6. **RS-232 Baud Rate:** Set the baud rate of the serial communication port, use the Select function key to make a choice, and the following rates can be selected: 115200/56000/384000/19200/9600 bps.

7. **Communication Interface**: Communication interface settings, select the communication interface GPIB/RS-232/LAN to be used.

8. **Language/Language/Language**: Language family setting, you can use the Select function key to select, there are English, orthograph Chinese ic, simplified Chinese, three choices.

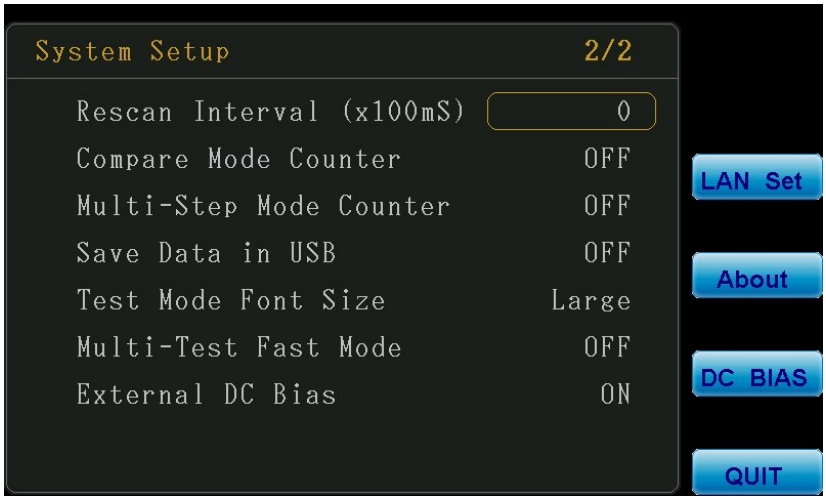


Fig. 3-2-1 System Setup screen (2/2).

9. **Rescan Interval (x100mS)**: Set the interval between continuous test and continuous test in multi-step test mode, set the range 0~100.

   - When set to 0, the continuous test function is disabled.
   - When the setting value is between 1~100, the continuous test function is started, and the continuous test interval time is set to x100mS.

   Example：

   When the setting value is 5, the continuous test interval is 500mS. (5x100mS=500mS)

10. **Compare Mode Counter**: Set the comparison mode counter on/off, you can use the Select function key to make a selection.

    a. **ON:** Turn on the comparison mode counter.

    b. **OFF:** Turns off the comparison mode counter.

※When this function is enabled, the PASS/FAIL statistics will be displayed at the top right of Meter Mode, and the upper limit of the good and bad product statistics is 999, 999, 999, if this value is exceeded, it will return to 1 and continue to accumulate.

11. **Multi-Step Mode Counter**: Set the multi-step mode counter on/off, which can be selected using the Select function key.

    a. **ON:** Turn on the multi-step mode counter.

    b. **OFF:** Turns off the multi-step mode counter.

    ※After this function is enabled, the PASS/FAIL statistics will be displayed at the top right of the multi-step test mode, and the upper limit of the good and bad product statistics is 999, 999,999, if this value is exceeded, it will return to 1 and continue to accumulate.

12. **Save Data in USB:** Set in multi-step test mode, enable/disable the function of saving test data to USB pen drive.

    a. **OFF:** Turns off the function of saving test data to USB pen drive.

    b. **ON:** Enable the function of saving test data to USB pen disk, when the test is completed, the test data will be stored in the USB pen disk.

    ※When this function is enabled, please make sure that the USB flash drive is properly connected to the machine.

13. **Test Mode Font Size**: Set the test numerical text size of the multi-step test mode, you can use the Select function key to select.

    a. **Large:** Set the text size to large.

    b. **Small:** Sets the text size to small.

14. **Multi-Test Fast Mode**: Set the test mode of multi-step test mode, whether to start the quick test mode, you can use the Select function key to choose.

    a. **OFF:** Turn off the multi-step test quick test feature.

    b. **ON:** Enable the multi-step test rapid test function.

    ※The rapid test mode is only suitable for the same test object and the same test conditions (voltage and frequency).

15.**External DC Bias**：

a. **OFF:** Turn off the function of the external overlapping current machine.

b. **ON:** Turn on the function of external overlapping current machine.

Connect the Bias hole on the back panel to the LAN port on the 6243 series back panel using an Ethernet cable.

Example:

After completing the above steps, switch the dial switch to position 1 when connecting the first 6243. When expanding to the second unit, prepare another Ethernet cable to connect the LAN port on the back panel of the first 6243 to the LAN port on the second 6243. Also, remember to switch the dial switch on the second 6243 to position 2, and so on.

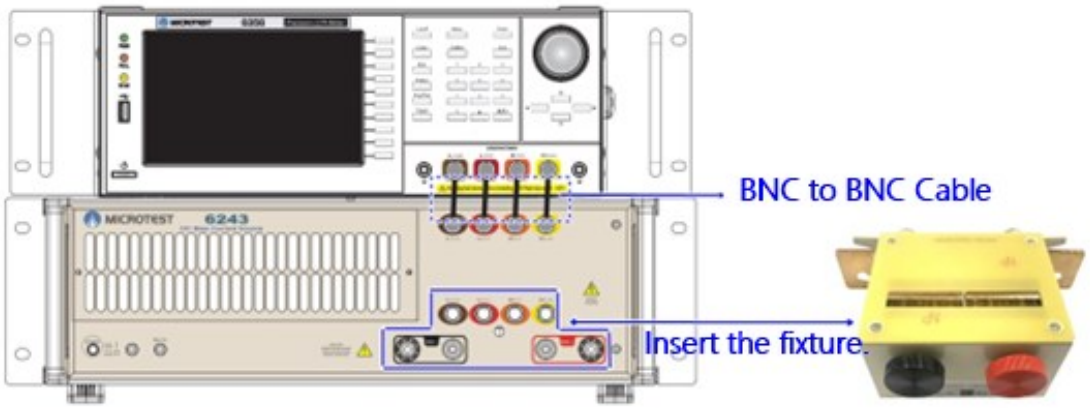


Figure 3-2-2 External DC Bias connection diagram (2/3).

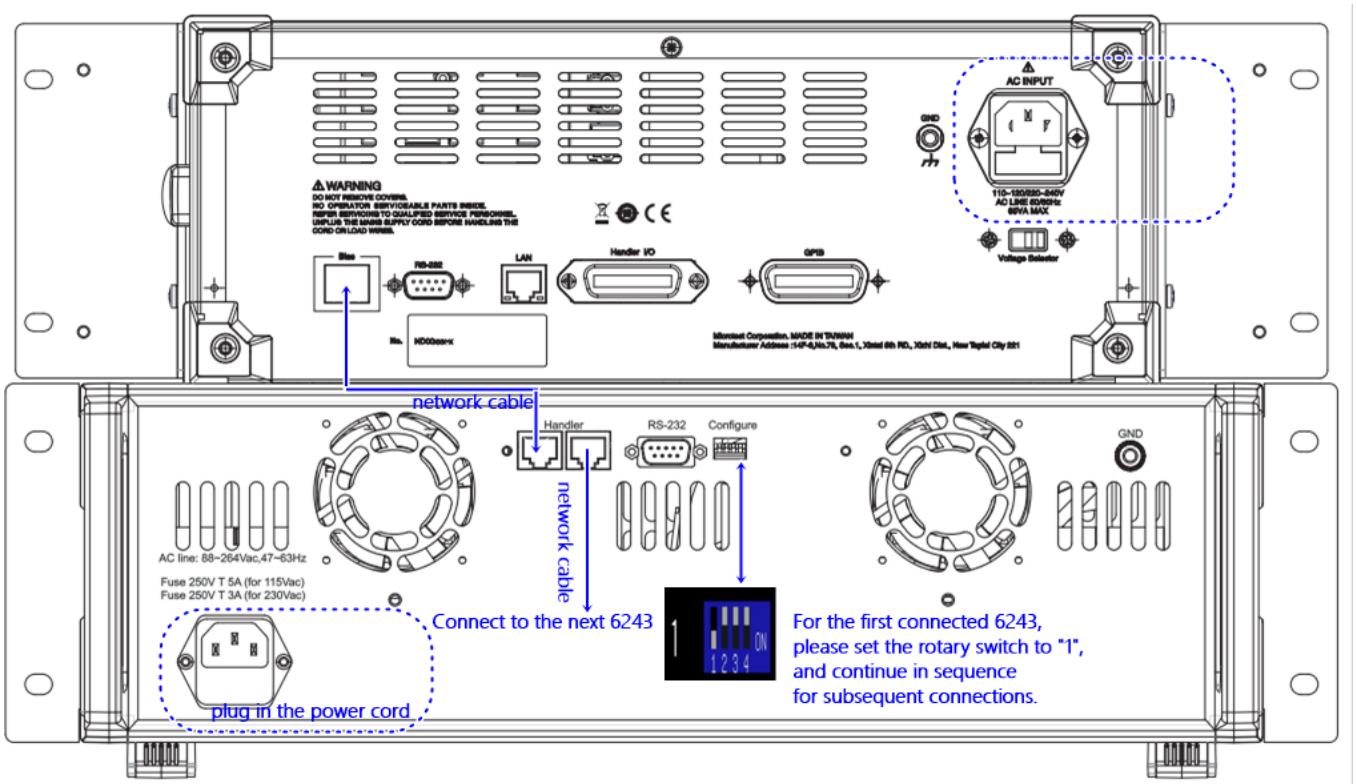


Figure 3-2-2 External DC Bias connection diagram (2/3).

※Press the DC BIAS option to check the connection status immediately.

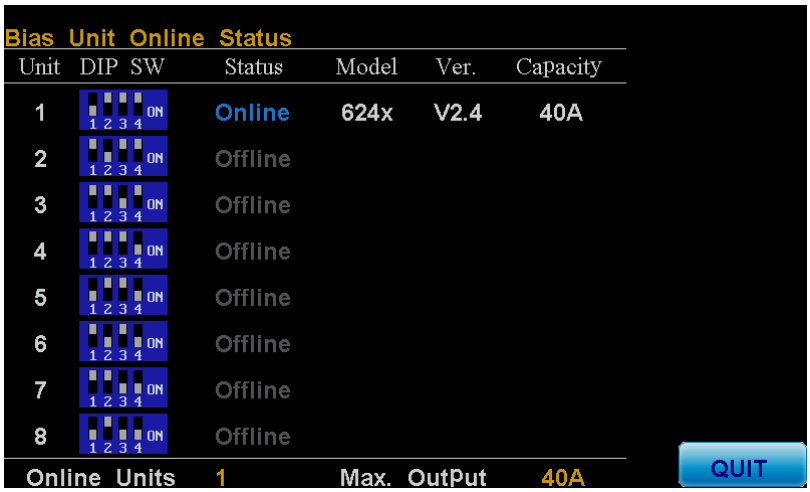


Fig. 3-2-2 DC Bias display figure (3/3).

16.**LAN Set**: Local Area Network (LAN) communication interface settings.

17. **About**: Displays the machine version information and machine serial number.

18. **DC BIAS**: Use External DC Bias to display connection status and model.

19. **LAN Set**: LAN communication interface configuration.

※To enable communication of the instrument via LAN, an Ethernet cable must be connected and its IP address configured.

