6265

transformer tester

7631

Hi-pot tester

User Manual

V1.02

MICROTEST

Microtest

Youtube

FaceBook

www.microtest.com.tw

Copyright and Trademark

Do not attempt to reproduce any part of this publication or transmit it by any form or method, whether through electronic, mechanical, copying, recording or other means, without the prior written permission of Microtest Co., Ltd. We shall neither be subjected to any responsibilities or obligations for the information contained in this Manual nor bear damage responsibility resulting from the use of the information contained herein. All brands and trademark are the properties of Microtest Co., Ltd.

Microtest Co., Ltd. and its affiliates shall not be liable for the damage, losses or costs incurred due to the accidental use, misuse or abuse by the product buyer or the third party; or the unauthorized modification, repairs or change of the product; or the failure in following the operation and maintenance instructions established by Microtest.

The content and the product specifications shall be subject to change without further notice.

2015 @ Microtest Corporation. All rights reserved.

CONTENT

CHAPTER 1 SAFETY SPECIFICATION 5

1.1 ELECTRIFICATION AND ELECTRIC SHOCK 5
1.2 STATIC 5
1.3 GROUNDING 5
1.4 POWER 5
1.5 CONNECT THE TESTING CABLE TO THE HIGH VOLTAGE OUTPUT TERMINAL 5
1.6 WARM UP 6
1.7 EXTERNAL CONTROL HOST 6
1.8 MACHINE MALFUNCTION 6
1.9 TEST END 6
1.10 PLACEMENT AND STORAGE 6
1.11 EMERGENCY MEASURES 6

CHAPTER 2 GENERAL DESCRIPTION 7

2.1 FEATURES 7
2.2 PACKAGE AND ACCESSORIES 7
2.3 FRONT PANEL 8
2.3.1 6265 Front Panel 8
2.3.2 7631 Front Panel 11
2.4 REAR PANEL 12
2.4.1 6265 Rear Panel 12
2.4.2 7631 Rear Panel 13
2.5 FIXTURE F7721 14
2.6 SETTING PROCESS 15

CHAPTER 3 6265/ 6266/ 6267 FUNCTION SETTING 16

3.1 MAIN MENU 16
3.2 SYSTEM SETUP (SYSTEM) 17
3.3 TRANSFORMER SETTING MENU 24
3.3.1 WINDING/FIXTURE Setting 24
3.3.2 Test Sequence Setting 26
3.3.3 L/Lk/Q/Rac/Z/D/θ/X/Y Setting 27
3.3.4 Rdc Setting 31
3.3.5 Turn Ratio Test Setting 35
3.4.6 Capacitance Testing Setting 38
3.3.7 Balance Test Setting 42

3.3.8 Pin Short Test Setting *43*
3.3.9 Correction Setting *44*
3.3.10 Complete Deviation Setting *45*
3.4 TEST MODE 47
3.5 FILE MANAGEMENT 48
3.5.1 Loading File *48*
3.5.2 Saving As *50*
3.5.3 Creating New File *50*
3.5.4 Deleting File *51*
CHAPTER 4 7631 FUNCTION SETTING 53
4.1 FUNCTION BLOCK DIAGRAM 53
4.2 STANDBY SCREEN DESCRIPTION 54
4.3 SYSTEM SETTINGS DESCRIPTION 55
4.4 FUNCTION SETUP DESCRIPTION (FUNC) 57
4.5 SPECIFICATION SETUP DESCRIPTION (1) 60
4.6 SPECIFICATION SETUP DESCRIPTION (2) 63
4.7 FILE MANAGEMENT (FILE) 67
4.8 START TESTING 69
4.8.1 Before testing *69*
4.8.2 Testing in progress *70*
4.8.3 Ending a Test *71*
4.8.4 Release determination results *72*

Chapter 1 Safety Specification

This tester outputs voltage as high as 5kVac/6kVdc for external testing; accidents will happen if this tester is used incorrectly or improperly. Therefore, in consideration of your own safety, please read the precautions described in this chapter carefully and memorize them in order to prevent accidents from occurring.

1.1 Electrification and Electric Shock

In order to prevent electric shocks, the wearing of insulating plastic gloves is recommended before using this tester to perform testing related tasks.

1.2 Static

This instrument uses components that are very sensitive to static.

- The desktop of the work table must be conductive material that is grounded.
- When the soldering iron and tools are not in use, their contact end must be in contact with grounded conductors.
- The maintenance staff must wear static bracelets with leakage resistance less than 1MΩ.
- The components or assembly base board must be placed in cases with protection against static.

1.3 Grounding

The back panel of the instrument is fitted with a safe ground terminal. Be sure to connect this ground terminal to the ground to prevent the operator from touching the housing as to cause the electrocution.

1.4 Power

Power that can be used with this machine is AC 100Vac~240Vac with a frequency range from 47Hz~63Hz; please confirm whether the input power voltage and frequency are within range before inserting the power.

1.5 Connect the testing cable to the high voltage output terminal

While the tester is powered off, insert the high voltage testing cables to the

high voltage output terminals on the tester respectively, and confirm that the exteriors of the testing cables are not ruptured or shed.

1.6 Warm up

The tester can operate normally once the power is turned on; however, in order to achieve the accuracy within specification, please turn on the machine in advance and let it warm up for 15 minutes or more before use.

1.7 External control host

This tester can perform external control; make sure the operator is not touching the high voltage output terminal and DUT when performing such controls in order to avoid causing danger.

1.8 Machine malfunction

If it is discovered that this tester has malfunctioned, for example: the voltage displayed on the voltmeter differs greatly from the voltage set, or there is no high voltage output but the high voltage output warning indicator remains on etc., cease usage immediately and contact our company or your dealer to perform repairs.

1.9 Test End

Turn off the power switch when the tester is not being used.

1.10 Placement and Storage

The normal temperature and humidity range of this machine is 5°C –40°C, 80% RH; the actions might be abnormal if exceeding this range. The storage temperature and humidity range of this machine is -20°C–70°C, 80% RH. In order to achieve accurate testing and for safety considerations, do not place this machine in environments with direct sunlight exposure, high temperature, high humidity, frequent vibrations or excessive dust.

1.11 Emergency Measures

When there is an electric shock or if the DUT or machine catches on fire, please switch off the power and unplug the power cable.

Chapter 2 General description

2.1 Features

- ✧ – 0ne-stop test solution (6265/6266/6267 transformer tester + 7631 Hipot tester)
- ✧ – The 7631 Hipot is the main control instrument, which controls the measurement sequence.

- 6265/ 6266/ 6267 Transformer Tester:
  - Frequency:
    - 6265 10Hz~200kHz
    - 6266 10Hz~500kHz
    - 6267 10Hz~1MHz
  - Basic measurement accuracy: 0.1%.
  - 20 Channels.

- Hipot Tester
  - Test voltage:

AC	100V~ 5000V/ Leakage current 31m A.
DC	10V~ 6000V/ Leakage current 11m A.
IR	10V~1000V/ Insulation resistance 12G ohm.

  - 8 channels
  - Arcing detection.
  - Adjustable ramp time (0.1s-10s).

2.2 Package and Accessories

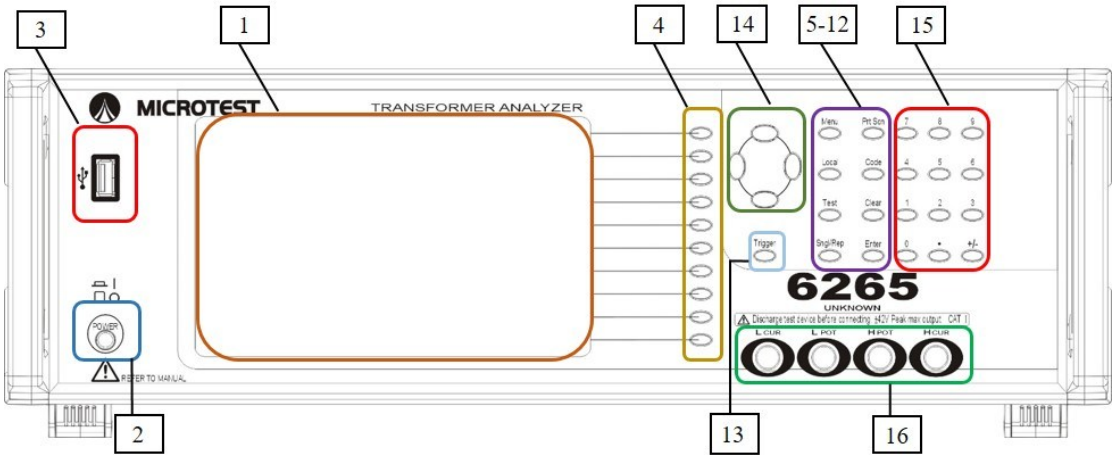
Standard accessories included:

- Power Cord * 2
- 24V Switch Power Supplier * 1
- User Manual (CD) * 1

- Scan Box (F7721) * 1
- HV Test Cable * 8
- RJ-45 Control Cable * 1
- 25Pin to 15Pin Cable

2.3 Front Panel

2.3.1 6265 Front Panel



(1) Monitor: Resolution 800x480, LED backlight monitor.

(2) POWER: Power switch.

(3) USB: USB flash drive port; it can be used to access the setting file and save test data.

The saving path of the setting file is ("\TF_6265\SetFile\")
The saving path of the test data is ("\TF_6265\TestData\")
The saving path of captured screen images is ("\TF_6265\Screen\")

※ Supported format for USB flash drive is FAT32, with a capacity smaller than 64GB.

(4) Function key: Selects the functions on the right of the screen.

(5) Menu: Switches the screen to the Main Menu page.

(6) Local: When the instrument is under remote control mode, this button can be pressed to release the key lock status. The RMT icon will be displayed on the top of the screen when the instrument is under remote control mode.

(7) Test: Enters the transformer test screen.

(8) Sngl/Rep: Allows switching of the measurement mode under Meter; it can switch between Single Trigger mode and Repeat Trigger mode. The MAN icon will be displayed on the top of the screen when the measurement mode is Single Trigger mode.

(9) PrtScn: Pressing this key will save the screen image into the USB flash drive.

a. Please insert a USB flash drive in advance when using this function; the image is in BMP format.
b. The path where 6265 saves the images is ("\TF_6265\Screen\").

(10) Code: Reserved key; it has no functions for now.

(11) Clear: Clear key; it can clear wrong numbers entered under edit mode.

(12) Enter: Confirm key; it conforms edited values or selections.

(13) Trigger: Measurement trigger key.

When under Meter Mode, if the measurement mode is Single Trigger mode, this key is the measurement trigger key; if the measurement mode is Repeat Trigger mode, then this key is the "Pause/Resume" measurement key. The HOLD icon will be displayed on the top of the screen when measurement stops.

Under transformer test mode, this key is the test trigger key; tests will begin once it is pressed.

(14) Arrow keys: Selects a single item or parameter.

(15) Number keys: Provided for entering numbers when editing.

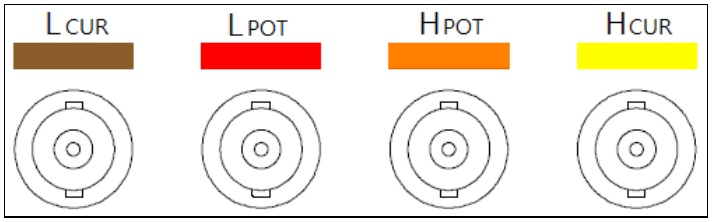
(16) Measurement terminals:

LCUR Receives the test current source; it is connected to the negative pole (-) of the DUT.

LPOT Negative terminal for voltage measurement; it is connected to the negative pole (-) of the DUT.

HPOT Positive terminal for voltage measurement; it is connected to the positive pole (+) of the DUT.

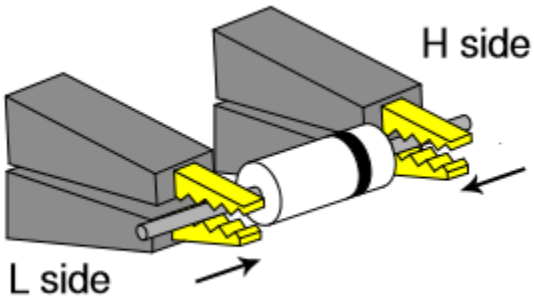
HCUR Receives the test current source; it is connected to the positive pole (+) of the DUT.



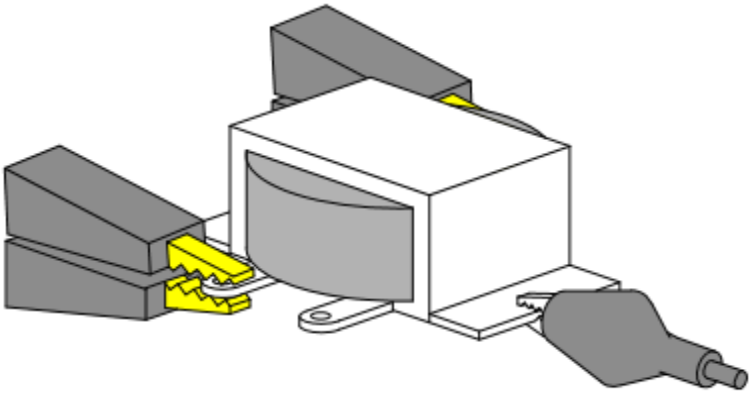
The figure above is a 626X four-wire measurement connector; please connect the four-wire measurement fixture head at the end of the fixture test line here.

1. Please discharge the DUT properly before connecting the fixture.

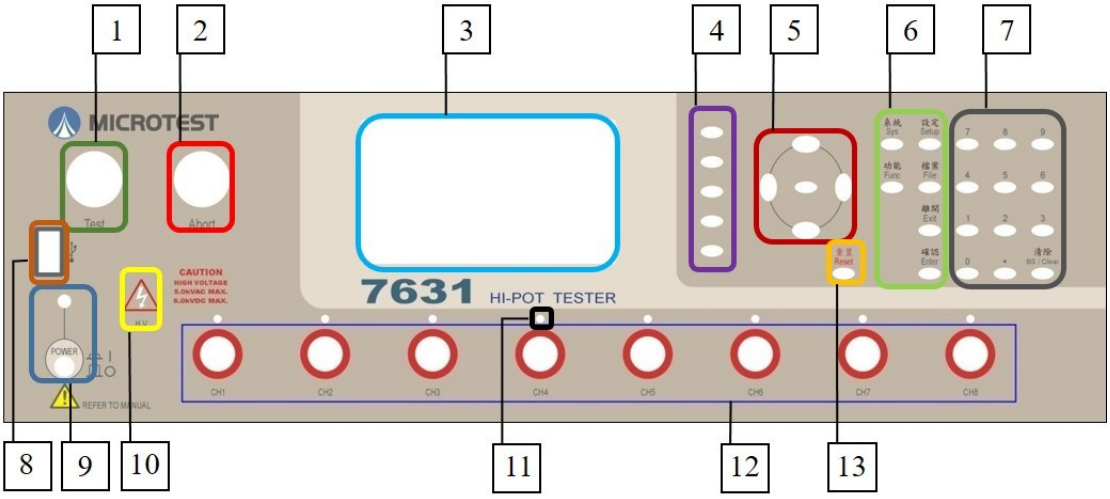
2. Connect the fixture terminals to the BNC terminal on the front panel according to the different colors.
3. Connect the DUT to the fixture; if the DUT is directional, connect the H side of the fixture clip to the positive end of the DUT and the L side of the fixture clip to the negative end of the DUT. Please make sure that the position of the fixture clip is as close to the DUT itself as possible.



4. If the DUT is covered by an external casing and it isn't connected to any fixture clip, connect this external case to ground in order to reduce noise interference.



2.3.2 **7631 Front Panel**



(1) **Test key (with PASS light indicator)**: Press to start testing the system in READY mode, it lights up after being tested successfully.

(2) **Stop key (with FAIL light indicator)：** Press to stop the test and close the high voltage output in test mode. It lights up when the test has failed. Press it to mute the alert buzzer.

(3) **LCD color display:** Display settings and test results

(4) **Software key:** These five software keys have functions as indicated by their screen, e.g. copy or delete. In case no functions are signed to a key, it displays a blank screen.

(5) **Arrow key:** These keys move the cursor for editing. The center key functions the same as the OK function key.

(6) **Function key:** Press to set up a function represented by the key which will be detailed later.

(7) **Numeric key:** Press to edit numeric data.

(8) **USB port:** Connect USB storage for setup file access and firmware updates. **Note: It supports FAT format only.**

(9) **Power switch: Power on or off the host.**

(10) **High voltage output light indicator:** It lights up when there is a current output. DO NOT touch the high voltage output port when this light is on as you may get shocked.

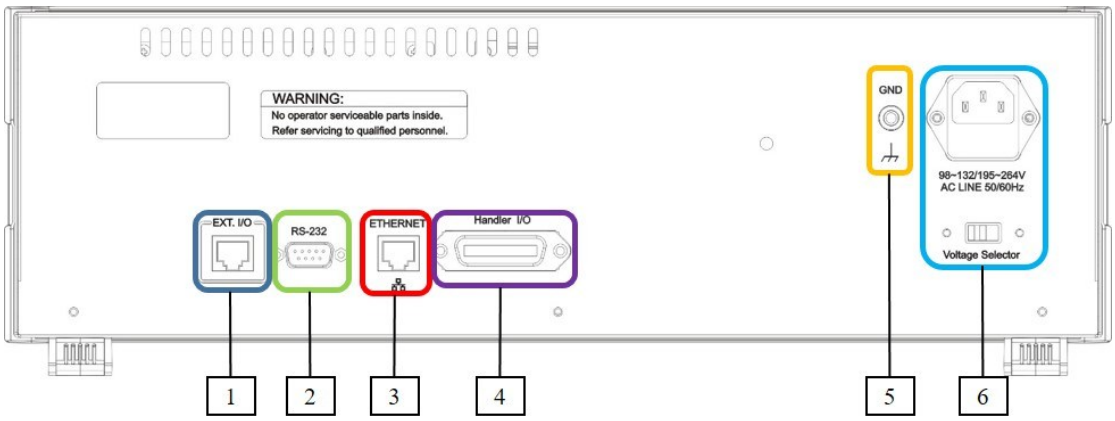
(11)**High voltage output status light indicator:** It lights up red when there is a high voltage current output at this port and is green when there is low voltage.

(12)**High voltage output port:** Port for current output test.

(13)**Reset key:** Press to reset the machine in case of an unexpected system error.

