7750

Impulse/Surge Tester

User Manual

V1.08

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Chapter 1 Safety Instructions

Chapter 1 covers important safety information that must be followed in accordance with the instructions, and the storage environment of the instrument must be strictly controlled. Before using this instrument, please read the following instructions carefully, ensure your safety and maintain the instrument in optimal condition before any operation.
This instrument is not suitable for outdoor use, especially in humid or highly dusty areas, and abnormal use may cause electric shock.

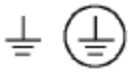
Section 1.1 Safety Signs

The following safety signs may appear in this operation manual and on the instrument.


: Danger High Voltage.


WARNING : "If ignored, there is a possibility that incorrect usage of this could result in injury or death to personnel."


CAUTION : "If ignored, incorrect usage could result in minor injuries to personnel or damage to the item."


: "Before using this instrument, please ensure that the protective conductor or grounding terminal is properly grounded to prevent electric shock accidents caused by leakage current when coming into contact with the chassis."


: "Do not dispose of electronic equipment as unsorted waste. Please use separate collection facilities or contact the supplier for proper disposal."

Section 1.2 Safety Guidelines.

 CAUTION	1. Do not place any heavy objects on top of the instrument.
	2. Avoid severe impacts that may cause damage to the instrument.
	3. Use a compatible connecting cable instead of bare wire.
	4. Do not disassemble the instrument or install non-approved parts into its circuitry.
	5. Do not allow items containing static electricity to come into contact with the instrument.
	6. Before using the instrument, place it in close proximity to the plug location for easy removal by the user."

 WARNING	1. The AC input voltage range for the power cord is 100-240 Vac 50/60Hz.
	2. The power voltage should not fluctuate more than 10%.
	3. Before the instrument outputs, please ensure that the user is not in contact with the equipment connected to its output terminal to avoid electric shock accidents.
	4. If the operation of the instrument is different from the instructions in the manual, the instrument or human body may be damaged.

Section 1.3 Static electricity.

Do not allow items containing static electricity to come into contact with the instrument to prevent damage to the instrument.

Section 1.4 Grounding.

The power socket of this instrument contains a grounding terminal. Please ensure that this grounding terminal is properly grounded to prevent electric shock accidents caused by contact with the outer casing.

Section 1.5 Power.

Before using this instrument, it is necessary to confirm that the provided power supply is an AC power supply, and the voltage must be between 100V and 240V 50/60Hz, with voltage fluctuations not exceeding 10%. When connecting the power supply to the instrument, please use the standard equipped power cord or select a power cord that complies with local national regulations, and connect

it to the instrument with a connector that meets the IEC320 safety specifications. The user must also ensure that the grounding wire is well grounded. Before using, it is necessary to confirm that it is an AC power supply, and the voltage must be between 100V and 240V 50/60Hz, with voltage fluctuations not exceeding 10%.

Section 1.6 Warm-up.

This instrument can operate normally when the power is turned on. However, in order to achieve the accuracy specified, please preheat for at least 30 minutes before testing and performing related operations.

Section 1.7 Instrument Malfunction

If the instrument malfunctions, please send it back to the original manufacturer for repair by professionals to ensure the accuracy and operational safety of the instrument.

Section 1.8 Test Termination

Please turn off the power switch when the instrument is not in use for a long period of time.

Section 1.9 Placement and Storage

The normal operating temperature and humidity range of this instrument is 0°C~40°C, 20~80 RH. If the temperature and humidity exceed this range, measurement data errors may be larger. The temperature and humidity range for storing the instrument is 0°C~70°C, <90 RH (non-condensing). To ensure correct testing and safety, please do not place the instrument in direct sunlight or environments with high temperature, high humidity, frequent vibration, or excessive dust, or unstable mains power supply.

Section 1.10 Cleaning the Instrument

- Disconnect the power cord before cleaning.
- Use a soft cloth dampened in a solution of mild detergent and water. Do not spray any liquid.
- Do not use chemicals containing harsh material such as benzene, toluene, xylene, and acetone.