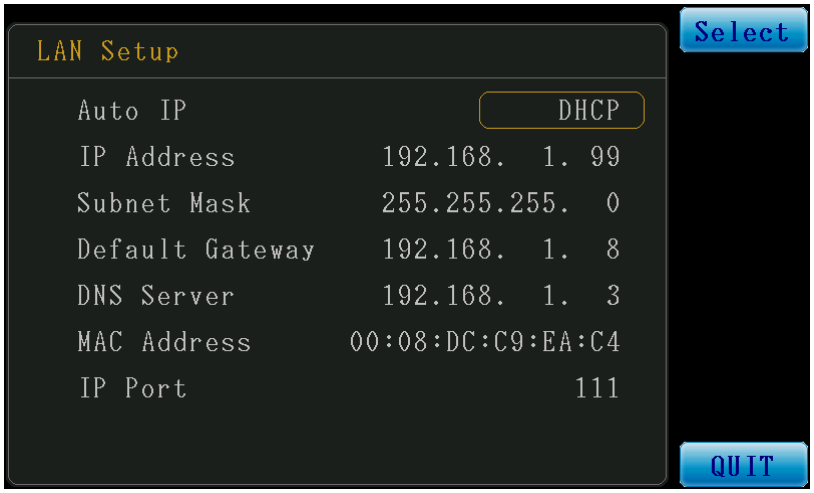


圖 3-2-3 LAN Setup

- Auto IP: Set to obtain IP automatically or configure it manually.
  - DHCP: Obtain available IP addresses automatically through a DHCP server.

    ※When using this setting, there is no need to configure other fields, and the cursor cannot move down either.

  - OFF: to manually configure the IP address, sub-network mask, default network gate, etc.
    - IP Address: The IP address setting field.
    - Subnet Mask: A subnet mask setting field.

- Default Gateway: The default gateway setting field.
- DNS Server: The DNS server settings field.
- MAC Address: The MAC address is displayed.
- IP Port: Port, fixed at 111.

Meter Mode

Press the **Menu** control key, the screen will display the main menu, press **METER** to enter the main screen (Meter Mode)。



Fig. 3-3-1 Meter Mode screen

- **Measurement Settings :**
  - **MODE: Measurement mode, AC (**AC mode) / DC (DC mode).

    ***DC mode only provides Rdc (DC resistance) measurement.**



Fig. 3-3-2 DC MODE screen (Rdc measurement only)

- **VOLT:** Measure voltage, set range 10mV~2.0V.

- **FREQ:** Measure frequency, which can only be set in AC mode.
  Setting range :
  10Hz~200kHz (6355)
  10Hz~500KHz (6356)

- **Speed:** Measures speed, there are four options: MAX (fast)/FAST (fast)/MED (medium)/SLOW (slow).
  Measurement time (without display update):
  MAX： 5mS
  FAST： 25mS
  MED： 100mS
  SLOW：250ms

- **Range:** Measures the gear, and its options are AUTO (Auto)/HOLD (Hold in Current Gear)/1 (Gear 1)/2 (Gear 2)/3 (Gear 3).

- **BIAS:** External superimposed current machine, according to the maximum output current of the external 622x or 624x instrument as the upper limit.



Fig. 3-3-3 Parameter selection screen-1



Fig. 3-3-4 Parameter selection screen-2

- **Up and down arrow keys:** used to move the yellow border and select the item of the test parameter you want to change.
- **Left and right arrow keys:** used to change the measurement parameters of the items selected by the yellow box, you can select OFF/Ls/Lp/Cs/Cp/Q/D/Rs/Rp/Z/θ/X/Y/G/B.
- **Function menu :**
  - **OFF:** Disable the measurement function of this project. (You cannot set all four items to close).
  - **Ls:** Set this item to measure Ls (series inductance).
  - **Lp:** Set this item to measure Lp (parallel inductance).
  - **Cs:** Set this item to measure Cs (series capacitance).
  - **Cp:** Set this item to measure Cp (parallel capacitance).
  - **Q :** Set this item to measure Q (quality factor).
  - **D :** Set the item to measure D (Dissipation Factor).
  - **Rs:** Set this item to measure Rs (series resistance).
  - **Rp:** Set this item to measure Rp (parallel resistance).
  - **Z :** Set the item to measure Z (impedance).
  - **θ:** Set the item to measure θ (angle).
  - **X:** Set the item to measure X (reactance).
  - **Y :** Set the item to measure Y (admittance).
  - **G :** Set the item to measure G (conductance).
  - **B :** Set the item to measure B (Susceptance).

- **More:** Switch to the next page menu.
- **Back:** Return to the measurement screen.

- **COMP.:(COMPARISON FUNCTION)**



Fig. 3-3-5 Comparison function setting screen (1/2).

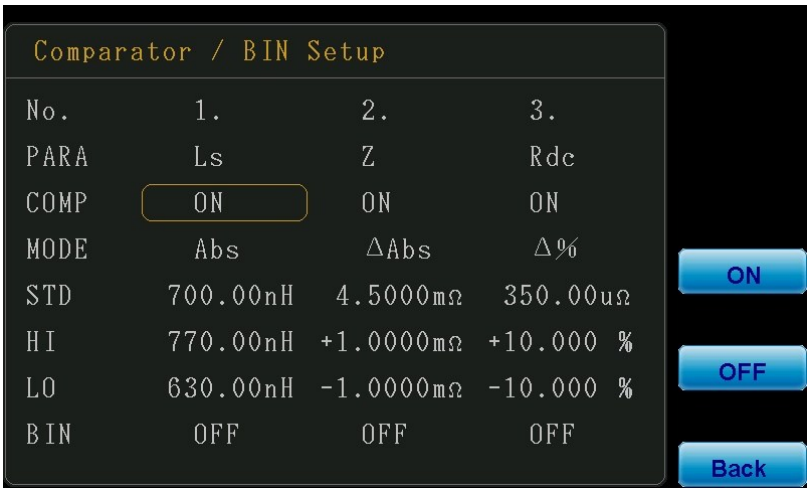


Fig. 3-3-5 Comparison function setting screen (2/2).

- **Comparison criteria settings :**
  - **COMP:** Set the comparison function ON (on)/OFF (off).
  - **MODE:** Sets the mode of comparison.

Abs: Its upper and lower limits are determined by the values entered in the HI/LO field.

ΔAbs: its upper limit is STD+HI; The lower limit is STD+LO.

Δ%: its upper limit is STD+(STD x HI%); The lower limit is STD+(STD x LO%).

- **STD:** Set the standard value.

- **HI:** Setting upper limit.
- **LO:** Lower limit of configuration.

◆ **Function menu :**

- **NO.1. :** Select Edit Measurement Item 1.
- **NO.2:** Select Edit Measurement Item 2.
- **NO.3:** Select Edit Measurement Item 3.
- **NO.4:** Select Edit Measurement Item 4.
- **NO.5:** Select Edit Measurement Item 5.
- **Back:** Return to the measurement screen.

The following figure shows the screen where the comparison function is turned on.



Fig. 3-3-6 Measurement screen with the comparison function turned on

FAIL: If the measurement value is lower than the lower limit, it will be displayed in red, and the light will FAIL will light up.
PASS: The measurement value will be displayed in green within the upper and lower limits, and the light will be lit up by PASS.

- **CAL.：**
  Calibration function, providing OPEN/SHORT correction.



Fig. 3-3-7 Meter Mode correction function screen

- **OPEN:** Enters the Open Correction menu.
  - **DC:** Initiates open DC correction.
  - **Spot:** Activates the open circuit correction currently configured for the "AC" setting.
  - **All Freq:** Initiates open correction at all frequencies.

- **SHORT:** Enter the short-circuit correction menu.
  - **DC:** Initiates DC short-circuit correction.
  - **Spot:** Initiates short-circuit correction for the current "AC" setting configuration.
  - **All Freq:** Initiates short-circuit correction at all frequencies.

※**It** is recommended that you perform an OPEN/SHORT correction before the first **measurement** or change **to another fixture or clamp**.

- **SETUP：**
  Meter Mode Setup

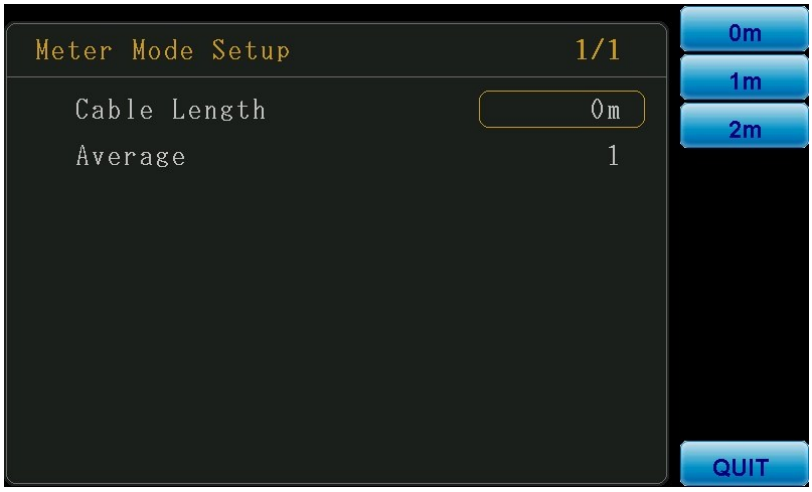


Fig. 3-3-8 Meter mode setting screen

- **Cable Length:** Set the cable length function, can be configured 0m/1m/2m, you need to purchase the special BNC test extension cable (F66301A/B/C) provided by the company.
  - **0m:** Set the cable length to 0m.
  - **1m:** Set the cable length to 1 m.
  - **2m:** Set the cable length to 2 m.

- **Average:** Average value 1~64 can be set.

※When switching and using different line lengths, you must correct the open/short circuit to zero before measuring.

Multi Step Mode

Press the Menu control key, the screen will display the main menu, press **MULTI** to enter the multi-test step mode
(Multi Step Mode)。

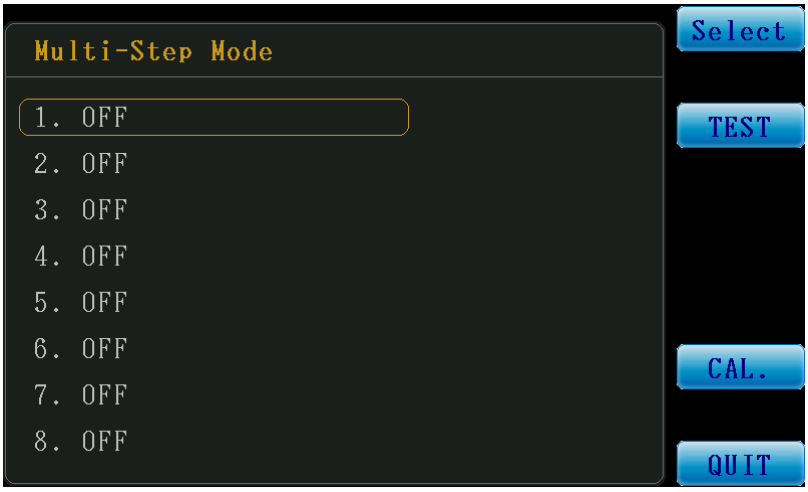


Fig. 3-4-1 Multi Step Mode screen

The figure above shows the Multi Step list, which easily presents each group of test configurations.

- **Multi-Step Mode list:**
  - **1~8:**8 group multi-step setting, you can use the up and down arrow keys to move to the item you want to edit.
  - **Select:** Click to enter the project where the yellow border is located and edit the test project.
  - **TEST:** Enter multi-step test mode.
  - **CAL.:** Open/short correction with multi-step function.
  - **QUIT:** Leave multi-step mode and return to the main menu.

The following figure shows the screen of the created test project:



Fig. 3-4-2 The screen of creating a test project has been established

- **Multi-Step Mode Editor:**



Fig. 3-4-3 Multi Step Mode editing screen

The area marked as Multi-Step Edit in the screen is the editing area, and the STEP 1 displayed on the left indicates that the first test item is now to be edited, and then you can use the arrow keys, that is, the function keys on the right side of the screen, to edit the required test items and test conditions.

In this screen, ITEM is in the OFF state, and you can select a test parameter on the right to open this test project, as shown in the following figure.