2.4 Rear Panel

2.4.1 6265 Rear Panel



(1) EXT. I/O: F5220 fixture control cable connection port; please connect the included RJ-45 cable from this terminal to the Remote Control terminal of the F5220 fixture.

(2) RS-232: RS-232 serial communication interface. (The 2 in 1 system needs to be connected to the 7631 RS-232 port.)

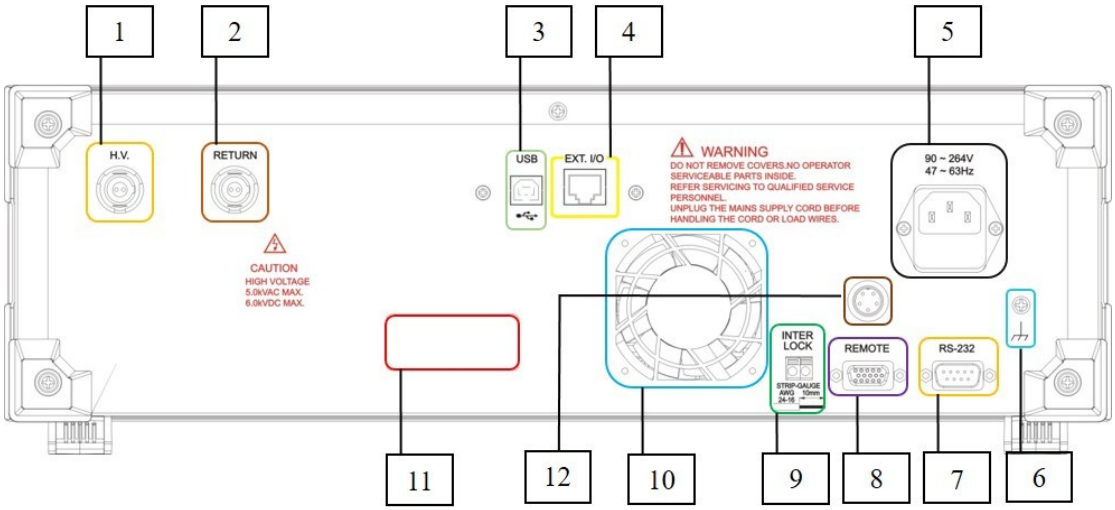
(3) ETHERNET: LAN network communication interface.

(4) Handler I/O: Remote control interface.

(5) GND: Grounding terminal.

(6) AC INPUT: Input power jack. Please confirm whether the input voltage is 110V or 220V before connecting the plug, and flip the power switch by the **Voltage Selector** to the proper voltage position (110V/220V).

2.4.2 7631 Rear Panel



(1) High voltage output terminal: Connection to the expansion box

(2) Low voltage output terminal: Connection to the expansion box

(3) USB port: Connection to the computer for controlling the machine with computer instructions

(4) Expansion box port: Connect this port and an expansion box with a connection cable

(5) AC power socket: AC power input connector with a 250V/3.15A fuse

(6) Iron casing terminal: Ground your machine with this terminal for more steady device operation

(7) RS-232 connector: Connect to the computer to control your machine with computer instructions (The 2 in 1 system needs to be connected to the 626X RS-232 port.)

(8) Remote controller port: Signal for external control including the determination and testing signal output or input of an external signal for test start and stop

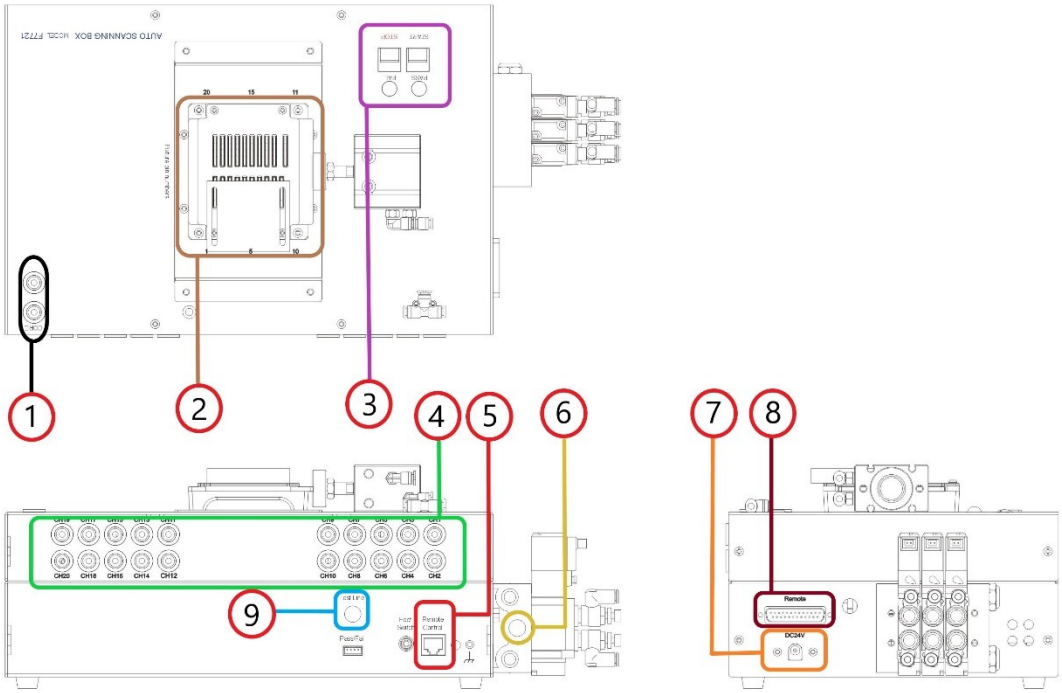
(9) Inter Lock port: High voltage current output safety switch. Short circuit both ends of this port during testing for the test voltage output. Opening the circuit of this port during testing will stop the test and prompt the message “INTER LOCK”

(10) Exhaust outlet: Air exhaust for cooling

(11) Serial number sticker: Indicates the serial number of your machine

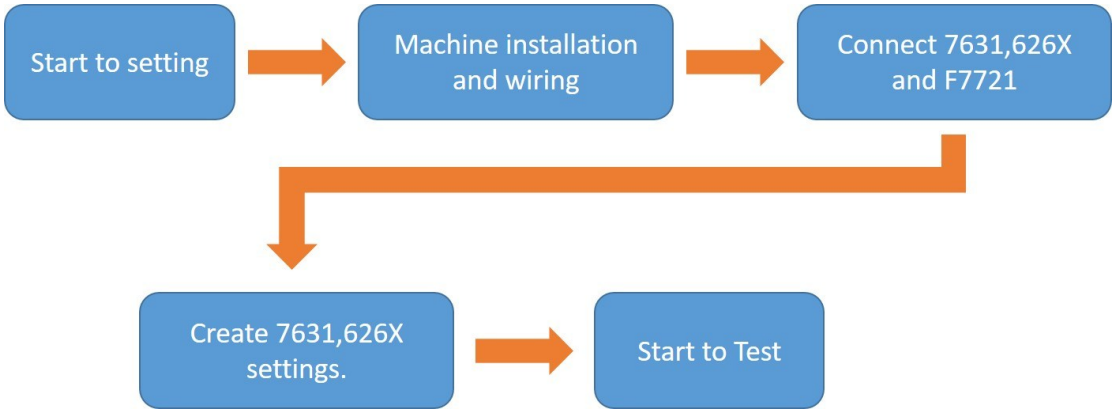
(12) High voltage test rod port: Connects to the high voltage test rod

2.5 Fixture F7721



(1) Core: To connect with the Core channel which setting on 7631.
(2) Fixture head: The test fixture head.
(3) Control key: Press start and stop key to control the system and the result will show by Green (For pass) and Red (For Fail) LED.
(4) Channels: CH1~CH20 to connect with **CH1~CH8** channels on 7631.
(5) Remote control: To connect with **EXT.I/O** on 626X.
(6) Air hose Socket: The socket is for Air hose.
(7) DC 24V: To connect with DC 24V adapter
(8) Remote: To connect with **Remote** on 7631.
(9) Test Line: To connect to the **626X/623X BNC output connector**.

2.6 **Setting process**



Chapter 3 6265/ 6266/ 6267 Function Setting

3.1 Main Menu

Press the **Menu** control key and the screen will enter the Main Menu screen.

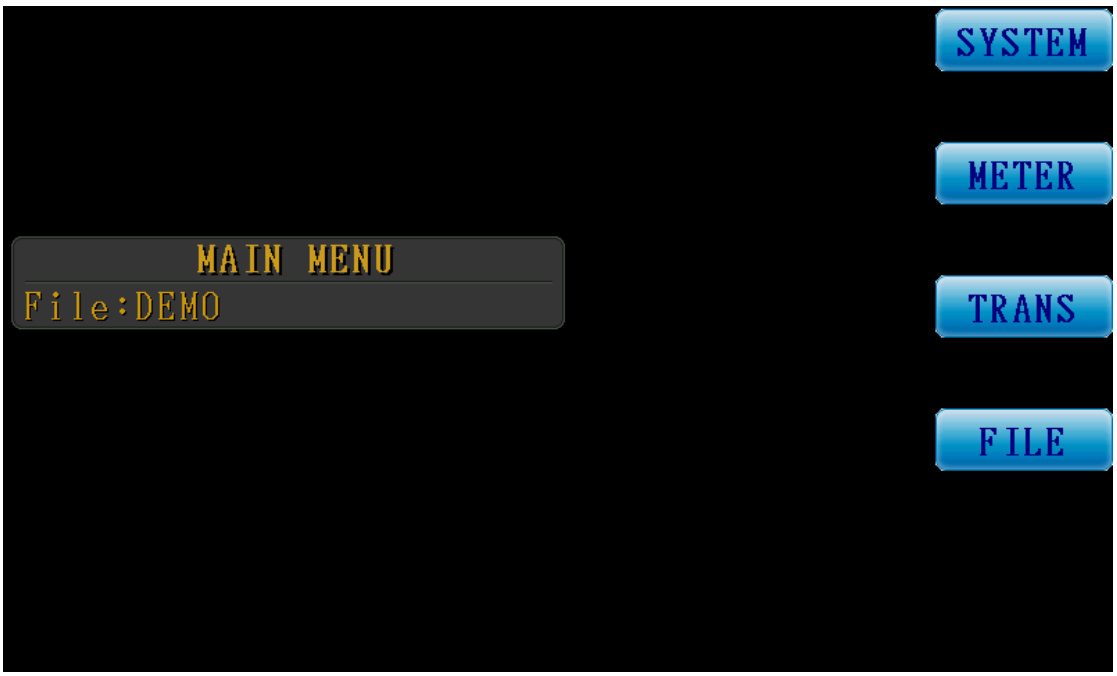


Figure 3-1-1 Main Menu

- SYSTEM: Enters the system setting screen (System Setup).
- METER: Enters the meter measurement mode (Meter Mode).
- TRANS: Enters the transformer test setting function screen (Transformer Setting Menu).
- FILE: Enters the file management screen (File Management).

3.2 System Setup (SYSTEM)

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

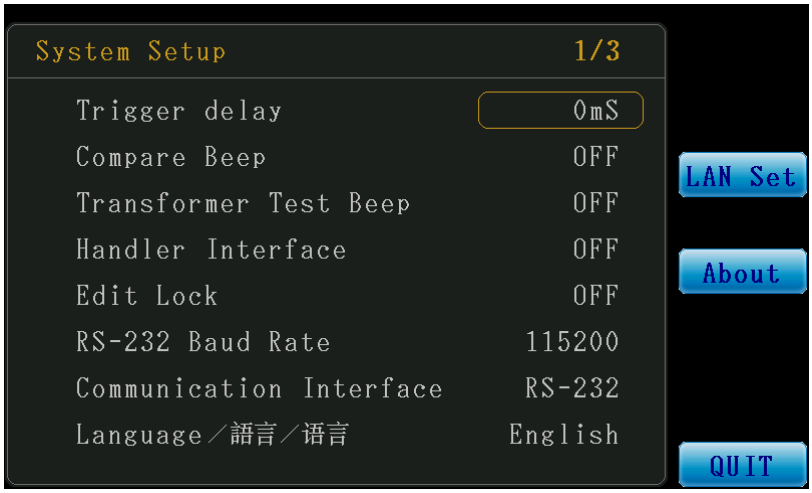


Figure 3-2-1 System Setup (1/3) screen

1. **Trigger delay (mS):** Sets the trigger delay time; the setting range is 0~5000 and the unit is mS. (This function is applicable for Meter Mode and transformer test mode.)

2. **Compare Beep:** Sets the time for the buzzer to prompt when the compare function is enabled in Meter Mode. The Select function key can be used to make selections.
   - **OFF:** Disable prompt.
   - NG: Prompt when any one item exceeded setting range (FAIL).
   - OK: Prompt only when all items with compare enabled are within the setting range (PASS).

3. **Transformer Test Beep**: Test result prompt setting when in transformer test mode; the Select function key can be used to make selections.
   - **ALL:** Prompt is enabled whether the test result is PASS/FAIL.
   - **OK:** Enable prompt only when the test result is PASS.
   - **NG:** Enable prompt only when the test result is FAIL.
   - **OFF:** Disable prompt.

4. **Handler Interface**: Sets Handler Interface function ON/OFF; the Select function key can be used to make selections.
   - **ON:** Enables the Handler Interface function.
   - **OFF:** Disables the Handler Interface function.

5. **Edit Lock**：Edit lock function, if there is a password, it will prompt to enter the password, and the setting value can be changed after confirming the old password.
   - **ON :** Open the Edit Lock function.
   - **OFF:** Close the Edit Lock function.

   ※**If you want to set/change password, you can set it on right side function key [Set P/W].**

6. **RS-232 Baud Rate**: Sets the baud rate of the serial communication port; the Select function key can be used to make selections. The following baud rates can be selected:
   115200/56000/384000/19200/9600 bps.

   Transmission format: 8/N/1 (8 Data Bit/ No Parity Bit/ 1 Stop Bit)

7. **Communication Interface**: Communication interface setting; select the communication interface to use RS-232/LAN.

8. **Language:** Language setting; the Select function key can be used to make selections. Three options are available for selection, including English, Traditional Chinese and Simplified Chinese.

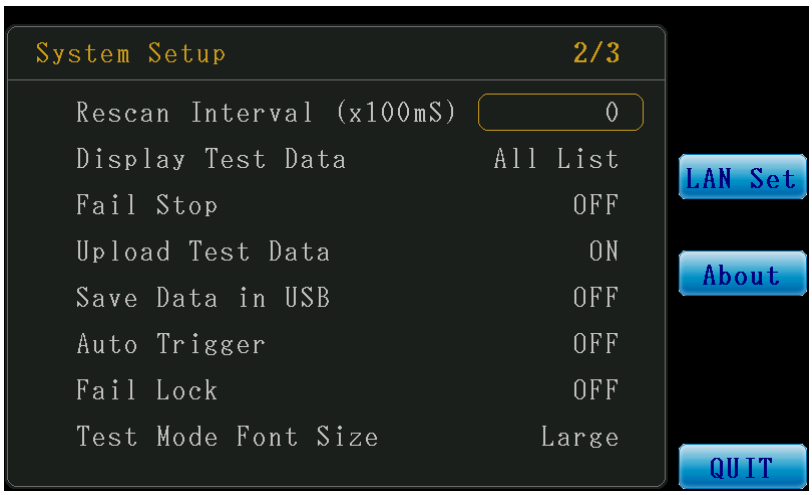


Figure 3-2-2 System Setup (2/3) screen

9. **Rescan Interval (x100mS)**: Sets the time for continual test and continual test intervals in transformer test mode; the setting range is between 0~100.
   - When the value is set as 0, the continual test function is disabled.
   - When the value is set between 1~100, the continual test function is enabled and the time for continual test intervals is the value set x100mS.

     Example:

     When the value is set as 5, the time for the continual test interval is 500mS. (5x100mS=500mS)

10. **Display Test Data:** Sets the display method of the transformer test data.
    - **ALL List:** Display on the screen whether the test data is PASS/FAIL.
    - **NG List:** Only display FAIL data on the screen.

11. **Fail Stop:** Sets whether to turn the test fail stop function ON/OFF under transformer test mode.
    - **ON:** Enables test stop function. (When an item is tested as FAIL, the test stops)
    - **OFF:** Disables test top function.

12. **Upload Test Data:** Sets whether to turn the data upload function ON/OFF under transformer test mode.
    - **ON:** Enables the test data upload function. When the test is complete, the test data will be automatically uploaded through the communication port (RS-232/LAN) set.
    - **OFF:** Disables the test data upload function.

13. **Save Data in USB:** Sets whether to turn the save test data to USB flash drive function ON/OFF under transformer test mode.
    - **ON:** Enables the save test data to USB flash drive function; once test is completed, the test data will be saved into the USB flash drive.
    - **OFF:** Disables the save test data to USB flash drive function.

    ※ **When this function is enabled, please ensure that a USB flash drive is connected to the machine.**

14. **Auto Trigger：In the Trans test mode, turn on/off to set the auto trigger function.**
    - **ON:** Open the auto trigger function.
    - **OFF:** Close the auto trigger function.

✧ **WARNING: To avoid cut your hands, please do not using when the fixture is working by cylinder.**

15. **Fail Lock**：If you need to lock the device when the test result is “fail”.
    - **ON:** Open the fail lock function.
    - **OFF:** Close the fail lock function.

16. **Test Mode Font Size**：To set the font display large/small in the test mode.
    - **Large:** Test mode font display Large(Default).
    - **Small:** Test mode font display small.



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

17. **Handler Interface Mode**: Use the select function key to set the output signal of Handler Interface are “Pass” or “Fail” in the both of test mode and multi-DUT mode.
    - **PASS:** Will output when each DUT test result is "Pass".
    - **FAIL:** Will output when each DUT test result is "Fail".

    (The HANDLER INTERFACE pin define can refer the 3.9 Handler Interface)

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

19. **LAN Set**: Local area network (LAN) communication interface setting.
    - To allow the instrument to communicate through the local area network (LAN), the network cable must be connected and its IP address must be configured.

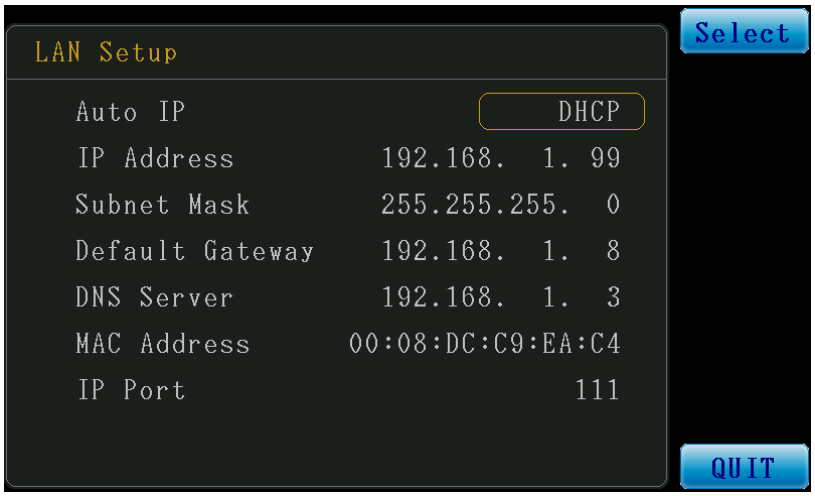


Figure 3-2-4 LAN Setup screen

- Auto IP: Sets whether to acquire IP automatically or configure manually.
  - ■ DHCP: Acquire available IP address automatically though the DHCP server.
    - ※ When this setting is used, no other fields need to be set, and therefore the cursor cannot move down.
  - ■ OFF: Configure the IP address, subnet mask and default gateway etc. manually.
- IP Address: IP address setting field.
- Subnet Mask: Subnet mask setting field.
- Default Gateway: Default gateway setting field.
- DNS Server: DNS server setting field.
- MAC Address: MAC address display.
- IP Port: Communication port; currently it is fixed at 111.



Figure 3-2-5 Set P/W

20. **Set P/W**：Set password function to avoid the Edit Lock function can be modifying arbitrarily.

    The following sets the password according to different situations:

- **Set new password:** This state is that you never set the password, if you want to select the password, please follow the steps as below,

  Enter new password >> Confirm password >> Enter the same password twice to complete.

- **Change password** **:** This state is you have done set the password and you want to change the password, please follow the steps as below,

  Enter the current password >> Enter the new password >> Confirm password >> Enter the same password twice to complete.

- **Clean password**： This state is you have done set the password and you want to clean the password, please follow the steps as below,

  Enter the current password >> Enter the new password (Enter nothing)>> Confirm password (Enter nothing again) >> Enter the same password (Enter nothing) twice to complete.

3.3 Transformer Setting Menu

Press the **Menu** control key, the screen will display the Main Menu; then press **Trans** to enter the transformer setting menu. This is where the various transformer test items can be edited.

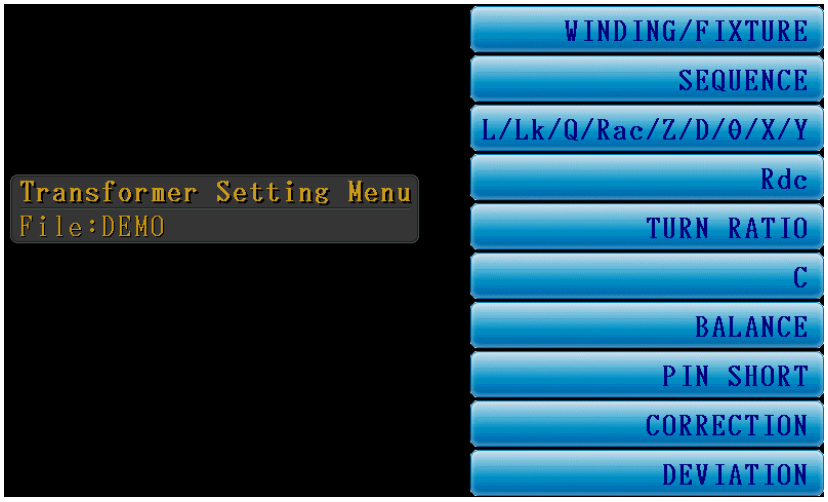


Figure 3.3.1 Transformer Setting Menu screen

3.3.1 WINDING/FIXTURE Setting

WINDING/FIXTURE: Transformer winding setting/Transformer and fixture pin allocation.

- Transformer pin allocation (Allocate Pin to Fixture) setting description:

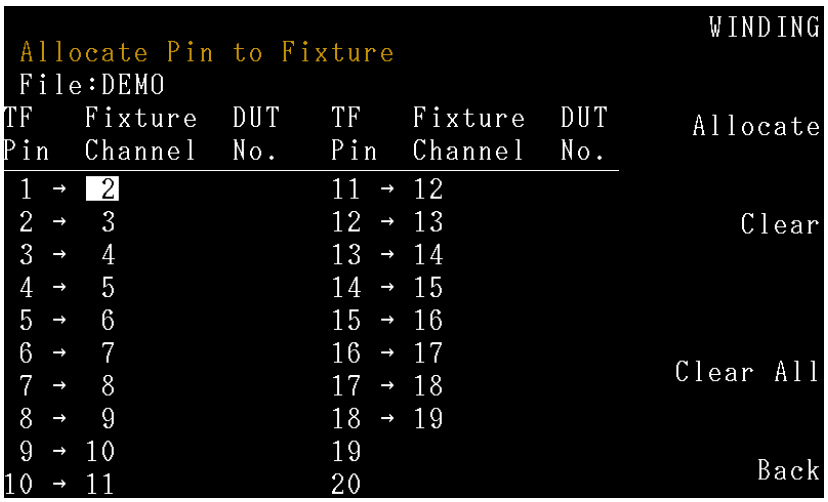


Figure 3.3.2 **Allocate Pin to Fixture** screen

1. **TF Pin:** Transformer pin, no need for setting and maximum pin 20.
2. **Fixture Channel:** Configures the position where each transformer pin is inserted on the fixture terminal; set using the number keys.
3. **DUT No.**：Multi DUT can be set by 1~12 with number keys. When the test DUT more than one then you can use different number to distinguish the DUT.
4. **Allocate:** Automatic transformer pin allocation; after entering the two parameters below and pressing the ENTER key**,** the corresponding pins of the transformer and fixture will be set automatically.
   Transformer total pins: Enter the total number of PINs of the transformer.
   Fixture start channel: Enter the position where PIN1 of the transformer will be inserted on the fixture.
5. **WINDING:** Enters the transformer winding setting screen.
6. **Clear:** Clears a single setting.
7. **Clear All:** Clears all settings previously made for the corresponding transformer pins to the fixture.
8. **Back:** Exits and returns to the function setting menu.

- **Transformer Winding Setting Description:**

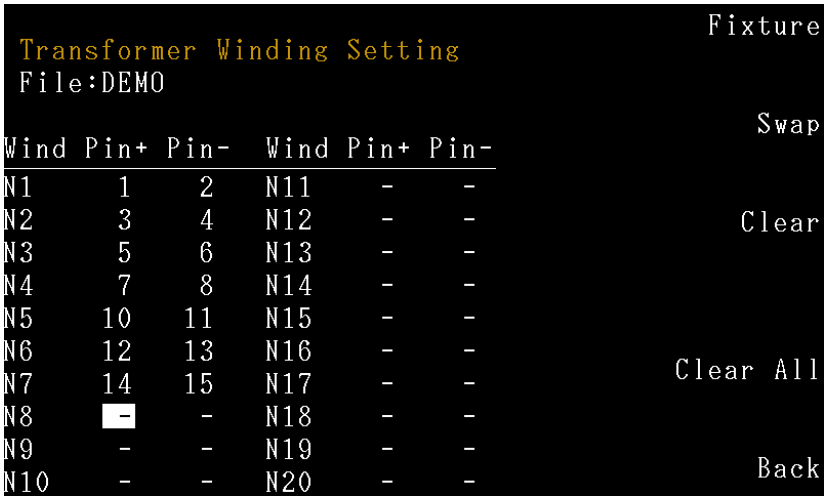


Figure 3.3.3 **Transformer Winding Setting** screen

1. **Wind** Transformer coil winding name (N1~N20); does not need to be set.
   Pin+: Sets the positive pin of the transformer winding.
   Pin-: Sets the negative pin of the transformer winding.

Swap: Swaps the Pin+ and Pin- pins.

2. **Clear:** Clears a single setting.
3. **Clear All:** Clears all settings previously made for the corresponding transformer pins to the fixture.
4. **Back:** Exits and returns to the function setting menu.

3.3.2 Test Sequence Setting

Test Sequence Setting: Sets the test order of each item / whether to test each item.

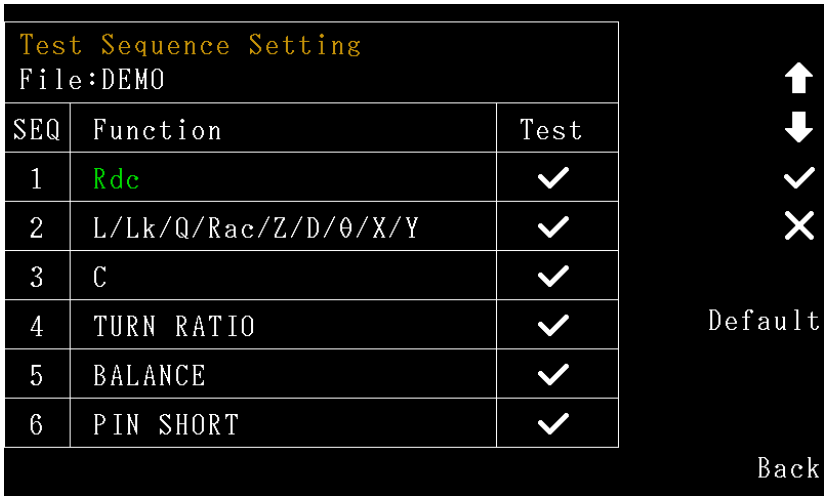


Figure 3.3.4 **Allocate Pin to Fixture** screen

Test Sequence Setting：

1. : Changes test order, it moves the currently selected test item up/down by one slot.
2. : Sets whether to enable/disable test for the currently selected test item.
3. **Default:** Restore default values.
4. **Back:** Exits and returns to the function setting menu.

3.3.3 L/Lk/Q/Rac/Z/D/θ/X/Y Setting

L/Lk/Q/Rac/Z/D/θ/X/Y Setting: Ls (serial inductance), Lp (parallel inductance), Lk (leaking inductance), Q (quality factor), Rs (serial resistance), Rp (parallel resistance), Z (impedance), D (dissipation factor), θ (phase angle), X (reactance), Y (admittance) test item settings; the screen is as shown below.

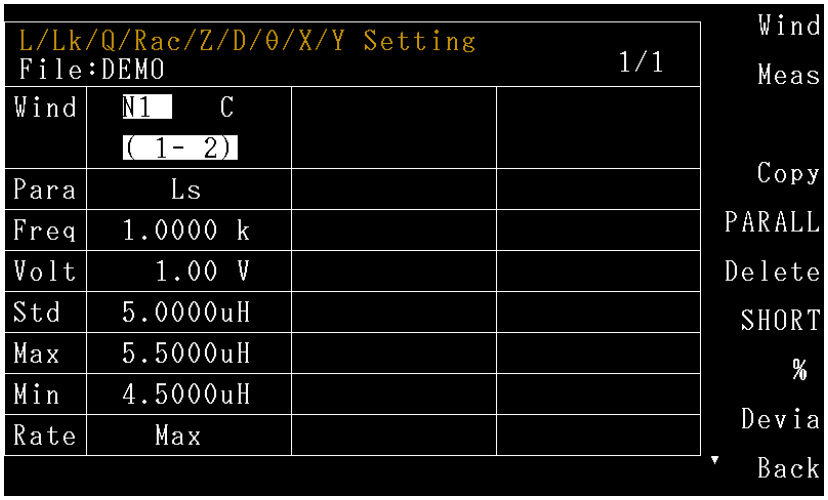


Figure 3.3.5 Ac test item setting

L/Lk/Q/Rac/Z/D/*θ*/X/Y setting description:

1. **Wind:** Transformer coil winding setting field; select the Wind function key to the right to enter settings.

   Right function keys descriptions:

   - **Wind:** Press this function key to select previously edited coil winding.
   - **Meas:** Measurement key; fixtures can be used to measure the value of the DUT for this item, and you can choose whether to carry over this measured value to be used as the standard value for this test item. (Put the DUT in place before measuring.)
   - **Copy:** Copy this set of test item to the next set.
   - **PARALL:** Sets the parallel pins of the transformer; press the PARALL key to enter the setting screen.
   - **Delete:** Deletes this set of test item.
   - **SHORT:** Sets the short-circuit pins of the transformer; press the SHORT key to enter the setting screen.
   - **%**: Sets the upper and lower limit values using percentage (%); its value is calculated using the standard value.

- **Devia:** Compensation function; fixtures can be used to measure the value of the DUT for this item, the system will calculate the deviation between this measured value and the standard value of this item automatically. When the use of this compensation value is confirmed, this error value will be compensated automatically during testing. (Put the DUT in place before measuring.)
- **Back:** Exits this function screen.

2. **Para:** Test item field; test items displayed by the function keys to the right of the screen can be selected, as shown in the figure below:

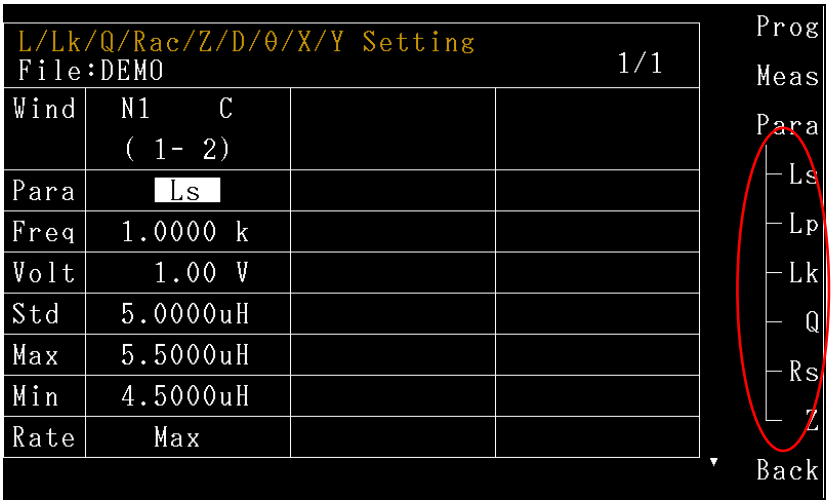


Figure 3.3.6 Ac test parameter

The software key (Para) to the right of the screen can be used to switch between test items, which include the Ls, Lp, Lk, Q, Rs, Z, D, θ, Rp, X and Y test parameters.

3. **Freq:** Sets the test frequency field.
4. **Volt:** Sets the test voltage field.
5. **Std:** Sets the standard value; the following three input methods can be used:
   - Enter the value using the number keys directly.
   - Press the **Meas** function key to the right to acquire the measurement value to use as the standard value directly, as shown in the figure below:

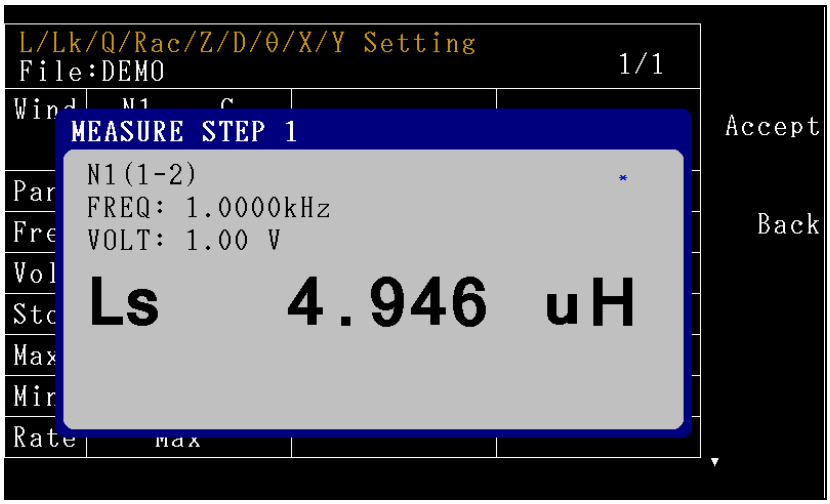


Figure 3.3.7 Ac test item Measure

Meas function software key description:

- **Accept:** Confirm the use of this measured value as the standard value and return to the edit screen.
- **Back:** Do not use the current measured value and return to the edit screen.

- First enter the standard value in the standard value field, then press the Devia function key to the right to use compensation to automatically compensate the measured value to the standard value entered. After confirming, the system will automatically record this compensation value entry and automatically add the compensation value when testing this item. The screen is as shown below:

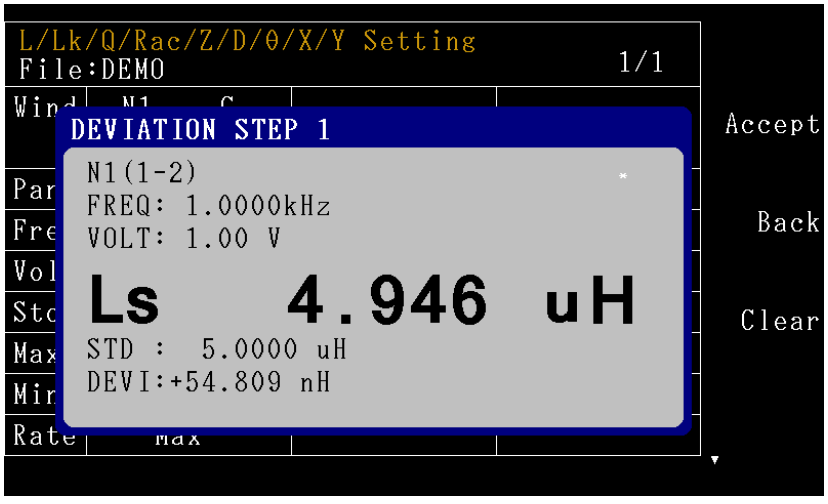


Figure 3.3.8 Deviation

Devia function description:

- **Ls:** Test parameter and measured value display field; this value is the actual measured value.
- **STD:** Standard value display field; this is the standard value set for this test item.
- **DEVI:** Deviation value display field; it is the difference between the standard value (STD) set and the current measured value. If the use is confirmed, this value will be saved as the compensation value.
- **Accept:** Confirm the use of the compensation value and return to the edit screen.
- **Back:** Do not use the compensation value and return to the edit screen.
- **Clear:** Clear the saved compensation value and return to the edit screen.