Fig. 3-4-3 Multi Step Mode editing screen

- **Quick menu:**
  - **PREV:** Switch the page to the previous test step.
  - **NEXT:** Switch the page to the next test step.

- **QUIT:** Leave the edit and return to the Multi-Step Mode list.

◆ **Multi-Step Edit:**

- **ITEM:** Test project settings, you can select the parameters on the right as follows:
  - **OFF:** Disable the measurement function of this project.
  - **Ls :** Set this item to measure Ls (series inductance).
  - **Lp:** Set this item to measure Lp (parallel inductance).
  - **Cs :** Set this item to measure Cs (series capacitance).
  - **Cp :** Set this item to measure Cp (parallel capacitance).
  - **Q :** Set this item to measure Q (quality factor).
  - **D :** Set the item to measure D (Dissipation Factor).
  - **Rs :** Set this item to measure Rs (series resistance).
  - **Rp :** Set this item to measure Rp (parallel resistance).
  - **Z :** Set the item to measure Z (impedance).
  - **θ:** Set the item to measure θ (angle).
  - **X:** Set the item to measure X (reactance).
  - **Y :** Set the item to measure Y (admittance).
  - **G :** Set the item to measure G (conductance).
  - **B :** Set the item to measure B (Susceptance).
  - **RDC:** Set this item to measure Rdc (DC resistance).

- **VOLT:** Set the measurement voltage, the setting range is 10mV~2.0V.
- **FREQ:** Set the measurement frequency, which can only be set in AC mode.
  Setting range :
  10Hz~200KHz (6355)/10Hz~500KHz (6356)

- **SPEED:** Set the measurement speed, there are four options of MAX (fast)/FAST (fast)/Med (medium)/Slow (slow).
- **MODE:** Sets the mode of comparison.

Abs: Its upper and lower limits are determined by the values entered in the HI/LO field.

ΔAbs: its upper limit is STD+HI; The lower limit is STD+LO.

Δ%: its upper limit is STD+(STD x HI%); The lower limit is STD+(STD x LO%).

- **STD:** Set the standard value, set the range -999G ~ +999G.
- **HI:** Set the upper limit, set the range -999G ~ +999G.
- **LO:** Set the lower limit, set the range -999G ~ +999G.
- **DELAY:** Set the delay time, set the range 0~5000 (mS).

◆ **Multi-Step Mode correction function:**

After editing the test project, please select "CAL." and make OPEN/SHORT corrections before starting to test the function.

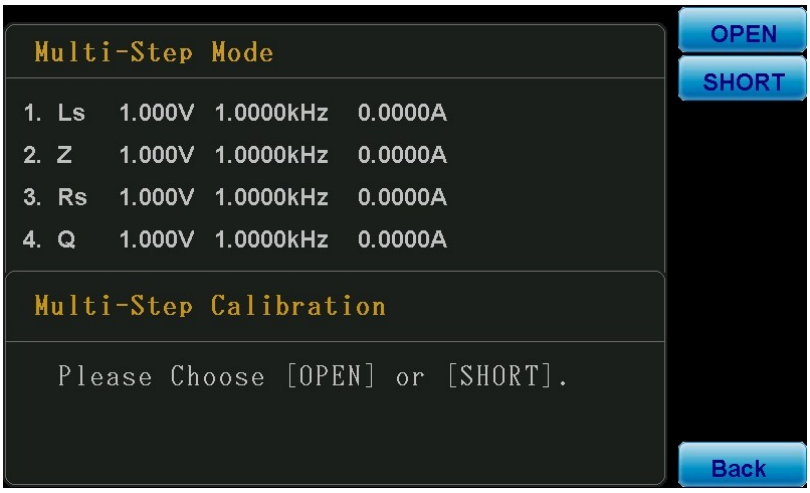


Fig. 3-4-5 Multi Step Mode correction screen

- **OPEN:** Start open correction.

- **SHORT:** Starts short correction.

● **Multi-Step Test Mode：**

The following figure shows the multi-step test screen, the test results will be displayed in the place of {READY} at the yellow box, {PASS} or {FAIL} at the end of the test, and the test data is displayed after each test item, with green font representing PASS and red font representing FAIL.



Fig. 3-4-6 Multi Step test screen

- **RUN:** Starts a multi-step test.
- **QUIT:** Returns the Multi-Step Mode test item list screen.

The test results are shown in the following figure:

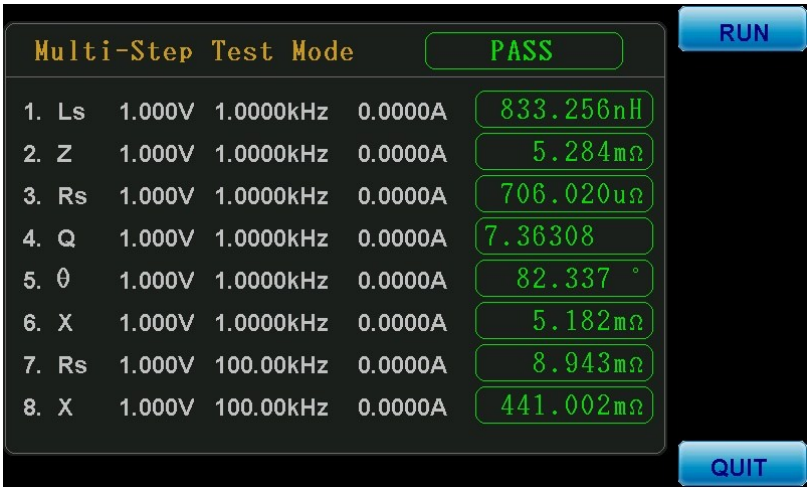


Fig. 3-4-7 Multi Step test completion screen

File management

Press the menu **File** control key, and the screen will display the main menu of file management.



FIG. 3-5-1 FILE MANAGEMENT screen

- **File Management:**
  - **LOAD: Load the archive.**
  - **SAVE AS: SAVE THE NEW FILE.**
  - **NEW: Create a new file.**
  - **DELETE: Delete the file**
  - **QUIT: Return to Main Menu**

- **LOAD FILE：**

  The following figure is the RAM FILE (internal file list) screen, you can use the arrow keys to select the file to be loaded, such as the file {6355} is displayed in green, that is, the currently selected file, you can click the right function key {LOAD} to load the file, and the file with the {@} symbol in front of the filename, indicating that the file is currently used.



Fig. 3-5-2 Internal file list screen

- **LOAD:** Loads the currently selected file.
- **USB File:** Switch to the USB flash drive file list screen, the screen is as follows.



Figure 3-5-3 USB flash drive file list screen

  - **RAM File:** A screen that returns the list of internal files.
  - **Copy to RAM:** Copy the currently selected file from the USB flash drive to the memory of the machine.
  - **PgDn:** Skip to next page.
  - **PgUp:** Skip to the previous page.
  - **QUIT:** Returns to the file management page.
- **Copy to USB:** Copy the currently selected file to the USB flash drive.
  6355 Its archive path is (USB:\6355_LCR\SetFile).
  6356 has an archive path of (USB:\6356_LCR\SetFile).
- **PgDn:** Skip to next page.
- **PgUp:** Skip to the previous page.
- **QUIT:** Returns to the file management page.

◆ **SAVE AS：**

The following figure is the operation interface of SAVE AS (save new file), you can use the arrow keys to select the English letters and numbers in the screen to form the file name, such as {A} is displayed in green, that is, the currently selected letter, you can click the right function key {Select} to type {A} word, when the input is completed, you can select {OK} to complete the function of saving a new file.

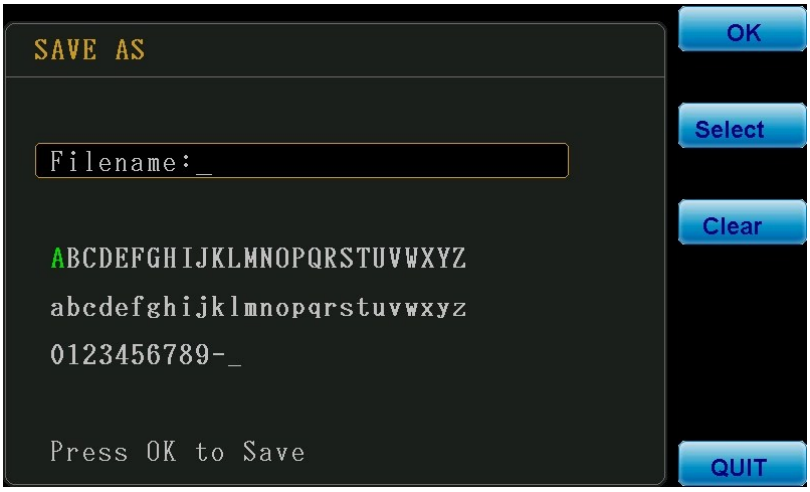


Fig. 3-5-3 SAVE AS screen

- **Filename:** The file name input area.
- **OK:** Archive confirmation key.
- **Select:** The confirmation key for selecting the file name literally.
- **Clear:** The filename delete key, clearing the last text one at a time.
- **QUIT:** Returns to the file management page.

◆ **NEW：**

The following figure is the operation interface of NEW FILE (create a new file), you can use the arrow keys to select the English letters and numbers in the screen to form the file name, such as {A} is displayed in green, that is, the currently selected letter, you can click the right function key {Select} to type {A} words, when the input is completed, you can select {OK} to complete the function of creating a new file.

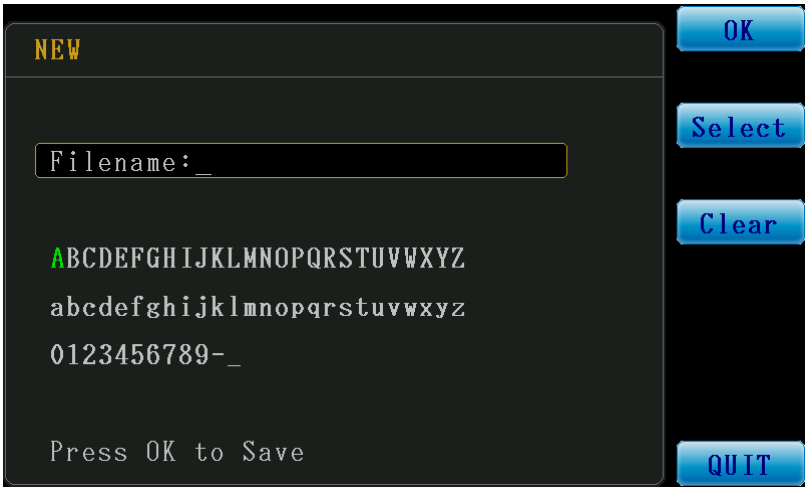


FIG. 3-5-4 NEW FILE screen

- **Filename:** The file name input area.
- **OK:** Archive confirmation key.
- **Select:** The confirmation key for selecting the file name literally.
- **Clear:** The filename delete key, clearing the last text one at a time.
- **QUIT:** Returns to the file management page.

◆ **DELETE：**

The following figure is the operation interface of DELETE FILE (delete file), you can use the arrow keys to select the file you want to delete, such as {6355} is green, that is, the currently selected file, you can click the right function key {DELETE} function key to delete the file, and the file name with the {@} symbol in front of the file, indicating that the file is currently used archive, can not be deleted, must load other files before you can delete the file.