※ **Please perform fixture calibration reset before using methods b and c.**

6. **Max, Min:** Sets the upper and lower limit field; the value can be entered directly or use the % key to perform settings. In the Limit Setting window, enter the percentage values for the upper and lower limit respectively; after pressing the Enter key, the system will automatically carry of the value to the Max and Min fields. The screen is as shown below:

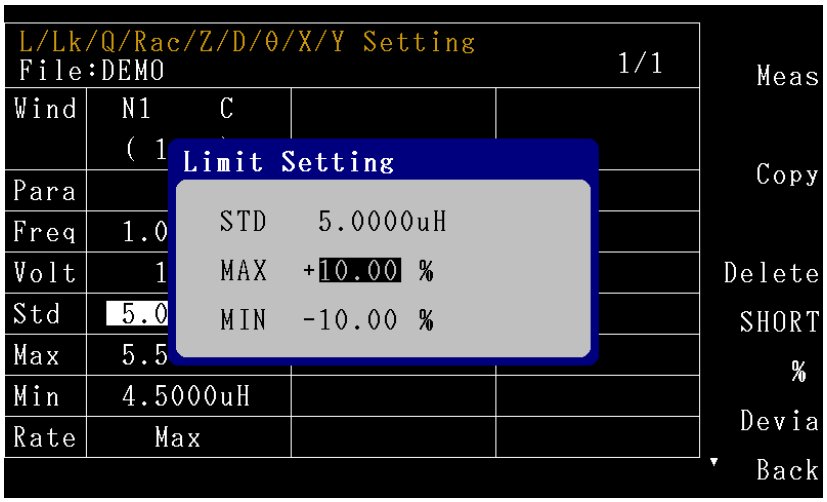


Figure 3.3.9 Limit setting

7. **Rate:** Measurement speed setting field; four measurement speeds are available for selection: MAX/FAST/MED/SLOW.

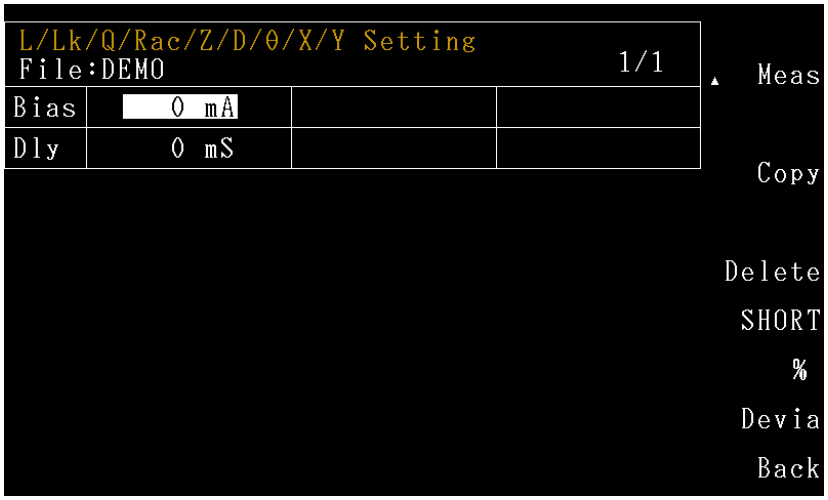


Figure 3.3.10 Bias & Dly

8. **Bias:** DC Bias Current function; the setting range is between 0~100mA. This function must be used with fixtures equipped with the DC Bias Current function (optional purchase).

9. **Dly:** Delay time setting field; the setting range is between 0~9999mS.

3.3.4 Rdc Setting

Rdc Test Setting: Direct current resistance test item setting; the screen is as follows.



Figure 3.3.11 Rdc setting

Rdc setting description：

1. **Wind:** Transformer coil winding setting field; select the Wind function key to the right to enter settings.
   Right function keys descriptions:
   - **Wind:** Press this function key to select previously edited coil winding.
   - **Meas:** Measurement key; fixtures can be used to measure the value of the DUT for this item, and you can choose whether to carry over this measured value to be used as the standard value for this test item. (Put the DUT in place before measuring.)
   - **Copy:** Copy this set of test item to the next set.
   - **PARALL:** Sets the parallel pins of the transformer; press the PARALL key to enter the setting screen.
   - **Delete:** Deletes this set of test item.
   - **SHORT:** Sets the short-circuit pins of the transformer; press the SHORT key to enter the setting screen.
   - **%**: Sets the upper and lower limit values using percentage (%); its value is calculated using the standard value.
   - **Devia:** Compensation function; fixtures can be used to measure the value of the DUT for this item, the system will calculate the deviation between this measured value and the standard value of this item automatically. When the use of this compensation value is confirmed, this error value will be compensated automatically during testing. (Put the DUT in place before measuring.)
   - **Back:** Exits this function screen.

2. **Std:** Sets the standard value; the following three input methods can be used:
   a. Enter the value using the number keys directly.
   b. Press the Meas function key to the right to acquire the measurement value to use as the standard value directly, as shown in the figure below:

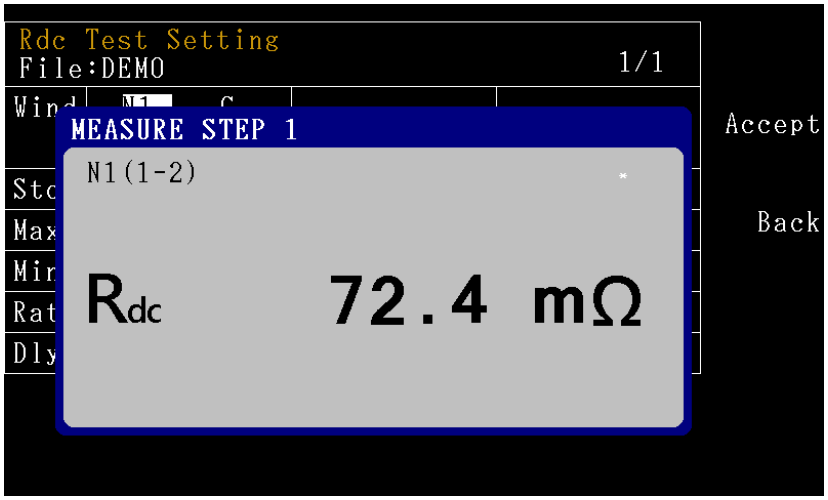


Figure 3.3.12 Rdc measure

Meas function software key description:

- **Accept:** Confirm the use of this measured value as the standard value and return to the edit screen.
- **Back:** Do not use the current measured value and return to the edit screen.

c. First enter the standard value in the standard value field, then press the Devia function key to the right to use compensation to automatically compensate the measured value to the standard value entered. After confirming, the system will automatically record this compensation value entry and automatically add the compensation value when testing this item. The screen is as shown below:

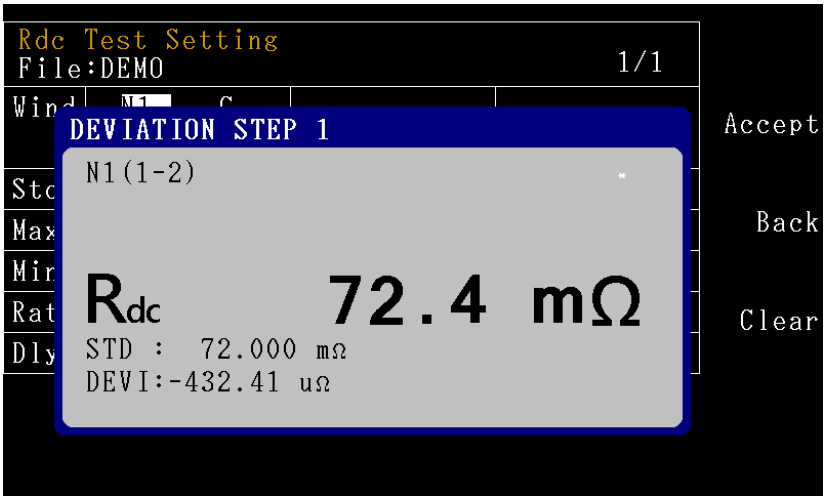


Figure 3.3.13 Rdc deviation

Devia function description:

- **Rdc:** Test parameter and measured value display field; this value is the actual measured value.
- **STD:** Standard value display field; this is the standard value set for this test item.
- **DEVI:** Deviation value display field; it is the difference between the standard value (STD) set and the current measured value. If the use is confirmed, this value will be saved as the compensation value.
- **Accept:** Confirm the use of the compensation value and return to the edit screen.
- **Back:** Do not use the compensation value and return to the edit screen.
- **Clear:** Clear the saved compensation value and return to the edit screen.

※Please perform fixture calibration reset before using methods b and c.

3. **Max, Min:** Sets the upper and lower limit field; the value can be entered directly or use the % key to perform settings. In the Limit Setting window, enter the percentage values for the upper and lower limit respectively; after pressing the Enter key, the system will automatically carry of the value to the Max and Min fields. The screen is as shown below:

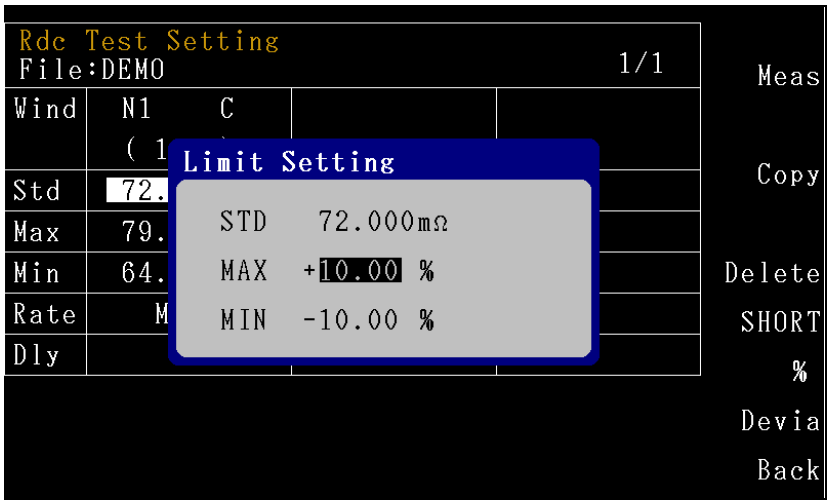


Figure 3.3.14 Rdc limit setting

4. **Rate:** Measurement speed setting field; four measurement speeds are available for selection: MAX/FAST/MED/SLOW.

5. **Dly:** Delay time setting field; the setting range is between 0~9999mS.

3.3.5 Turn Ratio Test Setting

Turn Ratio Test Setting：

※ It is strongly recommended that when editing this step, place windings with more coils at the initial end and the windings with fewer coils at the secondary end in order to prevent forced amplification of the signal and generating a voltage that is too high, exceeding the measurement range acceptable to the instrument.

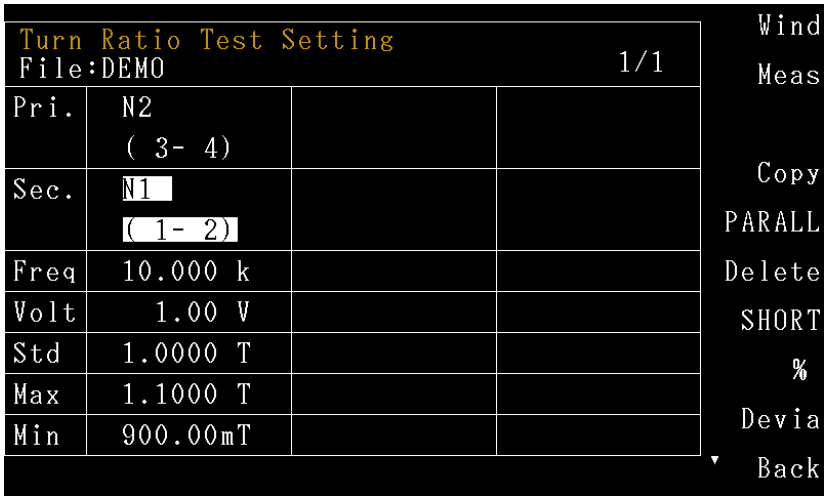


Figure 3.3.15 Turn ratio setting

Turn ratio setting description:

1. **Pri., Sec.:** Primary winding and secondary winding setting fields of the transformer cable; select the Wind function key to the right to enter settings.

   Right function keys descriptions:

   - **Wind:** Press this function key to select previously edited coil winding.
   - **Meas:** Measurement key; fixtures can be used to measure the value of the DUT for this item, and you can choose whether to carry over this measured value to be used as the standard value for this test item. (Put the DUT in place before measuring.)
   - **Copy:** Copy this set of test item to the next set.
   - **PARALL:** Sets the parallel pins of the transformer; press the PARALL key to enter the setting screen.

- **Delete:** Deletes this set of test item.
- **SHORT:** Sets the short-circuit pins of the transformer; press the SHORT key to enter the setting screen.
- **%**: Sets the upper and lower limit values using percentage (%); its value is calculated using the standard value.
- **Devia:** Compensation function; fixtures can be used to measure the value of the DUT for this item, the system will calculate the deviation between this measured value and the standard value of this item automatically. When the use of this compensation value is confirmed, this error value will be compensated automatically during testing. (Put the DUT in place before measuring.)
- **Back:** Exits this function screen.

2. **Std:** Sets the standard value; the following three input methods can be used:
   - **a.** Enter the value using the number keys directly.
   - **b.** Press the Meas function key to the right to acquire the measurement value to use as the standard value directly, as shown in the figure below:

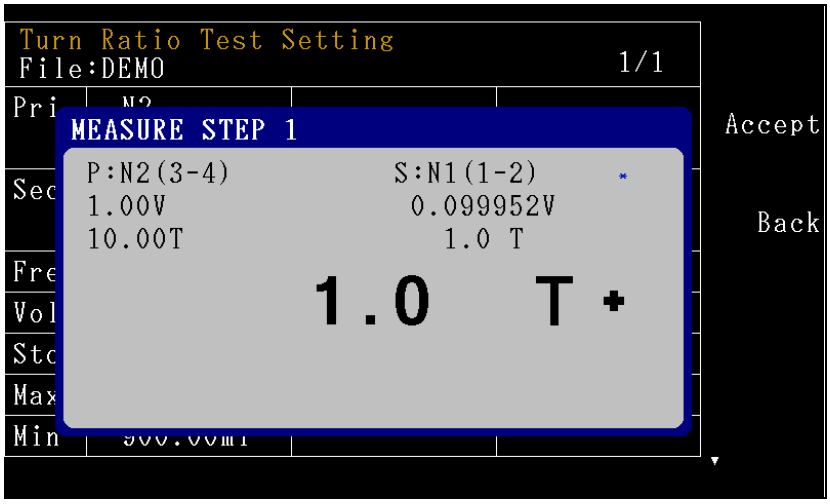


Figure 3.3.16 Turn ratio measure

Meas function software key description:

- **Accept:** Confirm the use of this measured value as the standard value and return to the edit screen.
- **Back:** Do not use the current measured value and return to the edit screen.
  (The "+" sign displayed to the right of the measured value is

the polarity; the polarity might be “+” or “-” according to different test conditions.)

c. First enter the standard value in the standard value field, then press the Devia function key to the right to use compensation to automatically compensate the measured value to the standard value entered. After confirming, the system will automatically record this compensation value entry and automatically add the compensation value when testing this item. The screen is as shown below:

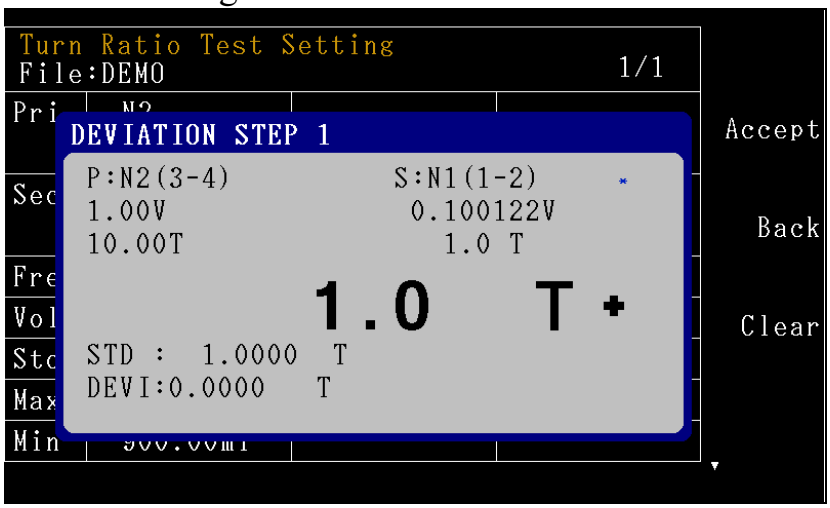


Figure 3.3.17 Turn ratio deviation

Devia function description:

- **Rdc:** Test parameter and measured value display field; this value is the actual measured value.
- **STD:** Standard value display field; this is the standard value set for this test item.
- **DEVI:** Deviation value display field; it is the difference between the standard value (STD) set and the current measured value. If the use is confirmed, this value will be saved as the compensation value.
- **Accept:** Confirm the use of the compensation value and return to the edit screen.
- **Back:** Do not use the compensation value and return to the edit screen.
- **Clear:** Clear the saved compensation value and return to the edit screen.

(The “+” sign displayed to the right of the measured value is the polarity; the polarity might be “+” or “-” according to different test conditions.)

3. **Max, Min:** Sets the upper and lower limit field; the value can be entered directly or use the % key to perform settings. In the Limit Setting window, enter the percentage values for the upper and lower limit respectively; after pressing the Enter key, the system will automatically carry of the value to the Max and Min fields. The screen is as shown below:

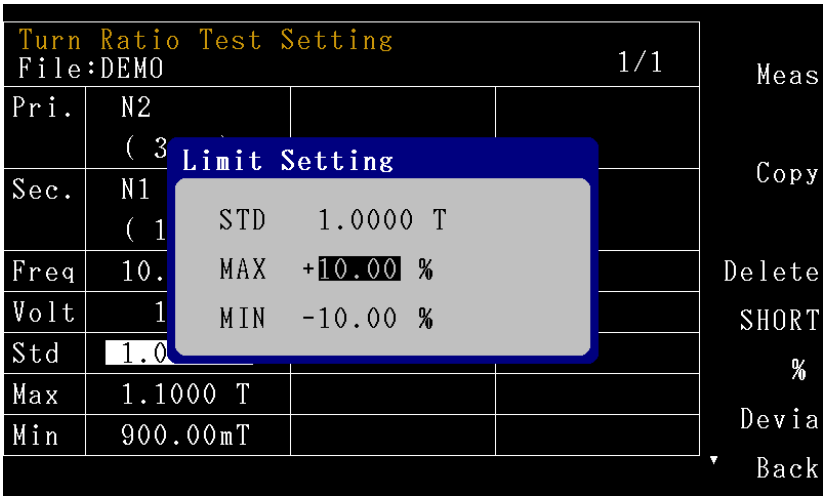


Figure 3.3.18 Turn ratio limit setting

4. **Mode:** Measurement mode setting field; two measurement modes Turn and Volt are available for selection.
   - **Turn:** The test value is displayed using the number of turns.
   - **Volt:** The test value is displayed using voltage value.
5. **PriT:** Number of preliminary winding turns setting field.
6. **Pol:** Polarity setting field; “+”, “-” or “OFF” are available for selection.
7. **Rate:** Measurement speed setting field; four measurement speeds are available for selection: MAX/FAST/MED/SLOW.
8. **Dly:** Delay time setting field; the setting range is between 0~9999mS.

3.4.6 Capacitance Testing Setting

Capacitance Test Setting screen as below:

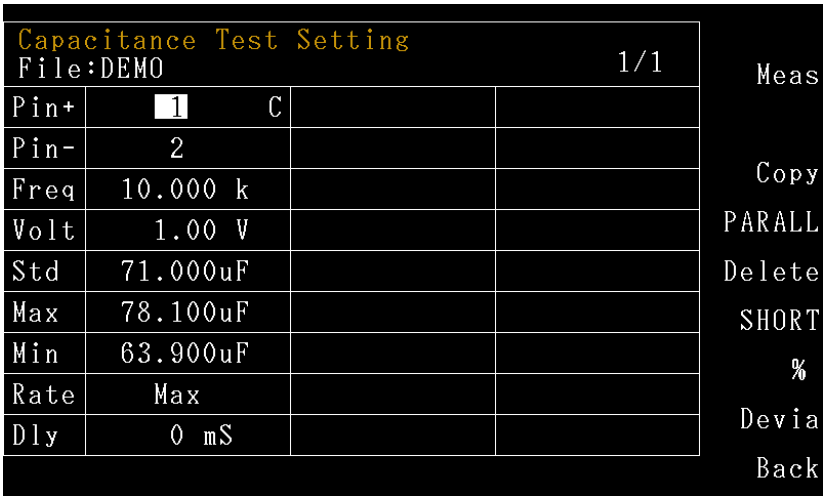


Figure 3.3.19 Capacitance setting

Capacitance test setting description:

1. **Pin+, Pin-:** Sets the pin of the transformer to measure the capacitance value.

   Right function keys descriptions:

   - **Meas:** Measurement key; fixtures can be used to measure the value of the DUT for this item, and you can choose whether to carry over this measured value to be used as the standard value for this test item. (Put the DUT in place before measuring.)
   - **Copy:** Copy this set of test item to the next set.
   - **PARALL:** Sets the parallel pins of the transformer; press the PARALL key to enter the setting screen.
   - **Delete:** Deletes this set of test item.
   - **SHORT:** Sets the short-circuit pins of the transformer; press the SHORT key to enter the setting screen.
   - **%**: Sets the upper and lower limit values using percentage (%); its value is calculated using the standard value.
   - **Devia:** Compensation function; fixtures can be used to measure the value of the DUT for this item, the system will calculate the deviation between this measured value and the standard value of this item automatically. When the use of this compensation value is confirmed, this error value will be compensated automatically during testing. (Put the DUT in place before measuring.)
   - **Back:** Exits this function screen.

2. **Std:** Sets the standard value; the following three input methods can be used:
   - **a.** Enter the value using the number keys directly.
   - **b.** Press the Meas function key to the right to acquire the measurement value to use as the standard value directly, as shown in the figure below:

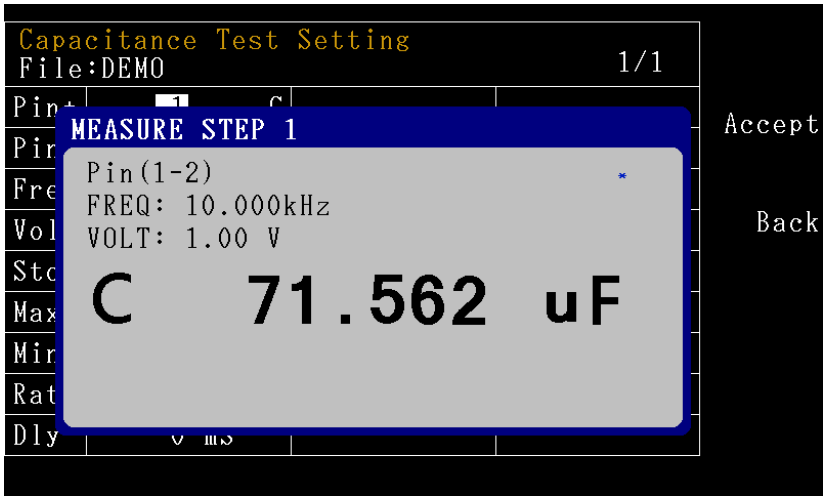


Figure 3.3.20 Capacitance measure

Meas function software key description:

- **Accept:** Confirm the use of this measured value as the standard value and return to the edit screen.
- **Back:** Do not use the current measured value and return to the edit screen.

   - **c.** First enter the standard value in the standard value field, then press the Devia function key to the right to use compensation to automatically compensate the measured value to the standard value entered. After confirming, the system will automatically record this compensation value entry and automatically add the compensation value when testing this item. The screen is as shown below:

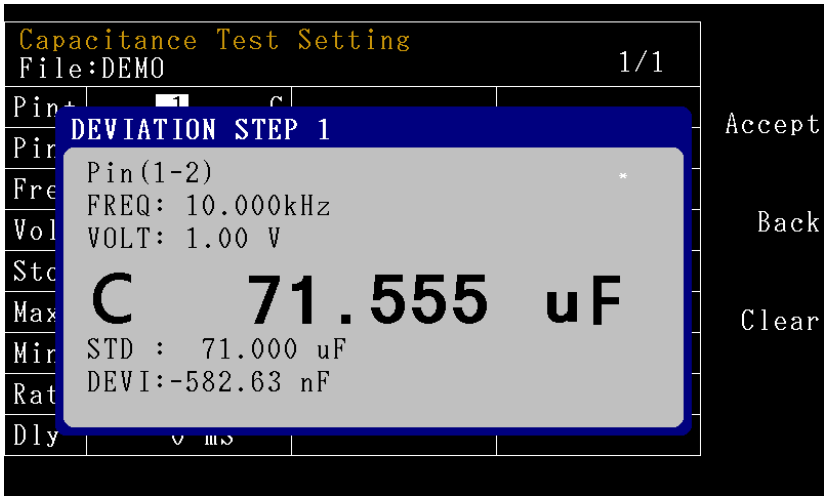


Figure 3.3.21 Capacitance deviation

Devia function description:

- **C:** Test parameter and measured value display field; this value is the actual measured value.
- **STD:** Standard value display field; this is the standard value set for this test item.
- **DEVI:** Deviation value display field; it is the difference between the standard value (STD) set and the current measured value. If the use is confirmed, this value will be saved as the compensation value.
- **Accept:** Confirm the use of the compensation value and return to the edit screen.
- **Back:** Do not use the compensation value and return to the edit screen.
- **Clear:** Clear the saved compensation value and return to the edit screen.

3. **Max, Min:** Sets the upper and lower limit field; the value can be entered directly or use the % key to perform settings. In the Limit Setting window, enter the percentage values for the upper and lower limit respectively; after pressing the Enter key, the system will automatically carry of the value to the Max and Min fields. The screen is as shown below:

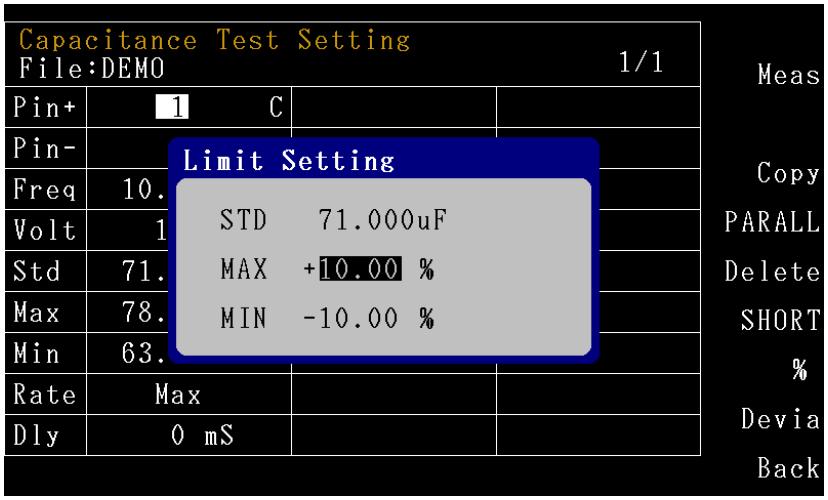


Figure 3.3.22 Capacitance limit setting

4. **Rate:** Measurement speed setting field; four measurement speeds are available for selection: MAX/FAST/MED/SLOW.

5. **Dly:** Delay time setting field; the setting range is between 0~9999mS.

3.3.7 Balance Test Setting

Balance Test Setting: Coil balance test item settings; it can compare the measured values of two sets of windings under the same conditions (test item/test frequency/test voltage). Please note that the winding that you are editing the coil balance for must be a coil winding with actual test items that have been created; otherwise, the correct results cannot be calculated.

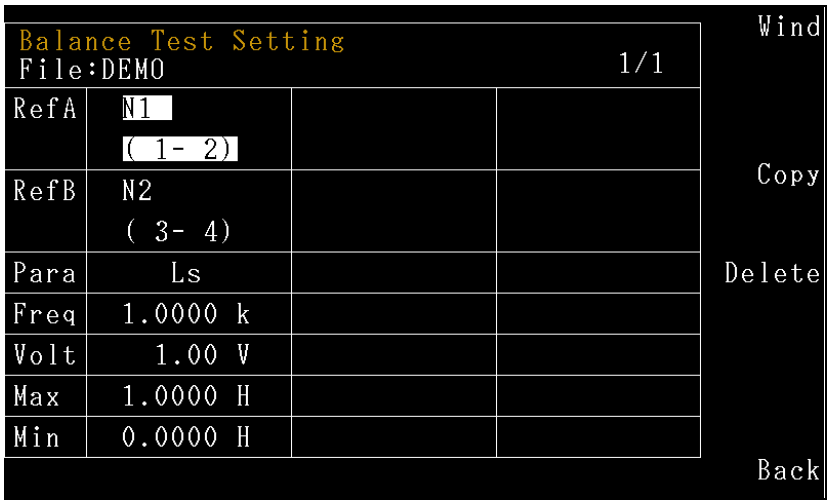


Figure 3.3.23 balance setting

Coil balance test setting description:

1. **RefA, RefB:** Sets the windings for coil balance to compare.

Right function keys descriptions:

- **Wind:** Press this function key to select previously edited coil winding.
- **Copy:** Copy this set of test item to the next set.
- **Delete:** Deletes this set of test item.
- **Back:** Exits this function screen.

2. **Para:** Test item field; the software key (Para) to the right of the screen can be used to switch between test items, which include the Ls, Lp, Lk, Rs, Z, and DCR etc. test parameters.
3. **Freq:** Sets the test frequency field.
4. **Volt:** Sets the test voltage field.
5. **Max, Min:** Sets the upper and lower limit fields.

3.3.8 Pin Short Test Setting

Pin Short Test Setting: Transformer short-circuit test item.

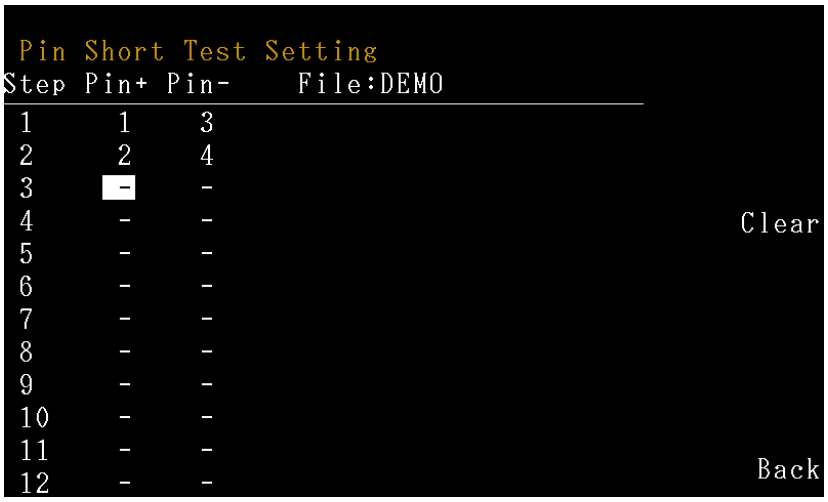


Figure 3.3.24 Pin short setting

Coil balance test setting description:

1. **Step:** Test step; a maximum of 12 short-circuit test items can be edited.
2. **Pin+, Pin-:** Sets the transformer pin combinations for the short-circuit test.

Right function keys descriptions:

- **Clear:** Clear key.
- **Back:** Exits this function screen.

3.3.9 Correction Setting

Correction: Fixture error correction test; the goal for the correction is to eliminate the errors caused by parasitic capacitance or serial impedance of the fixture or test cable.
The corrected and reset data will be saved in the flash memory inside the instrument; the data will not disappear even if powered off. However, frequent correction and reset is necessary because only by doing so can the most accurate measured value be acquired. Corrections usually must be performed when the test frequency or drive voltage changes.
(Before preparing for correction, please first remove the transformer on the fixture from the fixture)

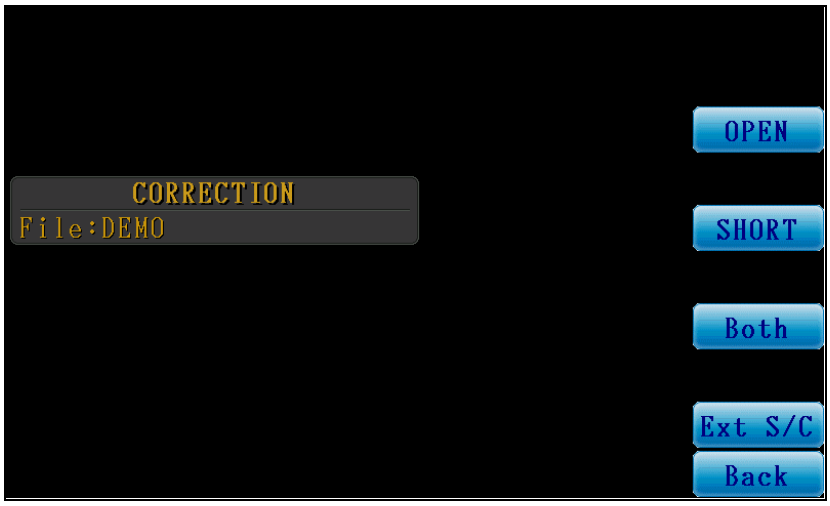


Figure 3.3.25 correction screen

Correction setting description:

1. **OPEN:** Only correct the error value of the fixture for open circuits.
2. **SHORT:** Only correct the error value of the fixture for short circuits.
3. **Both:** First correct the error value of the fixture for open circuits then correct the error value for short circuits.
4. **Ext S/C**：Perform external short correction。User should short the pins which you need to test before perform, to actually zeroing to the end of the test object.
5. **Back:** Exits this function screen.

3.3.10 Complete Deviation Setting

Complete Deviation: Uses GOLDEN SAMPLE as the standard to perform error compensation setting; it compensates the measured value to the value acknowledged by you.

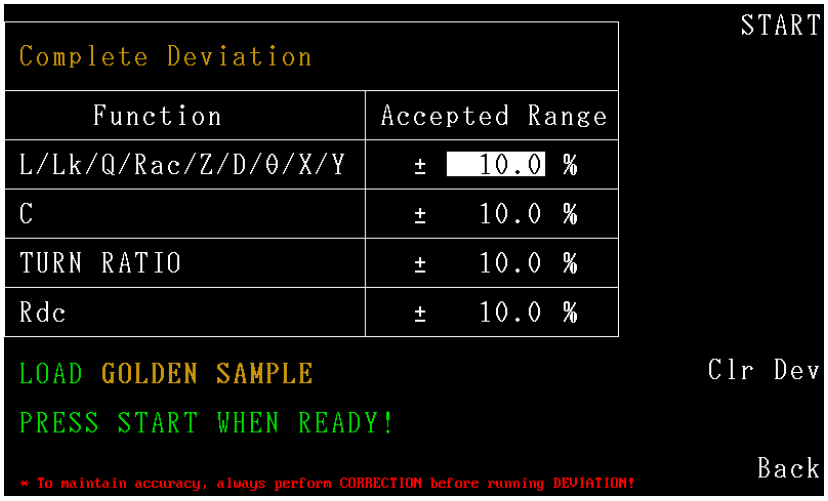


Figure 3.3.26 Complete deviation setting screen

Complete deviation setting description:

※This compensation setting requires placing the GOLDEN SAMPLE in the F5220 test fixture.

1. **Function:** Displays test items that you can perform compensation for.
2. **Accepted Range:** Upper and lower limit for compensation; use this to set the maximum range for compensation.
3. **Clr Dev:** Clear all compensation value.
4. **Back:** Exits this function screen.
5. **START:** Enters the compensation value test screen.
   - **Compensation value test description:**

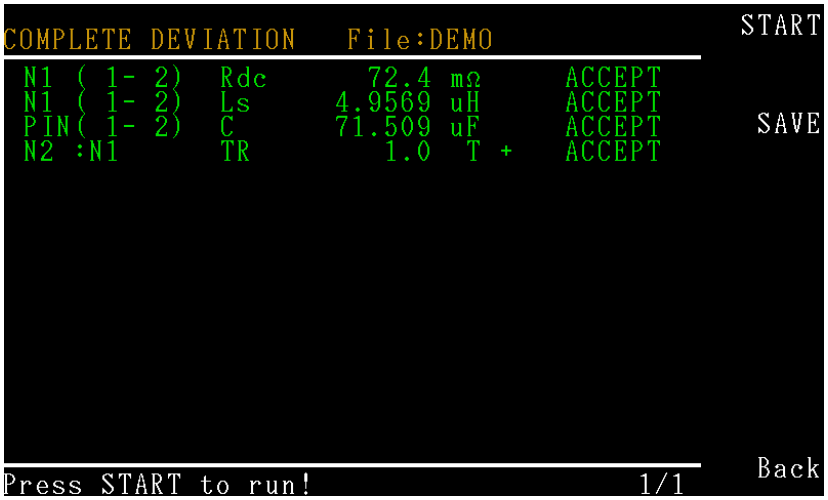


Figure 3.3.27 deviation setting screen

START: Starts performing test and calculate the compensation value; tests will be performed individually based on the test items you created. This test value will use standard value of the test item you created as the basis to perform compensation to the standard value. If the text REJECT appeared for the compensation value, it means that it exceeded the upper and lower limit for compensation and cannot be used. ACCEPT means that it is within range and is an acceptable compensation value.
SAVE: Saves the compensation value for this test.
Back: Exists this function screen.