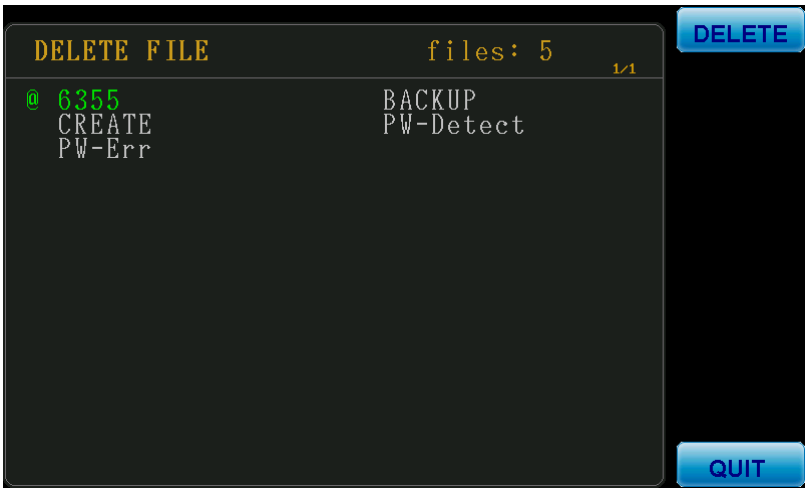


Fig. 3-5-5 DELETE FILE screen

- **DELETE:** Deletes the currently selected file.
- **PgDn:** Skip to next page.
- **PgUp:** Skip to the previous page.
- **QUIT:** Returns to the file management page.

Instruction set

- **Command Structure**

① ② ③ ④

:MEAS:AVER	␣	<NR1>	LF

1. Instructions
2. Spaces
3. Parameters
4. The closing character

- **Parameter category**

<NR1>	Integers	such as 0, 1, 2, 3
<NR2	Decimal number	such as 0.1, 1.23, 2.0
<NR3>	Float	such as 2.5E-1, 6.25E+1
<disc>	Discrete data	such as ON, OFF, MAX

- **The ending character**

\n(0xa) Line feed code.(LF)

- **Remark**

Directives are not case-sensitive.

The International System of Units; SI) The directives are as follows:

“G” (Giga) (10^9)
“MA” (Mega) (10^6)
“K” (Kilo) (10^3)
“m” (Milli) (10^{-3})
“u” (Micro) (10^{-6})
“n” (Nano) (10^{-9})
“p” (Pico) (10^{-12})
“f” (Femto) (10^{-15})

The following instruction sets are based on 6355 as an example of frequency-related settings, and the frequency ranges for each model are as follows:

6355 (10Hz~200KHz) / 6356 (10Hz~500KHz)

*IDN?

(Identification query) Identification query.

Responses: Information on manufacturer, machine model, serial number, firmware version.

Example：

***IDN?**

Returns:

MICROTEST,6355,S00001,E 2. 205110

*MARKET

(Triggers a direct measurement) Triggers a measurement but does not return the result.

Can be used in Meter Mode and Multi Step Test Mode.

Example：

***MARKET**

:CAL:OPEN:ALL?

Perform open circuit correction at 10Hz~200kHz frequency and read back the execution result.

Responses：

OK (calibration successful)
NG (calibration failure)

Example：

:CAL:OPEN:ALL? Returns**:OK**

:CAL:OPEN:DC?

Perform an open circuit correction of direct current (DC) and read back the execution results.

Responses：

OK (calibration successful)
NG (calibration failure)

Example：

:CAL:OPEN:DC? Returns**:OK**

:CAL:OPEN:SPOT?

Perform an open-circuit correction of the current frequency of alternating current (AC) and read back the execution result.

Responses：

OK (calibration successful)
NG (calibration failure)

Example：

:CAL:OPEN:SPOT? Returns: **OK**

:CAL:SHORT:ALL?

Perform short-circuit correction at 10Hz~200kHz frequency and read back the execution result.

Responses：

OK (calibration successful)
NG (calibration failure)

Example：

:CAL:SHORT:ALL? Returns **:OK**

:CAL:SHORT:DC?

Perform a short-circuit correction of direct current (DC) and read back the execution results.

Responses：

OK (calibration successful)

NG (calibration failure)

Example：

:CAL:SHORT:DC? Returns**: OK**

:CAL:SHORT:SPOT?

Perform a short-circuit correction of the alternating current frequency (AC) and read back the execution result.

Responses：

OK (calibration successful)

NG (calibration failure)

Example：

:CAL:SHORT:SPOT? Returns: **OK**

:DISP:PAGE <disc>

Select the page you want to display.

Parameters：

MEAS settings display page to Meter Mode

LSET sets the display page to Multi Step Edit Mode

LRUN sets the display page to Multi Step Test Mode

Example：

:DISP:PAGE MEAS

:DISP:PAGE?

Ask about the page that is currently displayed.

Responses：

MEAS currently displays the page in Meter Mode

LSET currently displays the page in Multi Step Edit Mode

LRUN currently displays the page in Multi Step Test Mode

OTHER is not currently on the above page.

Example：

:DISP:PAGE? Returns**: MEAS**

:FETCH? (for Meter Mode)

When in meter mode, the measured data and comparison results can be transmitted back according to the display order of the current measurement items.

It can be used in meter mode and multi step test mode, and the instructions here apply to meter mode.

Responses：

<Data 1>,<Data 2>,<Data 3>,<Data 4>,<Comp 1>,<Comp 2>,
<Comp 3>,<Comp 4>

Return parameter help :

<Data>

For measurement data, the return format uses <NR3> scientific notation format.

Data 1~4 represents the measurement data of the four test items, only the items that are turned on will have values; For example, if only two test projects are opened, two data will be returned; Or in DC mode, only Rdc items can be measured, and only one set of data is transmitted back.

<Comp>

Measurement data comparison results, the callback format uses <NR1 >, which

is defined as follows:

0 Compare function turned off

1The result of the comparison is OK

2The comparison result is NG

Comp 1~4 represents the test data comparison results of the four test items, as long as any test item turns on the comparison function, the comparison results will be sent back, and its arrangement order is consistent with the <Data>.

EX1:

4 test items, the comparison function is turned off, the return result is

<Data 1>,<Data 2>,<Data 3>,<Data 4>

EX2:

For 4 test items, if the comparison function of one or all of the projects is enabled, the return result is

<Data 1>,<Data 2>,<Data 3>,<Data 4>,<Comp 1>,<Comp 2>,

<Comp 3>,<Comp 4>

EX3:

For the 2 test projects, the comparison function is turned off, and the return result is

<Data 1>,<Data 2>

EX4:

For 4 test items, if the comparison function of one or all of the projects is enabled, the return result is

<Data 1>,<Data 2>,<Comp 1>,<Comp 2>,

Example：

:FETCH?

Returns

1.000060E+02,3.791240E-04,1.000060E+02,9.999395E-03,1,1,1,1

:FETCH? (for Multi Step Test Mode)

In the multi-step list test mode, the measured data and results can be returned according to the order of the test items.

It can be used in meter mode and Multi Step Test Mode, which is described here for Multi Step Test Mode.

Responses：

<Result>,<Step 1 Result>,<Step 1 Data>,<Step 2 Result>,
<Step 2 Data>… <Step n Result>,<Step n Data>

Return parameter help :

<Result>

Multi-step list mode test results, the callback format uses <NR1 >, which is defined as follows:

0 test interrupt did not complete

1. Test steps: All OK

2 NG in the test step

<Step Result>

The results of each step test determine that the callback format uses <NR1 >, which is defined as follows:

0 Not tested
1 The test result is OK
2 The test result is NG

<Step Data>

The test data for each step is in the callback format using <NR3> scientific notation format.

Example：
:FETCH?
Returns
1,1,1.000060E+02,1,3.791240E-04,1,1.000060E+02,1,9.999395E-03

:SYSTem:EXTernal:BIAS {ON | OFF}

Set the external overlapping current machine Yes/No to turn on. (This setting item is in the system settings)

Example：
:SYSTem:EXTernal:BIAS ON

:SYSTem:EXTernal:BIAS?

Ask if the external superimposed current machine is turned on
Responses: Transmit back the current external overlapping current machine status.

Example：
:SYSTem:EXTernal:BIAS? Returns**:ON**

:MEASure:BIAS:CURRent {0~320}

Set the bias current value for METER MODE.
Parameters: Set the range 0~320

Example：
:MEASure:BIAS:CURRent 40

:MEASure:BIAS:CURRent?

ASK METER MODE FOR THE BIAS CURRENT VALUE?

Responses: Return the current value of the current BIAS (0~320).

Example：

:MEASure:BIAS:CURRent? Returns**:4.000000E+01**

:MEASure:BIAS:STATe {ON | OFF}

Set the bias current of METER MODE to ON/OFF

Example：

MEASure:BIAS:STATe ON

MEASure:BIAS:STATe OFF

:MEASure:BIAS:STATe?

ASK METER MODE BIAS CURRENT OUTPUT STATUS?

Responses: Is there an output to the current current that transmits the current BIAS?

Example：

:MEASure:BIAS:STATe? Returns**:OFF**

:MEAS:AVER <NR1>

Set the average number of measurements.

Parameters: Set range 1~64

Example：

:MEAS:AVER 4

:MEAS:AVER?

Ask about the average number of measurements.

Responses: The setting value of the current average number of callbacks (1~64).

Example：

:MEAS:AVER? Returns: **4**

:MEAS:BEEP <disc>

When setting the Compare mode, the buzzer prompts the timing.

Parameters：

OFF turns off the buzzer prompt function

NG turns on the buzzer prompt function and sounds when FAIL

OK: Turn on the buzzer alert function and sound when PASS

Example：

:MEAS:BEEP OFF

:MEAS:BEEP?

When asked about Compare mode, the buzzer prompts the timing.

Responses：

OFF turns off the buzzer prompt function

NG turns on the buzzer prompt function and sounds when FAIL

OK: Turn on the buzzer alert function and sound when PASS

Example：

:MEAS:BEEP? Returns: **OFF**

:MEAS:FREQ <NR3|disc>

Set the measurement frequency.

Parameters：

10~200000(Frequency setting range 10Hz~200kHz)

The MAX is set to 200kHz

MIN is set to 10Hz (6355).

Example：

:MEAS:FREQ 1000

:MEAS:FREQ 1k

:MEAS:FREQ 1kHz

:MEAS:FREQ 1E3

:MEAS:FREQ MAX

:MEAS:FREQ MIN

:MEAS:FREQ?

Ask about the current measurement frequency.

Responses：

The callback format uses <NR3> scientific notation format.

Example：

:MEAS:FREQ? Returns:**1.000000E+03**

:MEAS:LENG <NR1>

Set line length 0 m/1 m/2 m.

Parameters: Set the range 0~2

Example：

:MEAS:LENG 0

:MEAS:LENG?

Ask for the setting of the cable length 0m/1m/2m.

Responses: Return the set value of the current line length (0~2).

Example：

:MEAS:LENG? Returns: **0**

:MEAS:MODE <disc>

Set the measurement mode.

Parameters：

AC setting measurement mode to alternating current (AC)

DC sets the measurement mode to direct current (DC)

Example：

:MEAS:MODE AC

:MEAS:MODE?

Ask about the current measurement mode.

Responses：

AC measurement mode is alternating current (AC)

DC measurement mode is direct current (DC)

Example：

:MEAS:MODE? Returns**:AC**

:MEAS:PARA <disc-1>,<disc-2>,<disc-3>,<disc-4>

Set the measurement parameters, corresponding to the four AC measurement parameters in the meter mode, at least one group needs to be set, and all of them cannot be set to OFF, and a maximum of four sets of measurement parameters must be set.

Parameters：

Its <disc > parameters are defined as follows

OFF	turns off the measurement
LS	series inductor (Ls).
LP	parallel inductor (Lp).
CS	series capacitor (Cs).
CP	parallel capacitance (Cp).
RS	series resistance (Rs).
RP	parallel resistance (Rp).
X	reactance (X).
B	Susceptance(B).
Z	impedance (Z).
Y	admittance(Y)
D	dissipation factor(D).
Q	quality factor (Q).
DEG	angle (θ).

G	conductance (G).