3.4 Test Mode

When you have finished editing the step, the **Test** key on the front panel can be pressed to enter test mode, and use the **Trigger** key to perform transformer test; its test screen functions and definitions are as shown in the figure below:

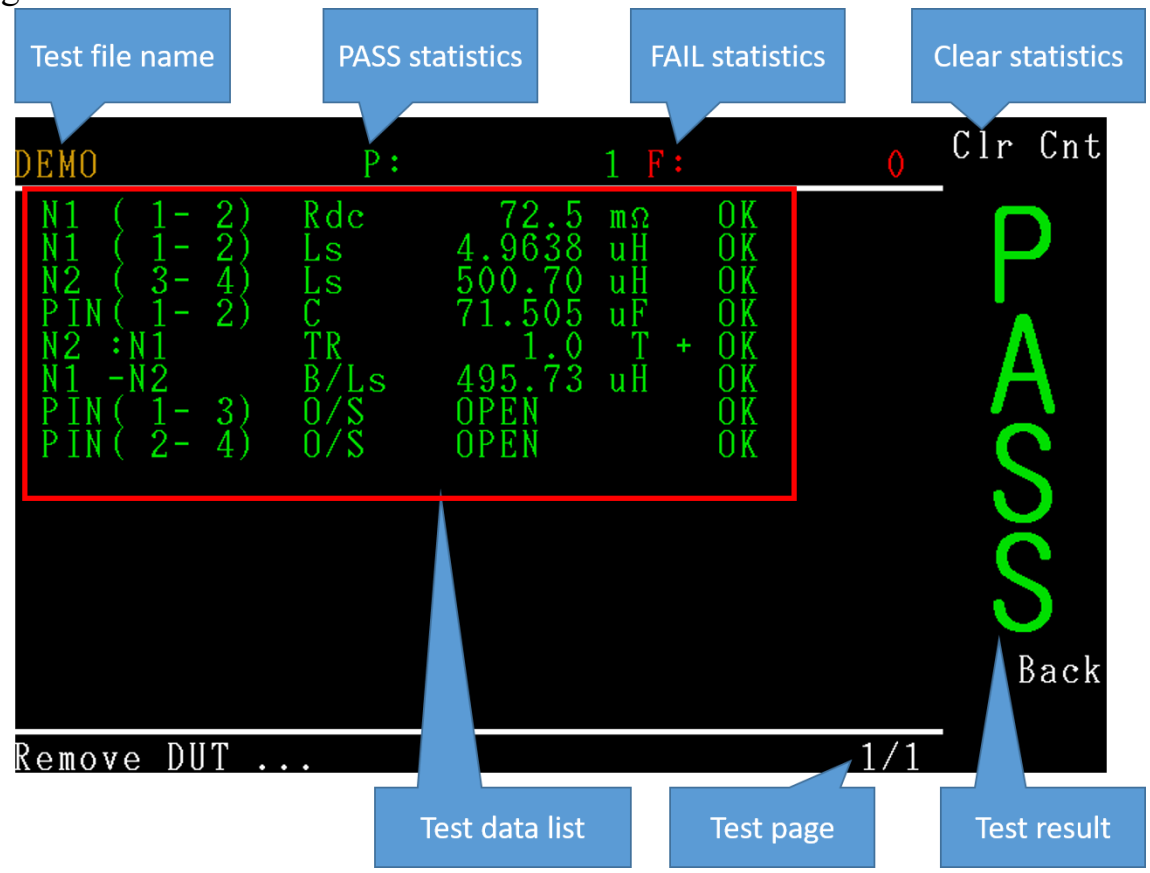


Figure 3-4-1 Multi Step Mode screen

※The maximum value of the PASS/FAIL statistics is 999,999,999 each. If this value is exceeded, it will be reset to 1 and continue to accumulate.

3.5 File Management

Under the Main Menu screen, press the **FILE** function key to enter the file management main menu.

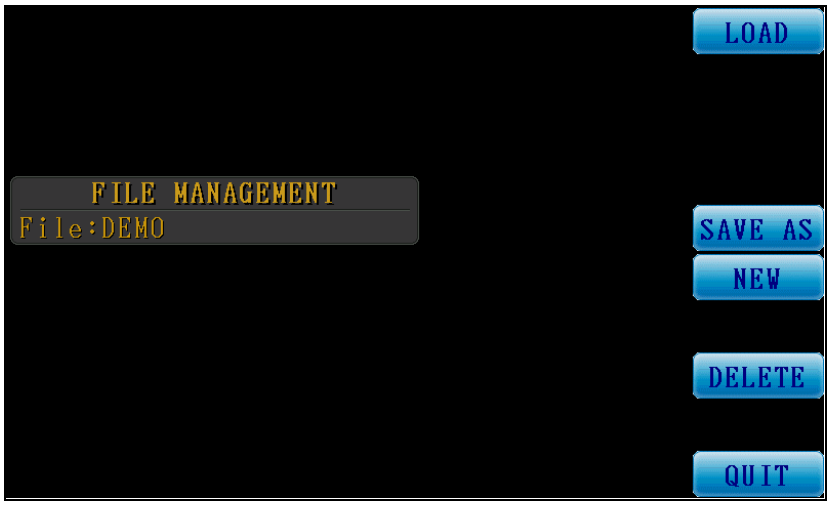


Figure 3-5-1 FILE MANAGEMENT screen

3.5.1 Loading File

The figure below is the RAM FILE (internal file list) screen; the directional keys can be used to select the file to load. For example file {001} is displayed in green, this means that it is the currently selected file. The function key {LOAD} to the right can be pressed to load the file. The file with an {@} symbol in front of the file name means it is the file that is currently being used.



Figure 3.5.2 RAM FILE screen

- **LOAD:** Loads the currently selected file.

- **USB File:** Switches to the USB flash drive file list screen; the screen is as shown below.



Figure 3.5.3 USB FILE screen

- **RAM File:** Returns to the internal file list screen.
- **Copy to RAM:** Copies the currently selected file from the USB flash drive to the internal storage of the machine.
- **All to RAM**：Copy all the file to the internal storage of the machine.

※ **Note**：If there have the same file name between USB and internal storage of the machine the file will be covered by the file in the USB.

- **PgDn:** Jump to next page.
- **PgUp:** Jump to the previous page.
- **QUIT:** Returns to the file management page.

- **Copy to USB:** Copies the currently selected file to the USB flash drive.Its saving path is (USB:\TF_6265\SetFile).
- **All to USB**：Copy all the file to the USB.
- **PgDn:** Jump to next page.
- **PgUp:** Jump to the previous page.
- **QUIT:** Returns to the file management page.

3.5.2 Saving As

The figure below is the SAVE AS (save as new file) operation interface. The directional keys can be used to select the English letters and numbers on the screen to form the file name. For example {A} is displayed in green, which means it is the currently selected letter. The function key {Select} to the right can be pressed to enter the character {A}. Once input is completed, select {OK} to complete the SAVE AS function.

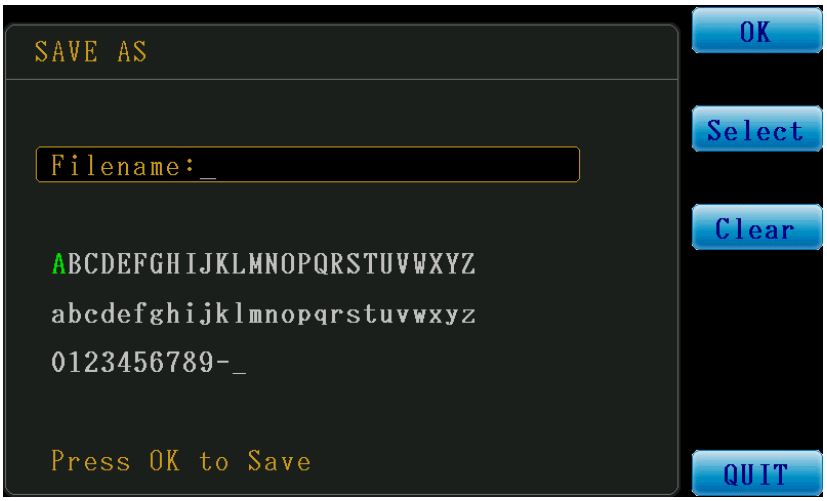


Figure 3.5.4 SAVE AS screen

- **Filename:** File name input area.
- **OK:** Save file confirm key.
- **Select:** File name text selection confirm key.
- **Clear:** File name deletion key; the letter at the end will be cleared each time it is pressed.
- **QUIT:** Returns to the file management page.

3.5.3 Creating New File

The figure below is the NEW FILE (create new file) operation interface. The directional keys can be used to select English letters and numbers on the screen to form the file name. For example {A} is displayed in green, which means it is the currently selected letter. The function key {Select} to the right can be pressed to enter the character {A}. Once input is completed, select {OK} to complete the NEW FILE function.

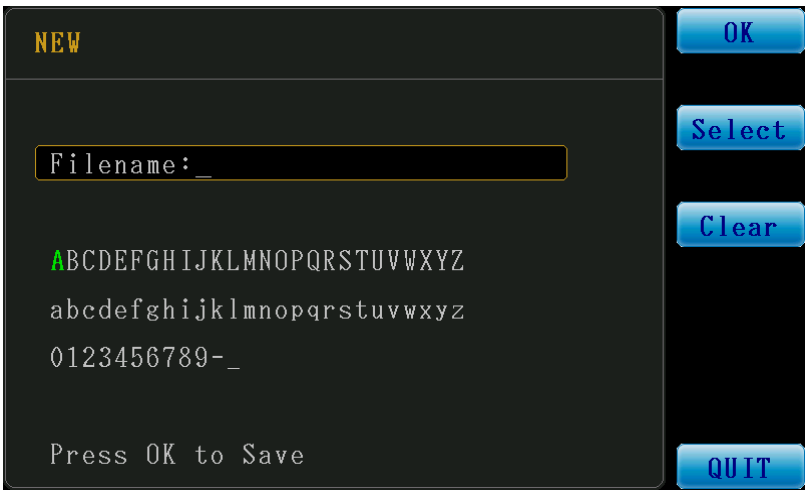


Figure 3.5.5 NEW FILE screen

- **Filename:** File name input area.
- **OK:** Save file confirm key.
- **Select:** File name text selection confirm key.
- **Clear:** File name deletion key; the letter at the end will be cleared each time it is pressed.
- **QUIT:** Returns to the file management page.

3.5.4 Deleting File

The figure below is the DELETE FILE (delete file) operation interface. The directional keys can be used to select the file to delete. For example {011} is displayed in green, which means it is the currently selected file. The function key {DELETE} to the right can be pressed to delete this file. The file name with the {@} symbol in front means it is the file currently being used and cannot be deleted. Another file must be loaded first in order to delete this file.

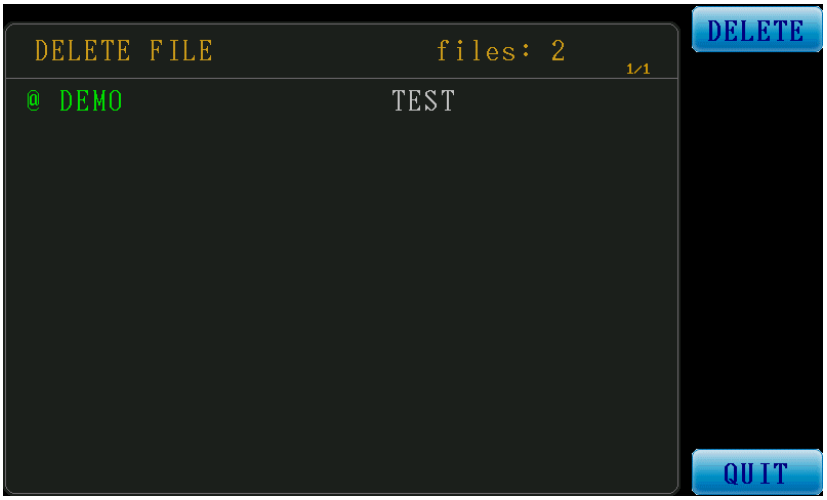
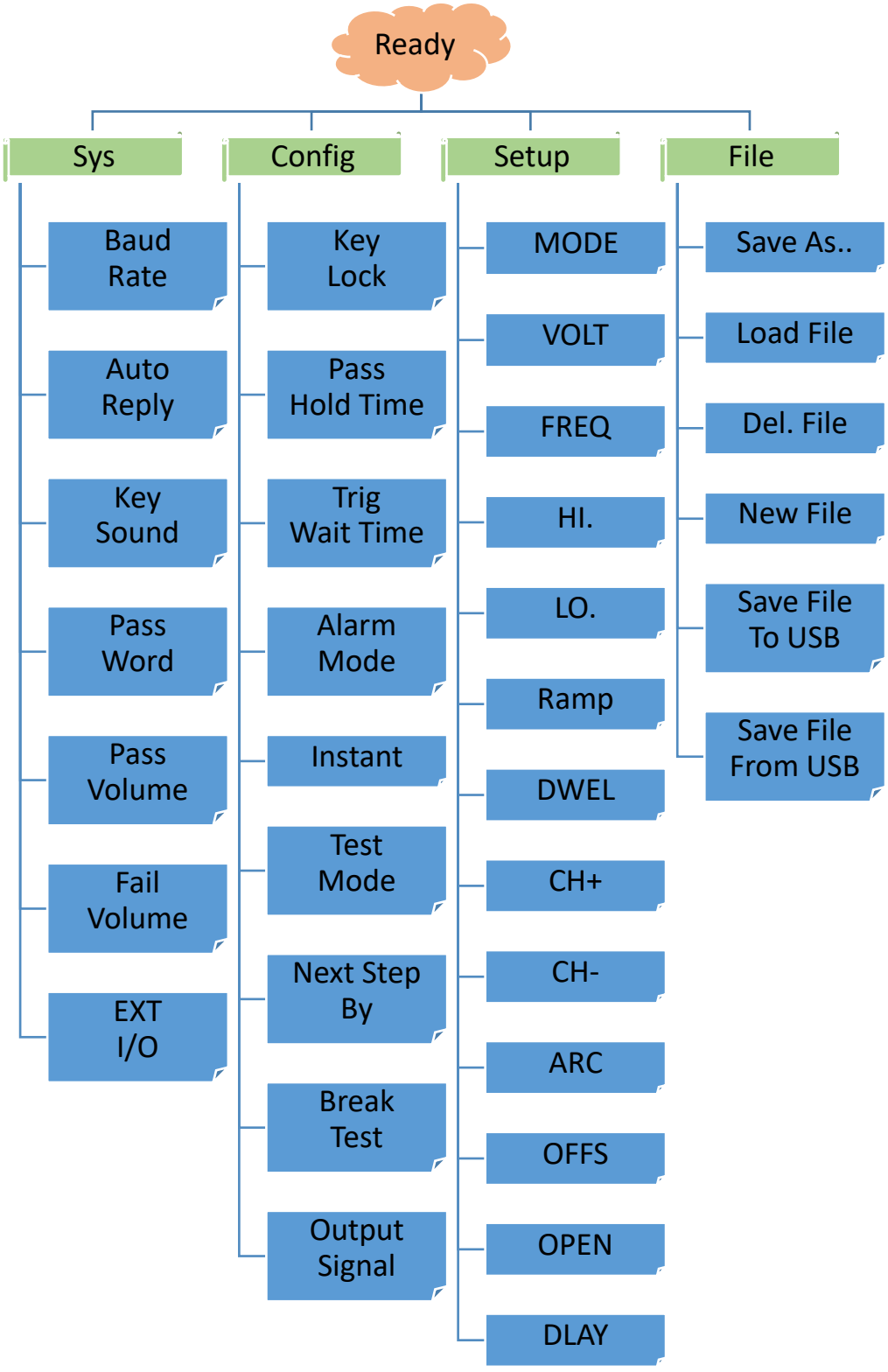


Figure 3.5.6 DELETE FILE Screen

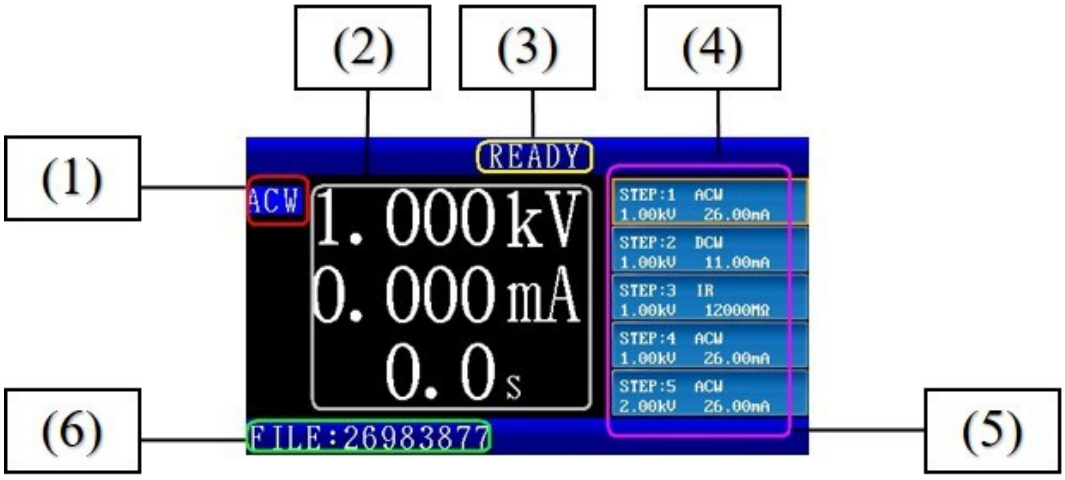
- **DELETE:** Deletes the currently selected file.
- **PgDn:** Jump to next page.
- **PgUp:** Jump to the previous page.
- **QUIT:** Returns to the file management page.

Chapter 4 7631 Function Setting

4.1 Function block diagram



4.2 **Standby screen description**



(1) Display the current test mode: Message “ACW” for AC voltage testing, “DCW” for DC voltage testing, “IR” for insulation impedance testing

(2) Readings of the voltage, current (resistance in IR mode), and test time of the measurement output port now. It displays the current voltage and test time settings if no test is running now.

(3) Display the current status of your machine as illustrated in the table below:

Status display	Description
READY	Your machine is ready for testing now, press the TEST key to begin testing
TEST	Testing now
WAIT	The Trig Wait Time which can be set up in the CONFIG menu
WAIT KEY	Waiting for the trigger signal for the next test
PASS	Tested successfully (qualified goods)
Break Down	Leak current exceeds the maximum measurement
Arcing	Arc exceeds the upper limit
Lo-Limit	Measurement exceeds the lower limit
Hi-limit	Measurement exceeds the upper limit
FAIL	At least one step in a multi-step test failed
INTER-	High voltage safety lock on

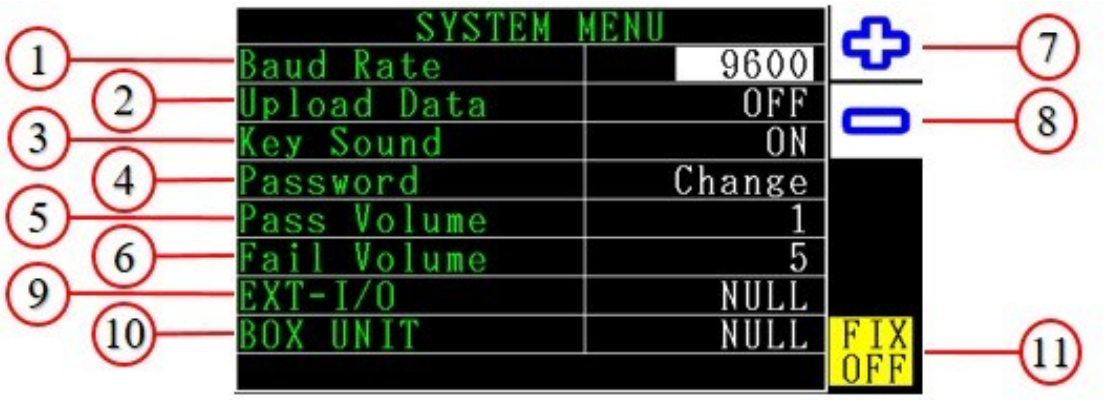
LOCK	
VOLT-ERROR	Voltage output error
OPEN	Test wire disconnection error

(4) Display the first five test steps of the current file

(5) The orange color framed step is the one under testing (DUT) now along with its specifications displayed. You may select the desired step by moving the cursor to it with arrow key. Press the ENTER key to set up the test items.

(6) Display the name of the current file. The name appended with an asterisk " * " suggests the file has been edited but not saved. In this case the current settings cannot be copied to a mobile storage device.

4.3 System settings description



(1) **Baud Rate:** You may set up a transmission speed of RS-232 to 9600, 19200, 38400, 57600, or 115200. Please note that this needs to be aligned with the speed at the control end.

(2) **Upload Data:** Upload test results automatically, select OFF, RS-232, FLASH, BOTH. When the function is set to RS-232, the machine will automatically reply to the current status. The status is: the machine will return the string of POWER ON when the machine is turned on, the machine will return the string of START when the test is started, and the machine will return the current test step and result when the test is over, for example, 01, ACW,1.001e +03,7.169e-06,PASS, there are five fields in the data, all separated by commas. The first field represents the step number of the test. The second column represents the test mode, there are seven types of ACW, DCW, IR, CONTACT, ACW-P, DCW-P, and IR-P. The third column represents the output voltage during the test, expressed in scientific notation. The fourth field

represents the current value during the test, expressed in scientific notation (if the test item is IR, this field returns the resistance value). The fifth column represents the result judgment: PASS (determined good product), HI-Limit (over the upper limit of the set value), Lo-LIMIT (below the lower limit of the set value), INTER-LOCK (high voltage safety lock start), ABORT (test suspension)), BREAKDOWN (Crash Point Detection), ARCING (Discharge Detection), VOLT ERR (Voltage Output Abnormal), OPEN (Destination Error), etc. If a multi-step test is performed, the final test will be added after the end of the test. critical result. When the function is set to FLASH, the test result will be automatically written into the mobile access device after the standby test is over, the format is the same as the RS-232 content; the data storage path is \7631\STAT\current test file name .csv. When the function is set to BOTH, the above two actions will be performed simultaneously. When the function is set to OFF, the function is turned off.

Note: When the RS-232 and FLASH functions are turned on, because it takes some time to transmit data (depending on the set transmission rate and mobile access device), it will cause some time delays for continuous or multi-step testing.

(3) Key Sound: Switch the key sound on/off (the keyboard clicks after a key is pressed successfully).

(4) Password: This is the password protecting the keyboard lock. When the latter is on you have to input the correct password to unlock the keyboard. You may change the password here. Its factory default value is 7631.

(5) Pass Volume: Volume for qualified goods after testing. You can set the volume in 5 steps from 1 to 5 with 1 being the softest and 5 the loudest. You can mute the pass sound in the CONFIG page.

(6) Fail Volume: Volume for failed goods after testing. You can set the volume in 5 steps from 1 to 5 with 1 being the softest and 5 the loudest. You can mute the fail sound in the CONFIG page.

(7) **Adjust upward:** You may press the corresponding software key when this symbol is displayed to tune options upward or increase the numeric value by 1 after each key is pressed.

(8) **Adjust downward:** You may press the corresponding software key when this symbol is displayed to tune options downward or decrease the numeric value by 1 after each key is pressed.

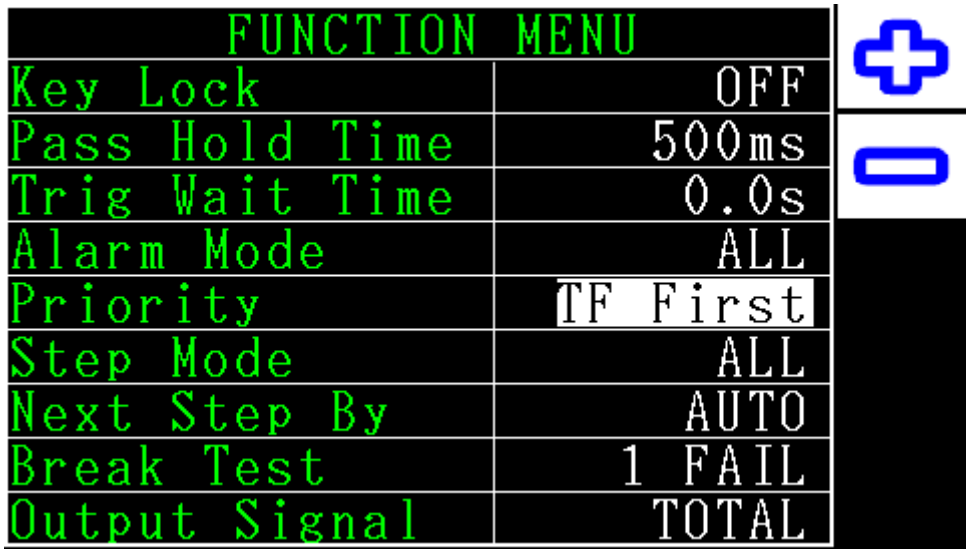
(9) **EXT-I/O:** External expansion I/O board, if the field shows NULL, it means that no expansion I/O board is currently connected, if it shows EXIST, there is an expansion I/O board connected.

(10) **BOX UNIT:** The number of scanner box, if the field shows NULL, it means that no scanner box is currently connected, if it shows 1~ 4, there is 1~ 4 scanner boxes connected.

(11) **FIX ON/OFF:** To trigger the cylinder which is on the F7721.

FIX ON: Enable the cylinder.
FIX OFF: Disable the cylinder.

4.4 Function setup description (FUNC)



(1) **Key Lock:** Keyboard lock prevents the test conditions from changes by unexpected user operation. Once it is on, users can start and stop the test without changing any settings. To unlock the keyboard, input the

password you set earlier. To change the password, please refer to the system setup steps given earlier.

(2) **Pass Hold Time:** The Retaining time for the qualified goods message display. Your machine prompts the message “PASS” and the output signal at the remote control port once a product is tested as qualified. This function sets up a time span of message display and signal output with the options of 50mS, 100mS, 500mS, 1S, 2S, 5S and Infinity. The “Infinity” option keeps on displaying test results until the ABORT key is pressed.

(3) **Trig Wait Time:** This is the time span after your machine enters the test page (the “WAIT” message prompts in the status column) by pressing the test key until there is a high voltage current output for the test. This is used to get the test jig triggered and positioned for testing.

(4) **Alarm Mode:** The alert mode has the options of ALL (alert all), PASS (alert for qualified goods), FAIL (alert for failed goods), and OFF.

(5) **Priority:** You have to press and hold the TEST key to run the test in this mode. Release the key and the test stops immediately.

(6) **Test Mode:** You may run the test in a single- or multi-step mode. You may press the up and down arrow key in single-step mode to select the desired test step and get test results immediately. Your machine begins test with the first step in SETUP through to the last one in multi-step mode. Test results are determined by the subsequent settings.

(7) **Next Step By:** In multi-step mode your machine runs the next step based on the given trigger source after the first one has ended. With the option “AUTO”, the test runs the next step automatically; “Trig”, the next step, will run only after the TEST key is pressed. This item is available only when **Test Mode is set to the option ALL.**

(8) **Break Test:** In multi-step mode, your machine stops or continues the test based on the settings in this field in case the results are failed goods. With option “1 FAIL”, the test stops immediately in case of failed goods; for “OFF”, the test ends only after the last step is

executed. This item is available only when **Test Mode is set to the option ALL.**

(9) **Output Signal:** In multi-step mode, your machine gives a results signal in case this is set to the option “EACH”; with the option “TOTAL” it gives the output signal “PASS” or “FAIL” only after the test has ended.

4.5 Specification setup description (1)

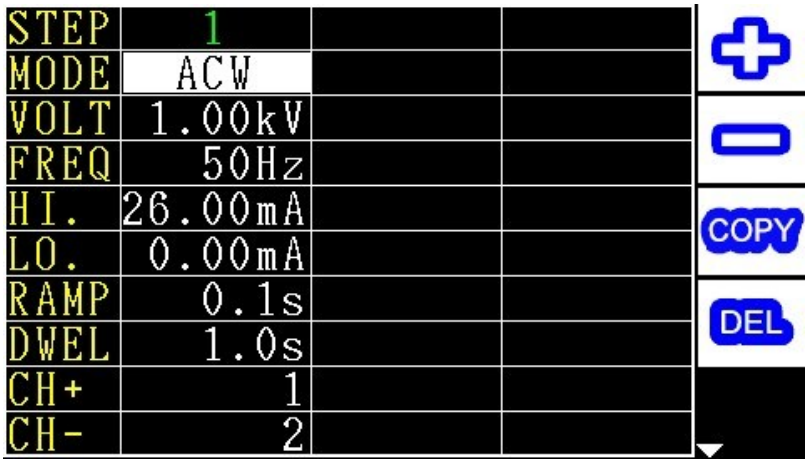


Figure 4-5-1 Setup 1

(1) **STEP:** Step ID. Each file can have up to 16 steps. Press the software key COPY to add the next step; press the software key DEL to delete the step where the cursor is positioned. Each file must have at least one step.

(2) **MODE:** There are seven test mode options: ACW, DCW, IR, Contact, ACW-P, DCW-P, IR-P which you can select with a software key.

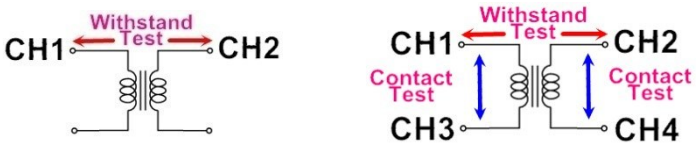
1. **ACW:** Use AC voltage to measure the current value on the DUT.

2. **DCW:** Use DC voltage to measure the current value on the DUT.

3. **IR:** Use DC voltage to test and measure the Insulation value on the DUT.

4. **Contact:** Use AC voltage (Approximately 10V) to measure whether there is resistance under 100kΩ between channels. If it is, the result will show Pass, otherwise, it will show Fail. Generally used for multi-step testing, first use this function to check whether the wiring is correct. It is to ensure that the test wiring is correctly connected to the DUT before the voltage withstands test.

   For example:



General test Contact check before test

(Set Step 1 to be contact mode, and test CH 1-3
Set Step 2 to be contact mode, and test CH 2-4
Set Step 3 to be ACW mode, and test CH 1-2)

5. **ACW-P, DCW-P, IR-P:** These test modes are the same as the general ACW, DCW, and IR test methods. The difference is that after setting the Parallel mode, if the test result of this step is PASS, the machine will look for the next step with the mode set to Parallel for testing. If the test result of this step is FAIL, the machine will proceed to the next step for testing. This mode is generally used for parallel testing of multi-DUT.

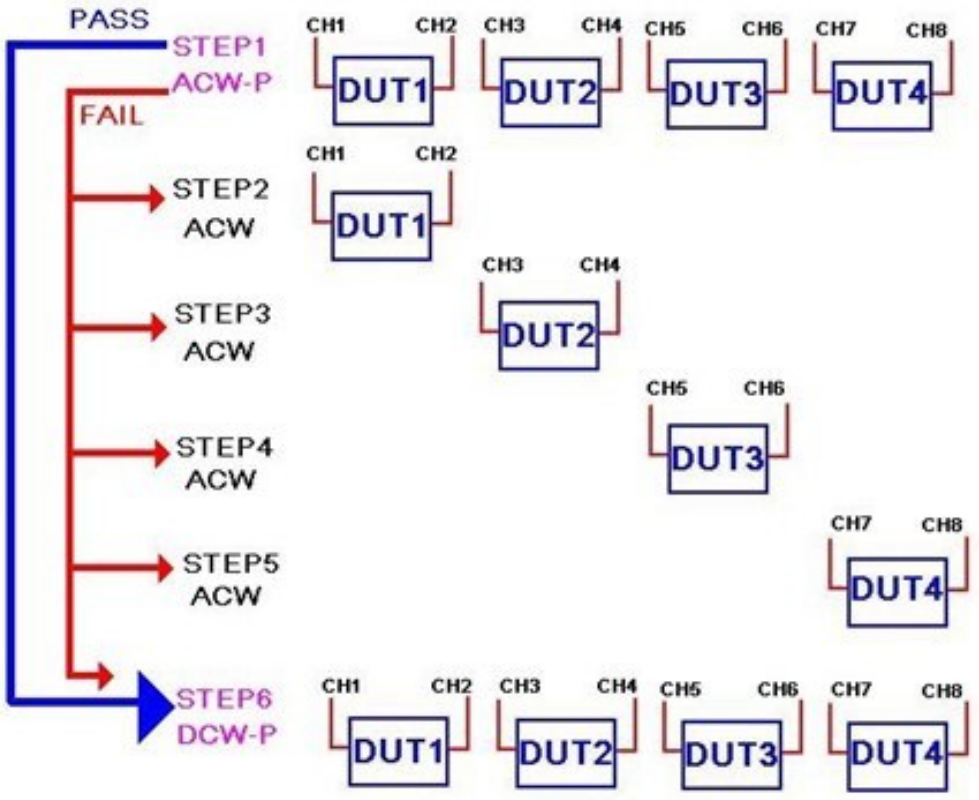


Figure 4-5-2 Parallel test

The figure 3-5-2 is the test flow chart of Parallel mode. As shown in the figure, STEP-1 and STEP-6 are setting Parallel mode. If

STEP-1 judges FAIL during the test, the machine will test according to the items set in STEP-2, 3, 4, and 5 to analyze which DUT is defective. If the STEP-1 test result is PASS, the machine will directly skip STEP-2, 3, 4, and 5 steps, and directly test the next step (STEP6) set to Parallel for testing to save test time.

(3) **VOLT:** Set up the test voltage by typing its value with a numeric key. The maximum voltage varies with the test mode for ACW: 5.0kV, DCW: 6kV, IR: 1kV. Their minimum values are all 0.1kV.

(4) **FREQ:** You may opt for a test frequency of 50Hz or 60Hz.

(5) **HI.:** This is the upper limit of measurement. In case test readings exceed this limit the test has failed and is ended immediately. This value varies with the test mode for ACW: 26mA, DCW: 11mA, IR: 1200MΩ. For IR tests with settings at 1200M, no upper limit will be judged.

(6) **LO.:** This is the lower limit of measurement. In case test readings exceed this limit, the test has failed and is ended immediately. For settings at a value 0, no lower limit will be judged.

(7) **Ramp:** This is the time span for the voltage to rise from 0 to the target value ranging from 10S to 0.1S.

(8) **DWEL:** This is the time span for sustaining the test after the voltage reaches the given settings. For a setting of value 0, the test continues until the stop key is pressed or the test fails.

(9) **CH+, CH-:** This item sets up the high or low voltage output channel. There are 8 options for you to set as desired. Check the channel number in the CH+ row to set it as the high voltage channel and in the CH- row to set it as the low voltage channel; numbers not checked represent closed channels. See below for the setup page.

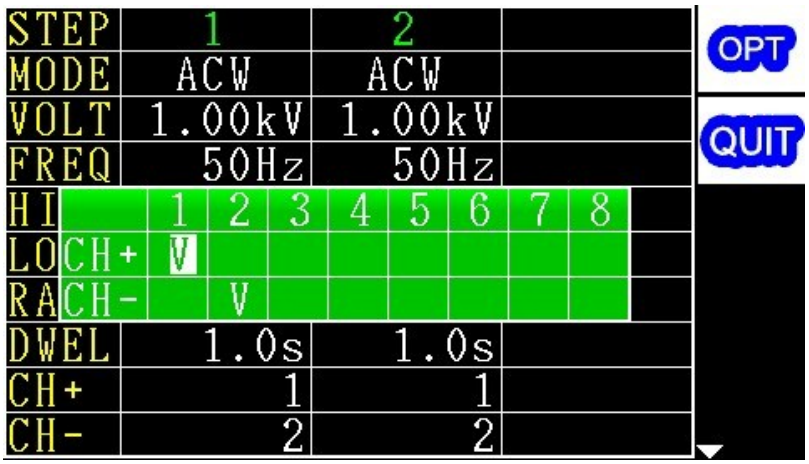


Figure 4-5-3 Channels

4.6 **Specification setup description (2)**

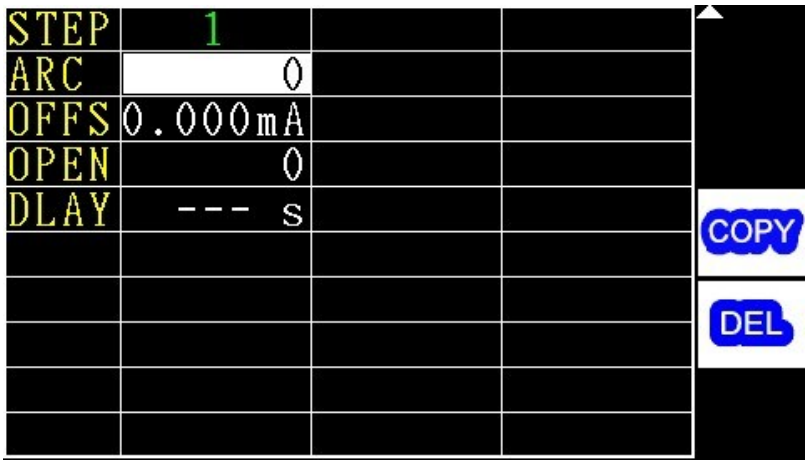


Figure 4-6-1 Setup 2

(1) **ARC:** This item sets up arc sensitivity. The greater the value is, the less sensitive the arc detection is. Setting it to 0 will disable your machine from making any judgment over the arc during the test.