Example：

:MEAS:PARA Z,DEG,X,RS

Let the first item be Z, the second be DEG(θ), the third be X, and the fourth be RS

:MEAS:PARA Z,DEG,OFF,RS

Set the first item to Z, the second to DEG(θ), the third to close, and the fourth to RS

:MEAS:PARA Z,DEG

Set the first item to Z, the second to DEG(θ), and the third and fourth groups are not set to be treated as OFF

:MEAS:PARA?

Ask about the current measurement parameters.

Responses：

< Para 1>,<Para 2>,<Para 3>,<Para 4>

The callback parameter <Para> is defined as follows:

OFF	turns off the measurement
LS	series inductor (Ls).
LP	parallel inductor (Lp).
CS	series capacitor (Cs).
CP	parallel capacitance (Cp).
RS	series resistance (Rs).
RP	parallel resistance (Rp).
X	reactance (X).
B	Susceptance(B).
Z	impedance (Z).
Y	Admittance (Y)
D	dissipation factor(D).
Q	quality factor (Q).
DEG	angle (θ).
G	conductance (G).

Example：

:MEAS:PARA? returns Z,DEG,X,RS

The first item is Z, the second is DEG(θ), the third is X, and the fourth is RS

:MEAS:PARA? returns Z,DEG,OFF,OFF

The first item is Z, the second is DEG(θ), and the third and fourth are OFF

:MEAS:RANG <NR1>

Set the measurement level.

Parameters：

The setting range is from 1~3.

Example：

:MEAS:RANG 1

:MEAS: RANG?

Ask about the current measurement level.

Responses：

Return gear 1~3.

Example：

:MEAS:RANG? Returns**:1**

:MEAS:RANK:AUTO

Set the measurement gear to Auto Shift.

Example：

:MEAS:RANK:AUTO

:MEAS:RANG:HOLD

Set the measurement gear and keep it fixed in the current gear.

Example：

:MEAS:RANG:HOLD

:MEAS:TIME <disc>

Set the measurement speed.

Parameters：

You can set one of the following speeds

MAX	is the fastest
FAST	is fast
MED	medium speed
SLOW	slow

Example：

:MEAS:TIME SLOW

:MEAS:TIME?

Ask about the current measurement speed.

Responses：

One of the following speeds is passed back

MAX	is the fastest
FAST	is fast
MED	medium speed
SLOW	slow

Example：

:MEAS:TIME? Returns**:SLOW**

:MEAS:TRIG:DEL <NR1>

Set the trigger delay time.

Parameters：

The setting range is from 0~5000, and its unit is mS.

Example：

:MEAS:TRIG:DEL 100

:MEAS:TRIG:DEL?

Ask about the current trigger delay time.

Responses：

Return 0~5000, its unit is mS.

Example：

:MEAS:TRIG:DEL? Returns:**100**

:MEAS:TRIG:MODE <disc>

Set the trigger mode.

Parameters：

REP continuous trigger mode

SING single trigger mode

Example：

:MEAS:TRIG:MODE REP

:MEAS:TRIG:MODE?

Ask about the current trigger mode.

Responses：

REPEAT continuous trigger mode

SINGLE single trigger mode

Example：

:MEAS:TRIG:MODE? Returns:**REPEAT**

:MEAS:VOLT <NR3|disc>

Set the measured voltage.

Parameters：

0.01~2.0	(voltage setting range 10mV~2.0V).
MAX	is set to 2.0V
MIN	is set to 10mV

Example：

:MEAS:VOLT 1

:MEAS:VOLT 1V

:MEAS:VOLT 100mV

:MEAS:VOLT 1E-1

:MEAS:VOLT MAX

:MEAS:VOLT MIN

:MEAS:VOLT?

Ask about the current measured voltage.

Responses：

The callback format uses <NR3> scientific notation format.

Example：

:MEAS:VOLT? Returns**:1.000000E+00**

:MEAS:COMP:LOW <NR3|disc>

Set the lower limit value of the comparison function.

Parameters：

<NR3> (setting range -999G ~ +999G)

MAX set to maximum (+999G)

MIN set to minimum (-999G)

Example：

:MEAS:COMP:LOW 1000

:MEAS:COMP:LOW 1k

:MEAS:COMP:LOW MAX

:MEAS:COMP:LOW?

Ask the lower limit of the comparison function.

Responses：

The callback format uses <NR3> scientific notation format.

Example：

:MEAS:COMP:LOW?

Returns:

1.000000E+03

:MEAS:COMP:MODE <disc>

Sets the comparison mode for the comparison function.

Parameters：

ABS measurement

DEV deviation value

Percentage of PERC deviation value

Example：

:MEAS:COMP:MODE ABS

:MEAS:COMP:MODE?

Comparison mode for the Ask Compare feature.

Responses：

Loopback one of the following patterns

ABS measurement

DEV deviation value

Percentage of PERC deviation value

Example：

:MEAS:COMP:MODE? Returns**: ABS**

:MEAS:COMP:NOM <NR3|disc>

Set the standard values for the comparison function.

Parameters：

<NR3> (setting range -999G ~ +999G)

MAX set to maximum (+999G)

MIN set to minimum (-999G)

Example：

: MEAS:COMP:NAME 1000

: MEAS:COMP:NAME 1k

: MEAS:COMP:MAX NAME

:MEAS:COMP: NOM?

Ask for standard values for comparison functions.

Responses：

The callback format uses <NR3> scientific notation format.

Example：

:MEAS:COMP:NOM? Returns**: 1.000000E+03**

:MEAS:COMP:PARA <NR1>

Set the parameter items to be set by the comparison function.

Parameters：

The parameter settings use the <NR1> format, which is defined as follows:

1. Set the first set of measurement parameters in AC mode
2. Set the second set of measurement parameters in AC mode
3. Set the third set of measurement parameters in AC mode
4. Set the fourth set of measurement parameters in AC mode

5 Setting Measurement Parameters (RDC) in DC Mode

Example：

: MEAS:COMP:PARA 1

: MEAS:COMP:PARA 5

:MEAS:COMP: PARA?

May I know the context of this question? If I translate it literally, it would be:

"Enquiry: Which parameter is currently set for the comparison function?

Responses:

The return format uses <NR1>, which is defined as follows:

The current comparison function is setting the first set of measurement parameters in AC mode.

The current comparison function is setting the second set of measurement parameters in AC mode.

The current comparison function is setting the third set of measurement parameters in AC mode.
The current comparison function is setting the fourth set of measurement parameters in AC mode.
The current comparison function is setting the measurement parameter (RDC) in DC mode.
"**Example**：

:MEAS:COMP:FOR? Returns**: 1**

:MEAS:COMP:STAT <disc| NR1>

Set the comparison feature on or off.
Parameters：

OFF or 0 sets the group comparison feature to off
ON or 1 sets the group comparison function to on

Example：

: MEAS:COMP:STAT 1

:MEAS:COMP:STAT?

Ask the comparison feature to turn on or off.
Responses：

The following parameters are callback
OFF is currently turned off for this group comparison feature
ON: The group comparison function is currently enabled

Example：

:MEAS:COMP:STAT? Returns **: ON**

:MEAS:COMP:UPP <NR3>

Set the upper limit of the comparison function.
Parameters：

<NR3> (setting range -999G ~ +999G)
MAX set to maximum (+999G)

MIN set to minimum (-999G)

Example：

:MEAS:COMP:UPP 1000

:MEAS:COMP:UPP 1k

:MEAS:COMP:UPP MAX

:MEAS:COMP:UPP?

Ask the upper limit of the comparison function.

Responses：

The callback format uses <NR3> scientific notation format.

Example：

:MEAS:COMP:UPP? Returns **: 1.000000E+03**

:MEAS:COUN <disc>

When setting the meter mode, whether to turn on the PASS and FAIL counters of the comparison function.

Parameters：

ON turns on the meter mode counter

OFF turns off the meter mode counter

Example：

:MEAS:COUN ON

:MEAS:COUN?

When asking for meter mode, the PASS and FAIL counters of the comparison function are on or off.

Responses：

Loopback one of the following patterns

The ON meter mode counter is on

The OFF meter mode counter is off

Example：

:MEAS:COUN? Returns **:ON**

:MEAS:COUN:RES

When setting the meter mode (Meter mode), reset the PASS and FAIL counter functions of the comparison function.

Example：

:MEAS:COUN:RES

:MEAS:COUN:VAL?

When asking the meter mode (Meter mode), compare the current values of the PASS and FAIL counters of the function.

Responses：

The callback format uses <NR1 >

<PASS Value>,<FAIL Value>

Example：

:MEAS:COUN:VAL? Returns **:1,0**

:LIST:BEEP <disc>

When setting Multi Step Test mode, the buzzer prompts the timing.

Parameters：

ON Turn on the buzzer tone

OFF turns off the buzzer tone

Example：

:LIST:BEEP ON

:LIST:BEEP?

When asked about Multi Step Test mode, the buzzer prompts the timing.

Responses：

ON Turn on the buzzer tone

OFF turns off the buzzer tone

Example：

:LIST:BEEP? Returns **: ON**

:LIST:COMP:LOW <NR3>

Sets the lower limit value for multi-step list mode.

Parameters：

<NR3> (setting range -999G ~ +999G)

MAX set to maximum (+999G)

MIN set to minimum (-999G)

Example：

:LIST:COMP:LOW 1000

:LIST:COMP:LOW 1k

:LIST:COMP:LOW MAX

:LIST:COMP:LOW?

Ask for the lower limit of the multi-step list mode.

Responses: The callback format uses <NR3> scientific notation format.

Example：

:LIST:COMP:LOW? Returns**: 1.000000E+03**

:LIST:COMP:MODE <disc>

Sets the comparison mode for multi-step list mode.

Parameters：

ABS measurement

DEV deviation value

Percentage of PERC deviation value

Example：

:LIST:COMP:MODE ABS

:LIST:COMP:MODE?

Compare mode for multi-step list mode.

Responses：

Loopback one of the following patterns

ABS measurement

DEV deviation value

Percentage of PERC deviation value

Example：

:LIST:COMP:MODE? Returns **:ABS**

:LIST:COMP:NOM <NR3>

Sets the standard value for multi-step list mode.

Parameters：

<NR3> (setting range -999G ~ +999G)

MAX set to maximum (+999G)

MIN set to minimum (-999G)

Example：

:LIST:COMP:NOM 1000

:LIST:COMP:NOM 1k

:LIST:COMP:NOM MAX

:LIST:COMP:NOM?

Ask for standard values for multi-step list patterns.

Responses: The callback format uses <NR3> scientific notation format.

Example：

:LIST:COMP:NOM? Returns : **1.000000E+03**

:LIST:COMP:UPP <NR3>

Set the upper limit for the multi-step checklist mode.

Parameters：

<NR3> (setting range -999G ~ +999G)

MAX set to maximum (+999G)

MIN set to minimum (-999G)

Example：

:LIST:COMP:UP 1000

:LIST:COMP:UPP 1k

:LIST:COMP:UPP MAX

:LIST:COMP:UPP?

Ask for the upper limit of the multi-step list mode.

Responses: The callback format uses <NR3> scientific notation format.

Example：

:LIST:COMP:UPP? Returns**: 1.000000E+03**

:LIST:COUN <disc>

When setting the Multi Step Test mode, whether to enable the PASS and FAIL counter functions.

Parameters：

ON turns on the multi-step test mode counter

OFF turns off the multi-step test mode counter

Example：

:LIST:COUN ON

:LIST:COUN?

When asked about Multi Step Test mode, the PASS and FAIL counter functions are turned on or off.

Responses：

Loopback one of the following patterns

The ON multi-step test mode counter is on

The OFF multi-step test mode counter is off

Example：

:LIST:COUN? Returns **: ON**

:LIST:COUN:RES

When setting the Multi Step Test mode, reset the PASS and FAIL counter functions.

Example：

:LIST:COUN:RES

:LIST:COUN:VAL?

When asking for Multi Step Test mode, the PASS and FAIL counters function the current value.