Arc sen.	mApeak	Arc sen.	mApeak
Level 1	1mApeak	Level 11	11mApeak
Level 2	2mApeak	Level 12	12mApeak
Level 3	3mApeak	Level 13	13mApeak
Level 4	4mApeak	Level 14	14mApeak

Level 5	5mApeak	Level 15	15mApeak
Level 6	6mApeak	Level 16	16mApeak
Level 7	7mApeak	Level 17	17mApeak
Level 8	8mApeak	Level 18	18mApeak
Level 9	9mApeak	Level 19	19mApeak
Level 10	10mApeak	Level 20	20mApeak

(2) **OFFS:** This item resets the test end to prevent the impact of the external jig on accuracy. It deducts the leak current by the jig in advance and displays the actual leak current of the DUT with the equation “measurement readings = actual measurement less reset value”. This item has two options: Manual and auto. The first requires manual input of the leak current value. The second contains the following steps: Remove the DUT from your machine; point the cursor to the field OFFS and press the software key AUTO; your machine measures according to the given voltage statistics and prompts the results; the message “SAVE=ENTER” displays after the measurement operation is done; press the ENTER key to save the test value or the EXIT key to exit without saving it; the saved value will be deducted from each measurement to enable a more accurate test.

(3) **OPEN:** Open circuit detection sensitivity. Poor connection of the high voltage test wire to the DUT may lead to a lower measurement current and invalid qualified product results in the voltage test. Once this function is enabled (with non-zero settings) your machine will measure the DUT's capacitance with low voltage for about 200ms before the high voltage test begins. In case the measured capacitance value is lower than the settings, the test wire may not be connected to the DUT properly and your machine will stop the test and prompt the message “OPEN”. You may set this in two options: Manual and auto. The first requires manual input of the given value. The second contains the following steps: Connect the DUT properly; point the cursor to the field OPEN and press the software key AUTO; your machine measures the given output channel and prompts the results; the message “SAVE=ENTER” displays after the measurement operation is done; press the ENTER key to save the test value or the EXIT key to exit without saving it.

Note: In case readings with or without connection to the DUT differ from each other in a range less than 20, then its capacitance is too small and may not be valid for using this method for an open circuit test.

(4) **DLAY: This item is aimed at judging the delay time and is editable only in IR mode.** For IR tests of the DUT with capacitance, this can be judged only after the capacitor is fully charged. The delay time starts counting only after voltage has reached the settings. Before that, your machine displays measurement without the upper and lower limit determination and enters judgment mode immediately after the delay time has expired. **As the delay time is contained in the test time, its settings must be lower than the latter.**

(5) **High voltage output time and results determination timing:** See the diagrams below for the results determination the timing after the TEST key is pressed by the user. Please note that in the IR delay and ascending time, no upper and lower limit will be determined while only the upper limit will be determined in the ascending time of the ACW and DCW modes.

	Mode	Low Limit Judgment	Hi Limit Judgment
Ramp Time	ACW	Disable	Enable
	DCW	Disable	Enable=Ramp Time > Delay Time
	IR	Disable	Disable
Dwell Time	ACW	Enable	Enable
	DCW	Enable=(Ramp Time + Dwell Time)>Delay Time	Enable=(Ramp Time + Dwell Time) > Delay Time
	IR	Enable=(Ramp Time + Dwell Time)>Delay Time	Enable=(Ramp Time + Dwell Time) > Delay Time

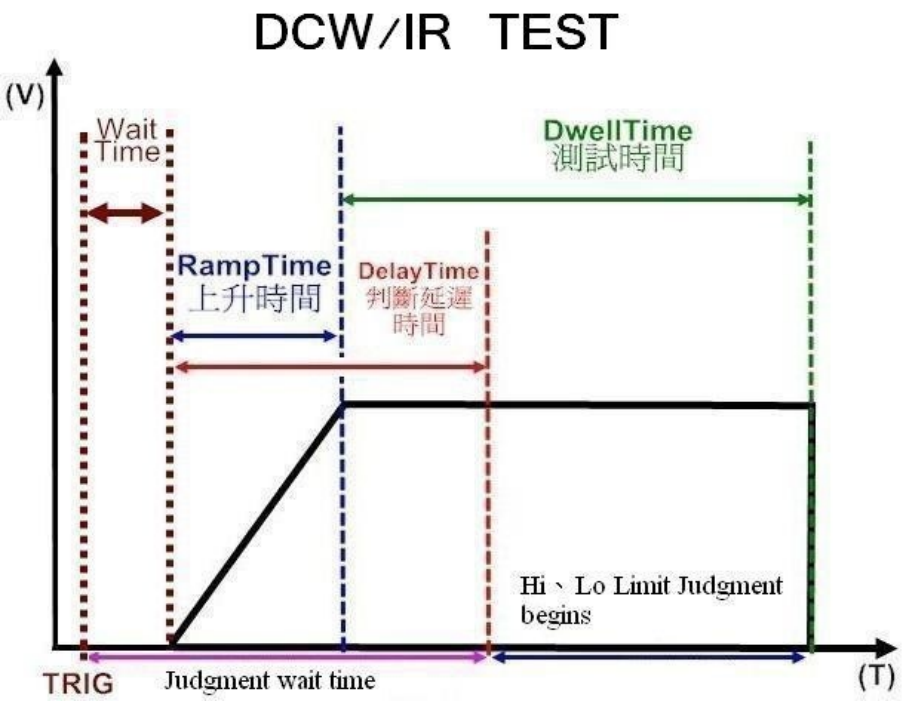


Figure 4-6-2 DCW/IR-TEST

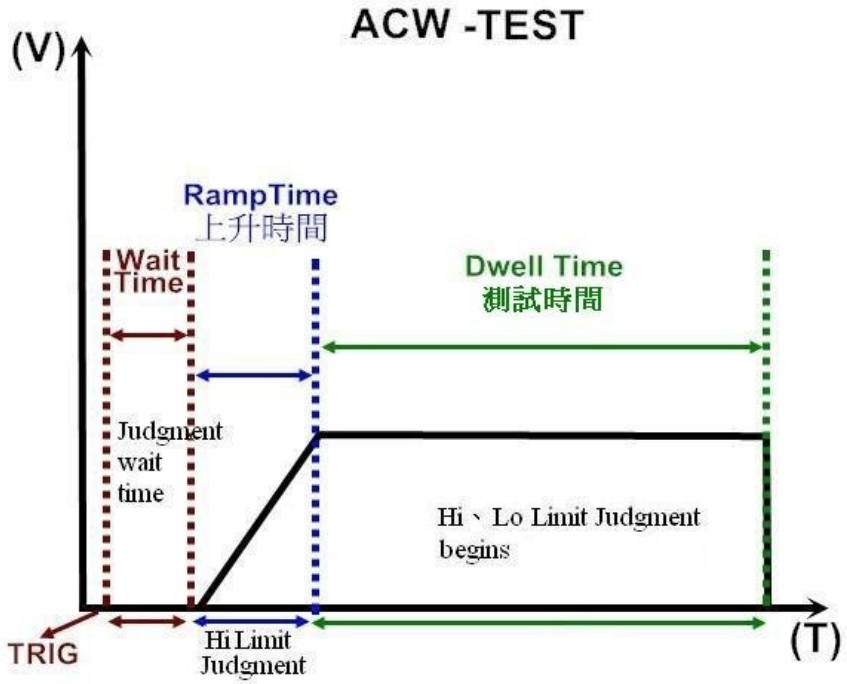


Figure 4-6-3 ACW-TEST

4.7 File management (FILE)

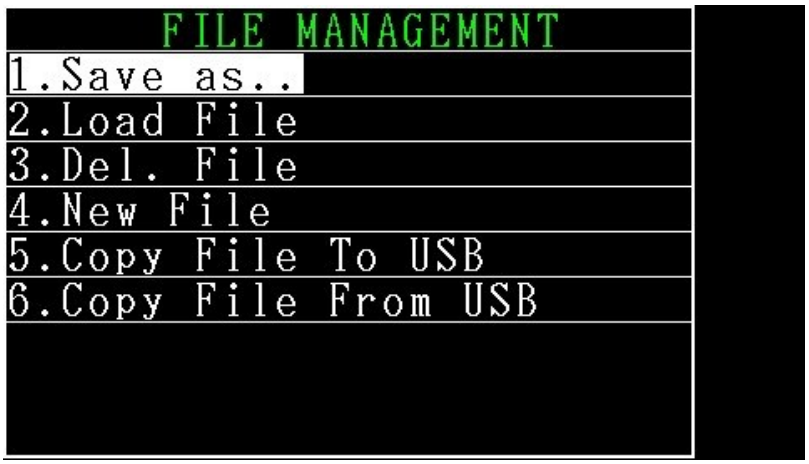


Figure 4-7-1 File

(1) **Save As..:** This option saves the setup file with a new file name **(there can be up to 30 files saved in your machine).** The "file save" page displays the existing files in your machine. In case a USB drive is connected, a USB icon shows in the upper right corner of the page. You may press the software key to select saving a file in the USB drive or internal memory. You can type a new file name or select an existing file with the arrow key as shown in the figure 3-7-2 below.



Figure 4-7-2 Save File Name

(2) **Load File:** This item reads the existing file. The "file access" page displays the existing files in your machine. In case a USB drive is connected, a USB icon shows in the upper right corner of the page. You may press the software key to select retrieving a file in the USB drive or internal memory. You can type the file name or select the existing file with the arrow key as shown in the diagram below. **Please note that all setting files are auto generated by your machine. DO NOT**

edit this data as the file may be damaged or the machine may run improperly.



Figure 4-7-3 Load File

(3) **Del File:** This item deletes the file in a manner similar to saving or retrieving it.

(4) **New File:** This item initializes all existing files and creates a new one.

(5) **Copy File to USB:** This item copies the existing setup files to a USB drive and overwrites any one in the latter with the same name. Enter this page to display the files existing in your machine, press the software key OPT to select one or more desired files, press the software key COPY to start copying the selected files. You may press the software key ALL to select all files shown in the current page for copying. Please note that the ALL option is valid for files on the current page only. For files on the next page, do the same to copy them as shown in the diagram below.

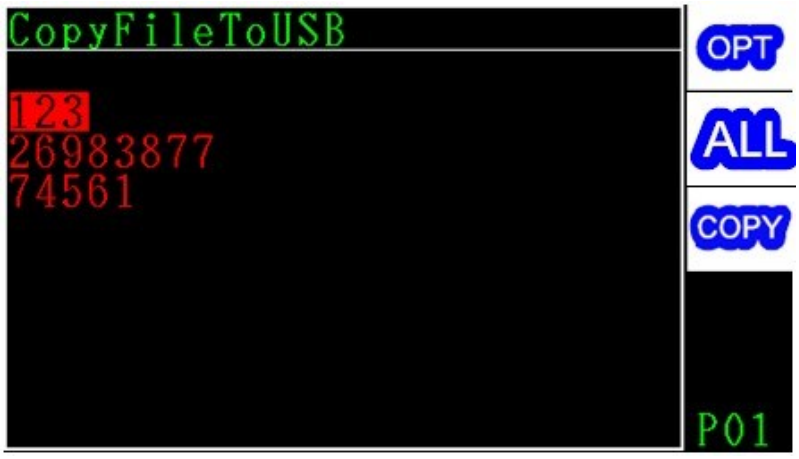


Figure 4-7-4 Copy File To USB

(6) **Copy File from USB:** This item copies the existing setup files to your machine from the USB drive and overwrites any one in the former with

the same name. Enter this page to display the files existing in USB drive, press the software key OPT to select one or more desired files, press the software key COPY to start copying selected files. You may press the software key ALL to select all files shown in the current page for copying. Please note that the ALL option is valid for files on the current page only. For files on next page, do the same to copy them as shown in the diagram below.



Figure 4-7-5 Copy File From USB

4.8 Start testing

4.8.1 Before testing

(1) Validate specification setup.

(2) Validate the proper connection between your machine and DUT.

(3) Validate that the message READY is prompted. (Figure 4-1-1)

(4) Press the TEST key to start testing. (Figure 4-1-2)



Figure 4-8-1 Ready

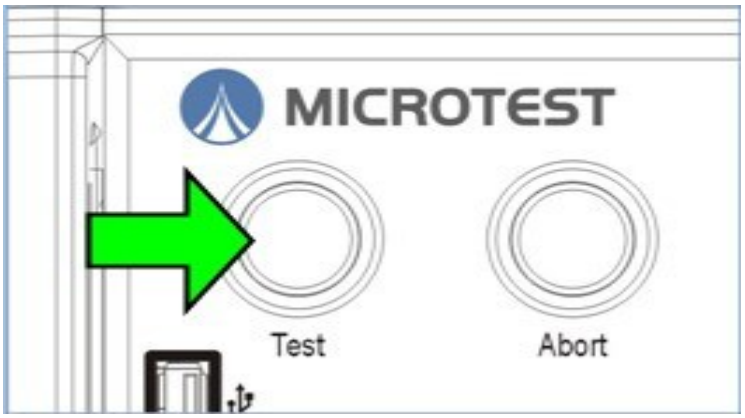


Figure 4-8-2 Test button

4.8.2 Testing in progress

(1) The message TEST is shown in the message column. (Figure 4-8-1)
(2) The high voltage output light indicator is ON in the front panel. (Figure 4-8-2)
(3) Measure the output voltage and leak current.
(4) Test time counting. For tests lasting longer than 100 seconds, their integral portion is displayed while the decimal portion is hidden; if it is longer than 999 seconds then it stops counting the time while the number 999 remains flashing on screen.

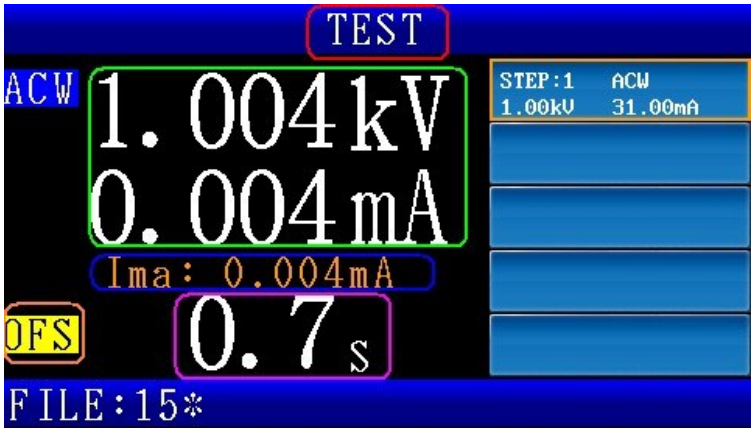


Figure 4-8-3 Test

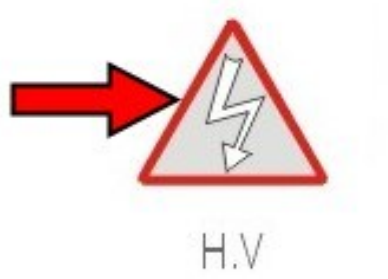


Figure 4-8-4 H.V LED

4.8.3 Ending a Test

(1) Press the ABORT key to stop testing.

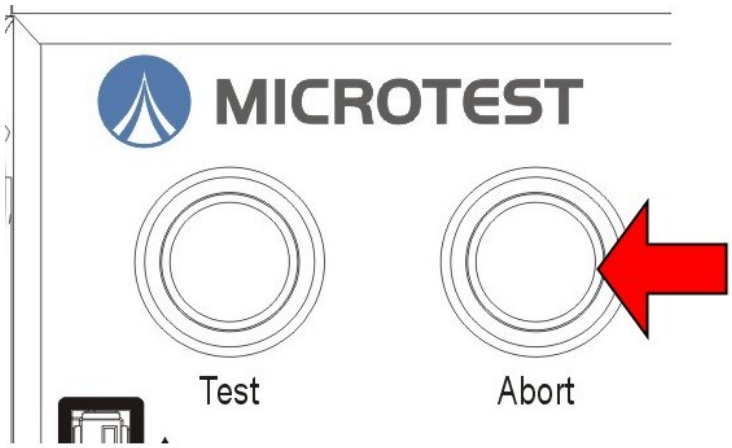


Figure 4-8-5 Abort

(2) Current/resistance measurements over the upper limit (HI-LIMIT).

(3) Current/resistance measurements below the lower limit (LO-LIMIT).

(4) Leak current over the maximum measurement (Break Down).

(5) Arc is over the settings (Arcing).

(6) Output safety switch is enabled (Inter Lock).

(7) The terminal to be tested is open (OPEN).

(8) Test time expired.

The test ends in case of any of the above. The high voltage output light indicator turns off and the high voltage output closes after the test has ended. Tests ended because of the conditions 2-8 described earlier will prompt determination results.



Figure 4-8-6 Pass

4.8.4 Release determination results

(1) After the test time has expired, the PASS light indicator turns on and the message “PASS” prompts. After the PASS HOLD time has expired, the page refreshes to READY status and the PASS light indicator turns off. In case PASS HOLD is set to Infinity, then you have to press the ABORT key to release the determination results display.

(2) In case the test fails then a red FAIL light indicator turns on and the message “FAIL” prompts. You have to press the ABORT key to release the determination results display.



Figure 4-8-7 Fail

Remark

1. 2022/12/16 Update Arc Sen. level