Responses：

The callback format uses <NR1 >

<PASS Value>,<FAIL Value>

Example：

:LIST:COUN:VAL? Returns**: 1,0**

:LIST:DEL <NR1>

Set the measurement delay time for multi-step list mode.

Parameters：

The setting range is from 0~5000 mS.

Example：

:LIST:COMP:DEL 100

:LIST:DEL?

Ask about the measurement delay time for multi-step list mode.

Responses：

Backhaul 0~5000 in mS.

Example：

:LIST:COMP:DEL? Returns**: 100**

:LIST:FAST <disc>

When setting the Multi Step Test mode, whether to enable the quick test function.

Parameters：

ON enables the multi-step test mode quick test function

OFF turns off the multi-step test mode quick test function

Example：

:LIST:FAST ON

:LIST:FREQ <NR3|disc>

Set the measurement frequency of the multi-step comparison function.

Parameters：

10~200000(Frequency setting range 10Hz~200kHz)

The MAX is set to 200kHz

MIN is set to 10Hz (6355).

Example：

:LIST:FREQ 1000

:LIST:FREQ 1k

:LIST:FREQ 1kHz

:LIST:FREQ 1E3

:LIST:FREQ MAX

:LIST:FREQ MIN

:LIST:FREQ?

Ask about the measurement frequency of the multi-step comparison function.

Responses：

The callback format uses <NR3> scientific notation format.

Example：

: LIST:FREQ? Returns**:1.000000E+03**

:LIST:PARA <disc>

Set measurement parameters for multi-step list mode.

Parameters：

Its parameters are defined as follows:

OFF	turns off the measurement
LS	series inductor (Ls).
LP	parallel inductor (Lp).
CS	series capacitor (Cs).
CP	parallel capacitance (Cp).
RS	series resistance (Rs).
RP	parallel resistance (Rp).
X	reactance (X).
B	Susceptance(B).

Z	impedance (Z).
Y	admittance (Y)
D	dissipation factor(D).
Q	quality factor (Q).
DEG	angle (θ).
G	conductance (G).
RDC	direct current group (RDC).

Example：

:LIST:PARA Z

Set the test item to Z

:LIST:PARA OFF

Set test project to OFF (disabled)

:LIST: PARA?

Ask for measurement parameters for multi-step list mode.

Responses：

The callback parameters are defined as follows:

OFF	turns off the measurement
LS	series inductor (Ls).
LP	parallel inductor (Lp).
CS	series capacitor (Cs).
CP	parallel capacitance (Cp).
RS	series resistance (Rs).
RP	parallel resistance (Rp).
X	reactance (X).
B	Susceptance(B).
Z	impedance (Z).
Y	admittance(Y)
D	dissipation factor(D).
Q	quality factor (Q).
DEG	angle (θ).
G	conductance (G).
RDC	direct current group (RDC).

Example：

:LIST:PARA? Returns **Z**

The loopback test item is Z

:LIST:PARA? Returns **OFF**

Returns the item as OFF (disabled)

:LIST:RESCAN <NR1>

When setting the multi-step test mode, the interval between continuous and continuous testing.

- When set to 0, the continuous test function is disabled.
- When the setting value is between 1~100, the continuous test function is started, and the continuous test interval time is set to x100mS.

Parameters: Set the range 0~100

Example：

:TRAN:RESCAN 0

:LIST:RESCAN?

When asking about the multi-step test mode, the interval between continuous and continuous testing.

- When set to 0, the continuous test function is disabled.
- When the setting value is between 1~100, the continuous test function is started, and the continuous test interval time is set to x100mS.

Responses: Recall the current setting value (0~100).

Example：

:TRAN:RESCAN? Returns**:0**

:LIST:STEP <NR1>

Set the steps for programming in multi-step list mode.

Parameters：

1~8 (set the current multi-step list mode programming step 1~8)

Example：

:LIST:STEP 1

The multi-step list pattern is currently programmed as -step 1

:LIST:STEP8

The multi-step list pattern is currently programmed as -step 8

:LIST:STEP?

Ask about the steps for programming in multi-step list mode.

Responses：

Callback 1~8 indicates that the current multi-step list mode programming steps 1~8.

Example：

:LIST:STEP? Returns**:1**

:LIST:TIME <disc>

Set the measurement speed for multi-step list mode.

Parameters：

You can set one of the following speeds

MAX is the fastest

FAST is fast

MED medium speed

SLOW slow

Example：

:LIST:TIME SLOW

:LIST:TIME?

Ask about the measurement speed of the current multi-step list mode.

Responses：

One of the following speeds is passed back

MAX is the fastest

FAST is fast

MED medium speed

SLOW slow

Example：

:LIST:TIME? Returns**:SLOW**

:LIST:VOLT <NR3 | disc>

Set the measured voltage in multi-step list mode.

Parameters：

0.01~2.0(Voltage setting range 10mV~2.0V)

The MAX is set to 2.0V

The MIN is set to 10mV

Example： **:LIST:VOLT 1**

:LIST:VOLT 1V

:LIST:VOLT 100mV

:LIST:VOLT 1E-1

:LIST:VOLT MAX

:LIST:VOLT MIN

:LIST:VOLT?

Ask for the measured voltage in multi-step list mode.

Responses：

The callback format uses <NR3> scientific notation format.

Example：

:LIST:VOLT? Returns: **1.000000E+00**

: LIST:BIAS {0~320}

Sets the BIAS current for MULTI STEP.

Parameters：

0~320 (current setting range 0~320A, upper limit according to the maximum number of parallel units).

Example：

: LIST:BIAS 40

LIST:BIAS?

Ask for the current in multi-step list mode.

Responses：

The callback format uses <NR3> scientific notation format.

Example：

LIST:BIAS? Returns**: 4.000000E+01**

:TRIG

(Triggers a direct measurement) Triggers a measurement but does not return the result.

Can be used in Meter Mode and Multi Step Test Mode.

Example：

:TRIG

:TRIG? (for Meter Mode)

When in meter mode, a measurement can be triggered, and the data measured by the current measurement and the comparison results can be transmitted back according to the display order of the current measurement item. (The return time will vary depending on the measurement speed and measurement frequency).

It can be used in meter mode and multi step test mode, and the instructions here apply to meter mode.

Responses：

<Data 1>,<Data 2>,<Data 3>,<Data 4>,<Comp 1>,<Comp 2>,
<Comp 3>,<Comp 4>

Return parameter help :

<Data>

For measurement data, the return format uses <NR3> scientific notation format.

Data 1~4 represents the measurement data of the four test items, only the items that are turned on will have values; For example, if only two test projects are opened, two data will be returned; Or in DC mode, only Rdc items can be measured, and only one set of data is transmitted back.

<Comp>

Measurement data comparison results, the callback format uses <NR1 >, which is defined as follows:

0 Compare function turned off

1The result of the comparison is OK

2The comparison result is NG

Comp 1~4 represents the test data comparison results of the four test items, as long as any test item turns on the comparison function, the comparison results will be sent back, and its arrangement order is consistent with the <Data>.

EX1:

4 test items, the comparison function is turned off, the return result is

<Data 1>,<Data 2>,<Data 3>,<Data 4>

EX2:

For 4 test items, if the comparison function of one or all of the projects is enabled, the return result is

<Data 1>,<Data 2>,<Data 3>,<Data 4>,<Comp 1>,<Comp 2>,

<Comp 3>,<Comp 4>

EX3:

For the 2 test projects, the comparison function is turned off, and the return result is

<Data 1>,<Data 2>

EX4:

For 4 test items, if the comparison function of one or all of the projects is enabled, the return result is

<Data 1>,<Data 2>,<Comp 1>,<Comp 2>,

Example：

:TRIG?

Returns:

1.000060E+02,3.791240E-04,1.000060E+02,9.999395E-03,1,1,1,1

:TRIG? (for Multi Step Test Mode)

In the multi-step list test mode, a measurement can be triggered, and the data measured and the comparison results of the current trigger can be transmitted back according to the display order of the current measurement items.

It can be used in meter mode and Multi Step Test Mode, which is described here for Multi Step Test Mode.

Responses：

<Result>,<Step 1 Result>,<Step 1 Data>,<Step 2 Result>,
<Step 2 Data>… <Step n Result>,<Step n Data>

Return parameter help :

<Result>

Multi-step list mode test results, the callback format uses <NR1 >, which is defined as follows:

0 test interrupt did not complete

1. Test steps: All OK

2 NG in the test step

<Step Result>

The results of each step test determine that the callback format uses <NR1 >, which is defined as follows:

0 not tested

1Test result is OK

2Test result is NG

<Step Data>

The test data for each step is in the callback format using <NR3> scientific notation format.

Example：

:TRIG?

Returns:

1,1,1.000060E+02,1,3.791240E-04,1,1.000060E+02,1,9.999395E-03

Create a LAN communication interface (NI VISA).

Once you have completed the LAN settings on the instrument side, you can use your computer to communicate with the instrument over the network, and the following will describe how to establish communication with the instrument through NI VISA.

First start the NI Measurement & Automation Explorer program on the computer, the picture is shown in the following figure, click Network Devices under Devices and Interface on the left, and then select Add Network Device at the top right of the screen to add the instrument, the picture is as follows:

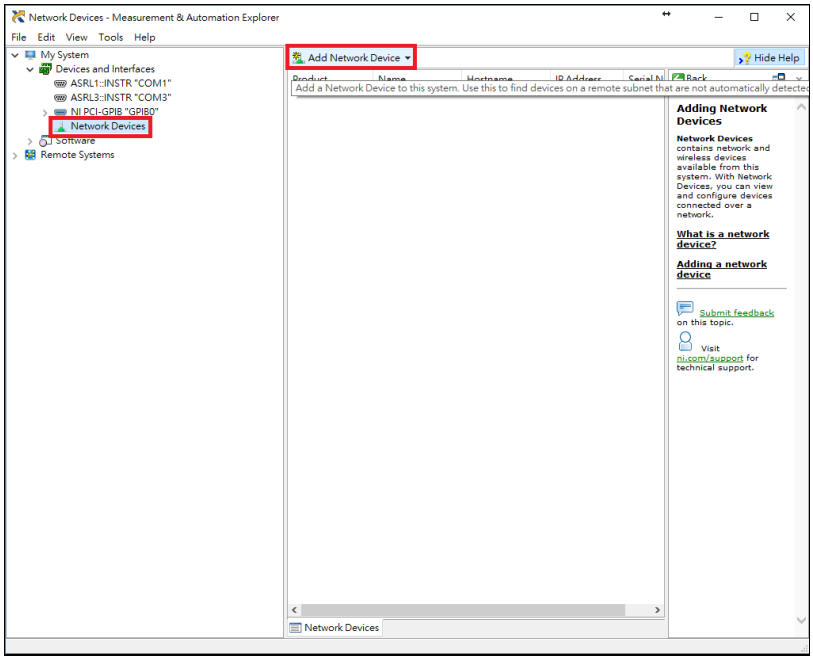


圖 3-7-1 NI Measurement & Automation Explorer

When you click Add Network Device, a drop-down window will appear and select VISA TCP/IP Resource.... Project, the picture is as follows:

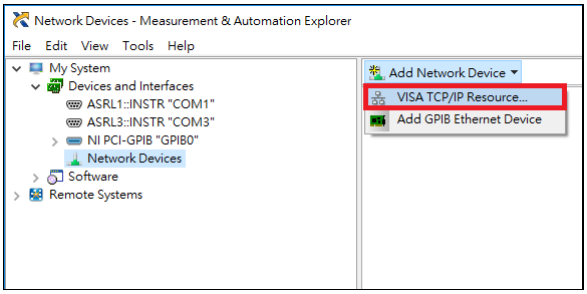


圖 3-7-2 Add Network Device

After entering the Choose the type of LAN resource you want to add. window, select the Manual Entry of Raw Socket project, and then click Next to enter the next step, the screen will be shown in the following figure:

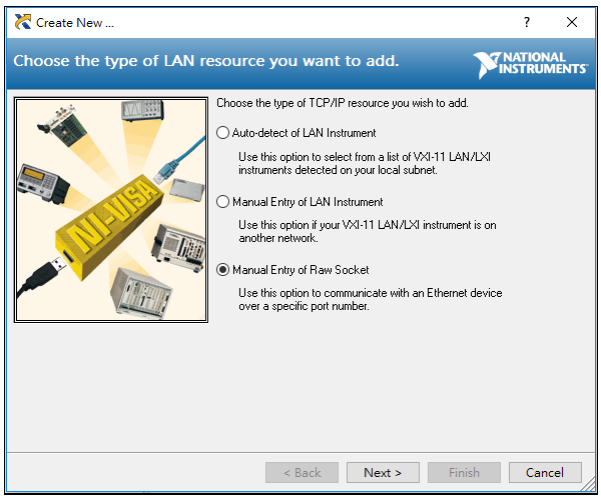


圖 3-7-3 Choose the type of LAN resource

After entering the Enter the LAN resource details. window, fill in the IP Address displayed in the instrument screen in the Hostname or IP address field, and fill in the IP Port value in the Port Number field, and the screen will be shown in the following figure:

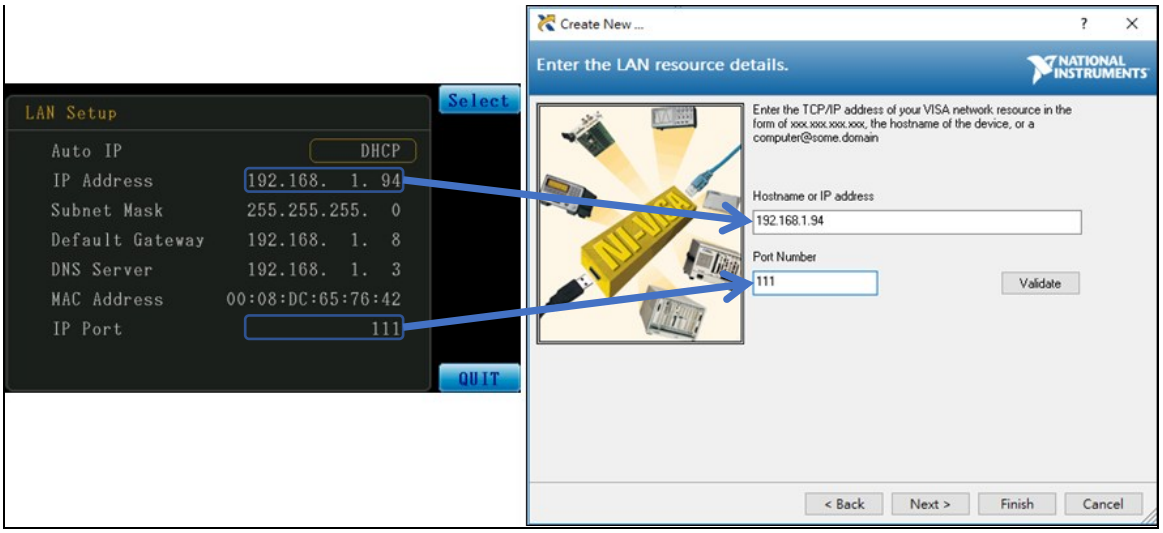


圖 3-7-4 Enter the LAN resource detail

After filling in the fields, click the Validate button on the right to check whether the instrument communication is successfully connected, when the message is displayed as Successfully opened a VISA session, it means that the instrument is successfully connected, and its screen will be shown in the following figure:

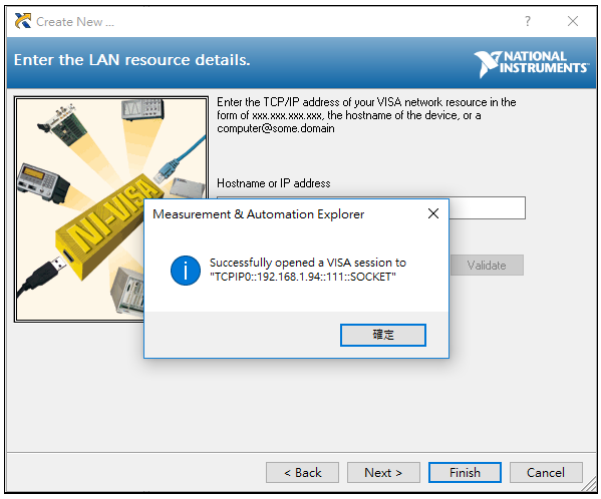


圖 3-7-5 Validate

After the connection is successful, press Finish to return.
At this time, under the Network Devices project, the newly added device (TCPIP0::192.168.1.94:::111::SOCKET) will be displayed, and its screen will be shown in the following figure:

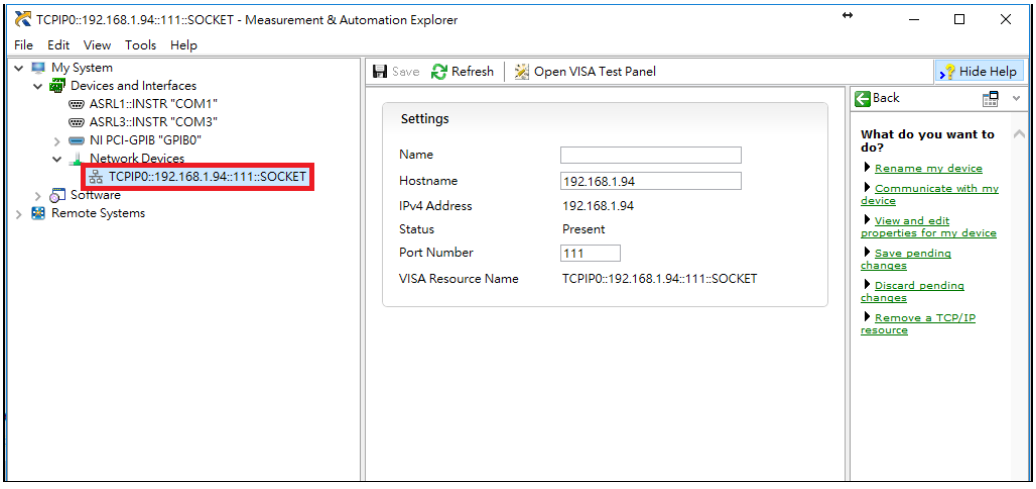


圖 3-7-6 VISA TCP/IP Resource

Click the Open VISA Test Panel at the top right of the window to open the communication interface, and its screen will be shown in the following figure:

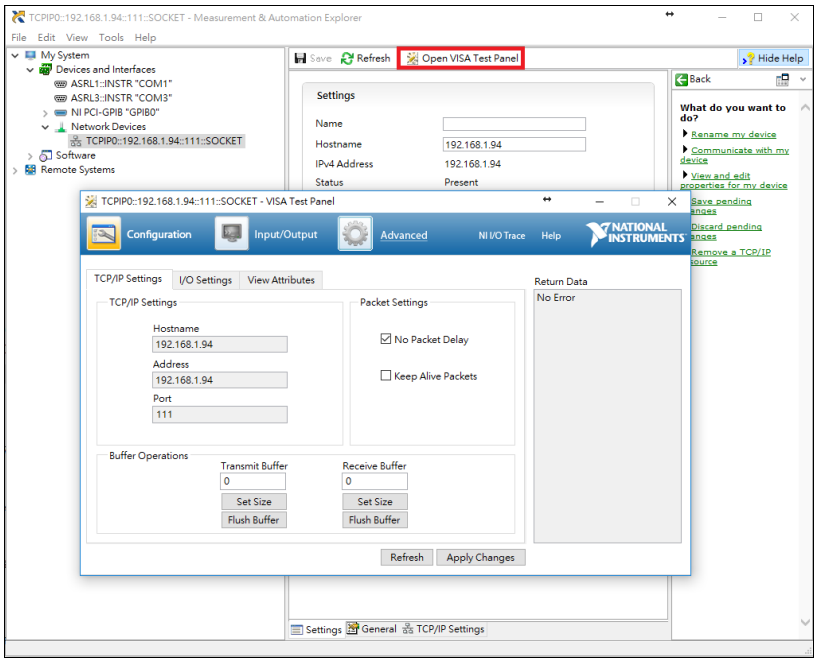


圖 3-7-7 Open VISA Test Panel

In the VISA Test Panel window, select I/O Settings Pagination, and change the Termination Methods settings, only check the Send End On Writes function, the rest of the items are not checked, click Apply Changes to confirm the changes, and the screen will be shown in the following figure:

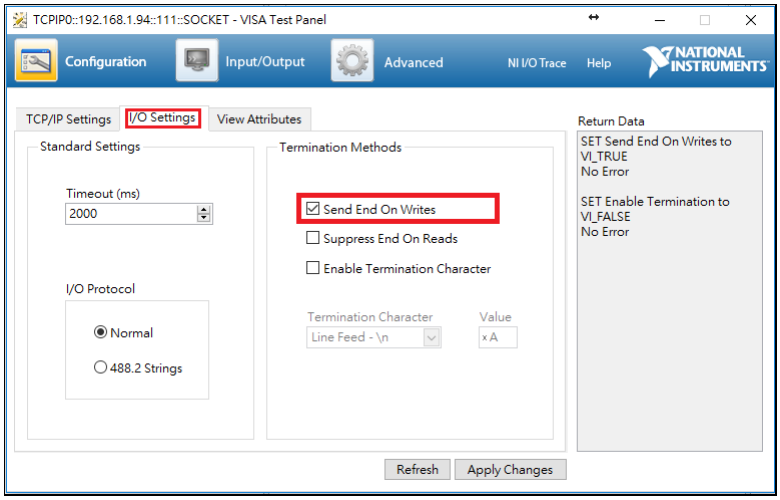


圖 3-7-9 I/O Settings

After selecting the Input /Output function, press the Query button, and the lower field should display the message sent back by the instrument (MICROTEST, 6355, S00001, V1.803300\n), and its screen will be shown in the following figure

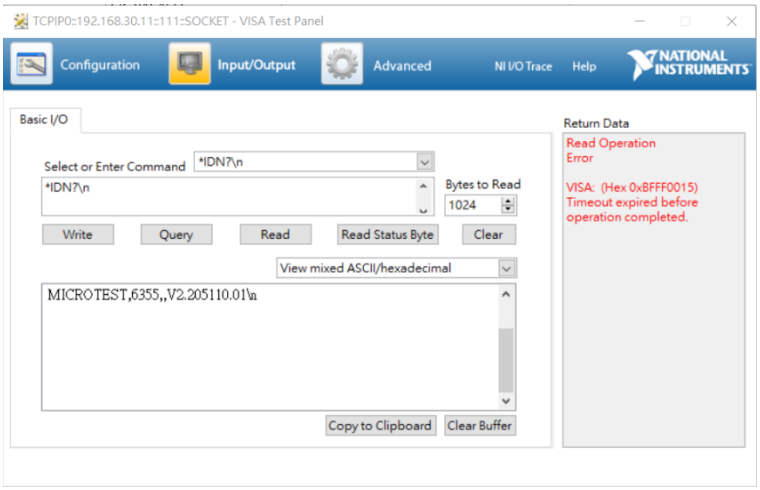


圖 3-7-10 Input / Output

Remote Control Interface (Handler Interface).

Handler Interface, which uses external signals to control local testing through the Handler I/O port on the rear panel of the machine.
To use this function, please set the Handler Interface to ON in SYSTEM to enable remote control.

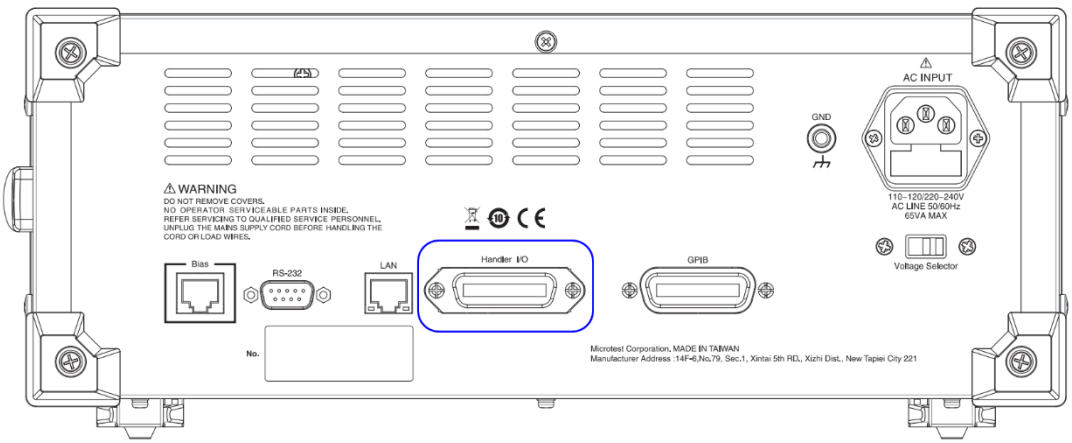


Figure 3-8-1 Handler I/O port on the rear version of the machine

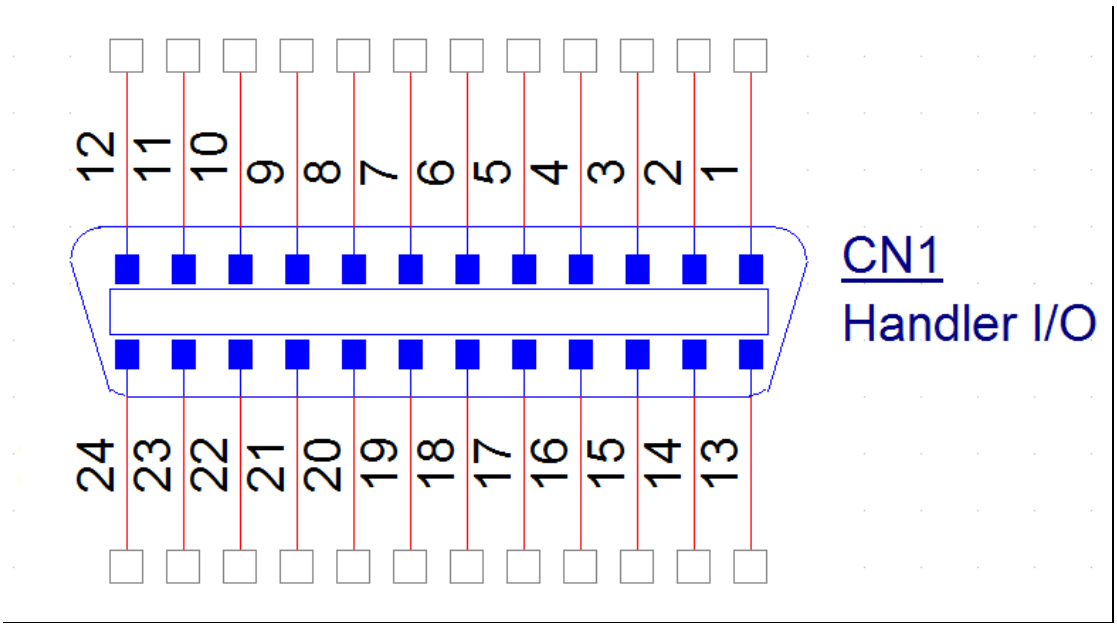


Figure 3-8-2 Handler I/O port footprint

- **Handler I/O pin description:**

Foot position	Foot name	I/O	Function
1	/START	I	Test trigger
2	/ DAV	Or	End of the test program
3	/PASS	Or	The test results were judged to be good
4	/FAIL	Or	The test result was judged to be defective
5	GND	-	earthing
6	GND	-	earthing
7	GND	-	earthing
8	NULL	-	Empty feet
9	NULL	-	Empty feet
10	+5V	-	DC +5V Export
11	NULL	-	Empty feet
12	NULL	-	Empty feet
13	/READY	Or	The test is ready, that is, the trigger status is received. (This signal will be non-ready when the measurement program is in progress, or in non-Meter Mode and non-Multi Step test mode).
14	/INDEX	Or	The measurement procedure is completed (only the measurement is completed, the entire test procedure

			has not been completed).
15	/OK1	Or	When the comparison function is enabled in Meter Mode, the first item test is considered good.
16	/OK2	Or	When the comparison function is enabled in Meter Mode, the second item test is considered good.
17	/OK3	Or	When the comparison function is turned on in Meter Mode, the third item is tested as a good product.
18	/OK4	Or	When the comparison function is enabled in Meter Mode, the fourth item test is considered good.
19	/NG1	Or	When the comparison function is enabled in Meter Mode, the first item is tested as defective.
20	/NG2	Or	When the comparison function is enabled in Meter Mode, the second item is tested as defective.
21	/NG3	Or	When the comparison function is enabled in Meter Mode, the third item is tested as defective.
22	/NG4	Or	When the comparison function is enabled in Meter Mode, the fourth item is tested as defective.
23	undefined	Or	obligate
24	undefined	Or	obligate

- **Handler I/O Timing Diagram:**

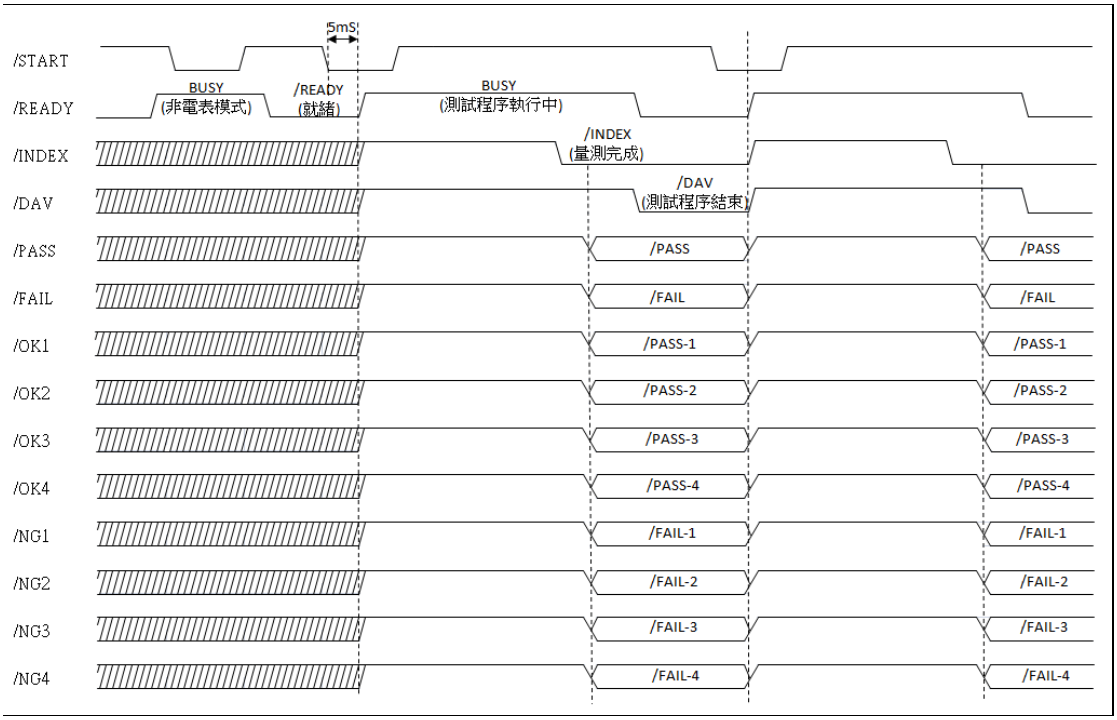


Figure 3-8-3 Handler I/O timing diagram

Note: Handler Interface is only available in Meter Mode and Multi Step test mode.

When the test is triggered in Meter Mode, the measurement mode is automatically set to Single Mode.

- **Help to use:**

All output pins (Output Pin) are open collector outputs, do not output any voltage or signal, the current flowing through each contact shall not exceed **30mA**, and **the voltage shall not exceed DC 24V**.

- **Common use cases:**

1. **Trigger signal:** Use the normal open switch of the relay to control the machine for testing. **(Note: The trigger signal needs to last at least 5mS).**

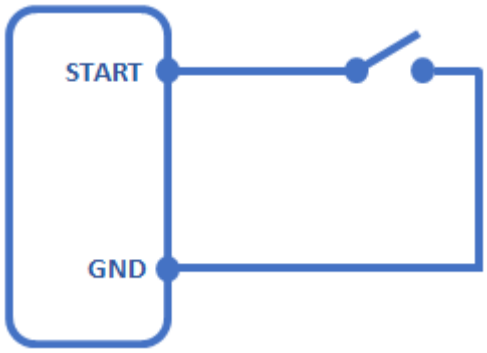


Fig. 3-8-4 Schematic diagram of the recommended connection method of trigger signal

2. **Output signal:** Use the output signal to control the relay. For safer use, connect the coil part of the relay to a regulator diode. **(The use voltage needs to be less than DC 24V).**

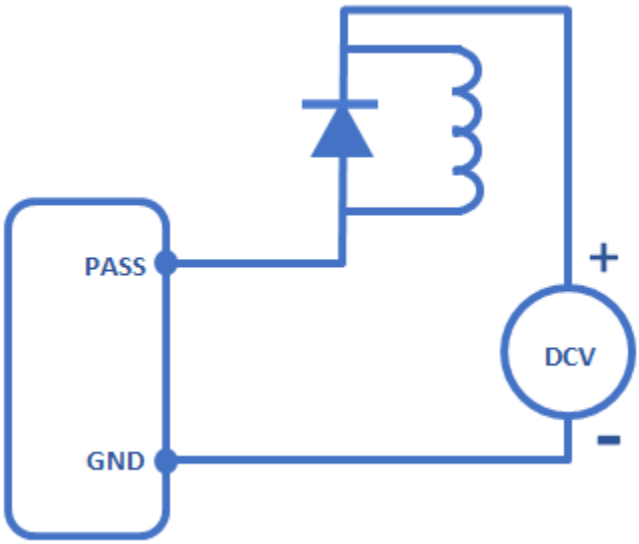


Fig. 3-8-5 Schematic diagram of the recommended connection method of the output signal

The test data is saved to a USB flash drive

In Multi-Step Test Mode, test data can be stored via the USB port on the front of the machine, and the archive compartment is used CSV, the archive path is as follows:

6355 Its archive path is (USB:\6355_LCR\TestData).

6356 has an archive path of (USB:\6356_LCR\TestData).

To use this function, please make sure that the USB flash drive is installed on the machine, and enable the function of [Save test data to USB flash drive] in the system settings.

Its archive compartment is as follows:

<File Name>,<Result>,<Step 1 Result>,<Step 1 Data>,

<Step 2 Result>,<Step 2 Data>… <Step n Result>,<Step n Data>

Return parameter help :

<File Name>

Filename.

<Result>

Multi-step list mode test results, the callback format uses <NR1 >, which is defined as follows:

0 test interrupt did not complete

1. Test steps: All OK

2 NG in the test step

<Step Result>

The results of each step test determine that the callback format uses <NR1 >, which is defined as follows:

0 not tested

1Test result is OK

2Test result is NG

<Step Data>

The test data for each step is in the callback format using <NR3> scientific notation format.

Appendix

| Z| Accuracy table