Section 1.11 Emergency Handling

If an electric shock, combustion of the test object, or combustion of the instrument occurs, please immediately turn off the power switch or unplug the power cord.

Chapter 2 General Description

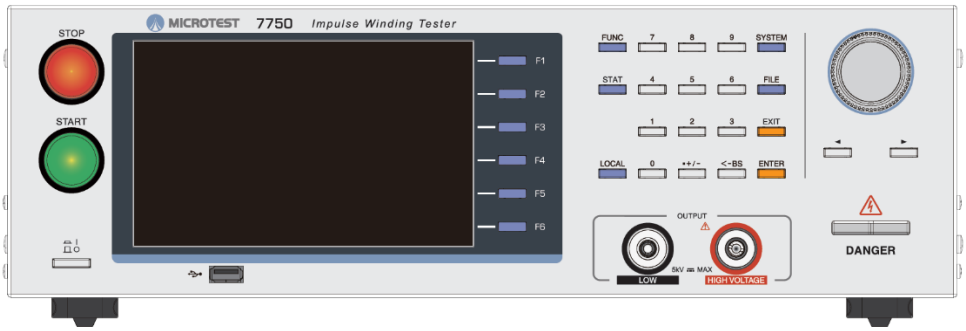
Section 2.1 Specifications

Model Name	7750-5E	7750-5H	7750-5S	7750-1S	7750-10S
Feature					
Waveform Sampling Rate (MAX)	50MHz	100MHz	200MHz		
Non-destructive pulse voltage output	100V~5200V			10V-1200V	200V-10000V
Measure the minimum inductance	≥1μH			≥0.1μH	≥20μH
Measurement time	10 次/秒				
Crash voltage test	–	–	•	•	•
PC connection software interface displays wave pattern analysis	•	•	•	•	•
USB storage measurement screen	•	•	•	•	•
Support USB Device communication interface	•	•	•	•	•
Support LAN interface	–	–	•	•	•
voltage compensation	•	•	•	•	•
Waveform analysis					
Comparative analysis of total area	•	•	•	•	•
Area difference comparison analysis	•	•	•	•	•
Second-order differential comparative analysis	–	•	•	•	•
Comparative analysis of corona number	•	•	•	•	•
Comparative analysis of tremor numbers	•	•	•	•	•
Waveform comparison analysis	•	•	•	•	•
Comparative analysis of high frequency harmonics	–	You can activate second-order differentiation to examine the discrepancies in high-speed momentary discharge levels.			

If the function is not available, it is represented by the symbol "–", and if the function is available, it is indicated by "•".

▌Application Areas: Integrated Inductor, Three-Phase BLDC Motor, New Type LAN Transformer, Common-Mode Inductor, Flyback Transformer, High-Voltage Ignition CoilApplication fields include winding products such as transformers, motors, generators, ignition coils for automobiles and motorcycles, relays, electromagnets, filters, etc.

General



Input signal	START/STOP
Out Signal	PASS/FAIL/TEST/READY/HV OUT
Safety Switch	To enable the output of the testing voltage, the safety switch needs to be short-circuited during testing by setting the INTERLOCK function.
built-in storage	128 sets/groups
power supply	Voltage：100Vac-240Vac
	Frequency：50/60Hz ±5%
Power consumption	70VA MAX
Operating environment	Temperature：0℃-40℃
	Humidity：20-80%RH
Physical dimensions or Appearance size	430x132x370 mm (W*H*D)
Weight	7Kg
Interface	USB Host/Device、RS-232、Signal I/O、LAN(7750-5E & 5H do not have this feature) GPIB (Optional)
LCD screen	7-inch TFT color display (800*480)

Section 2.1.1 Comparison Function Description

Waveform comparison mode	
Total area comparison - AREA	The sum of all the areas covered by the resonant wave is called "total area". When performing a comparison of the waveform area of the DUT coil, when a interlayer short circuit occurs, the energy loss of the coil increases, the damping coefficient of the resonance increases, and the resonance amplitude decreases. The total area also decreases. This is the most basic parameter for checking interlayer short circuits. It is expressed as a percentage and determines the difference in energy loss (as shown in Figure 2.1-1).

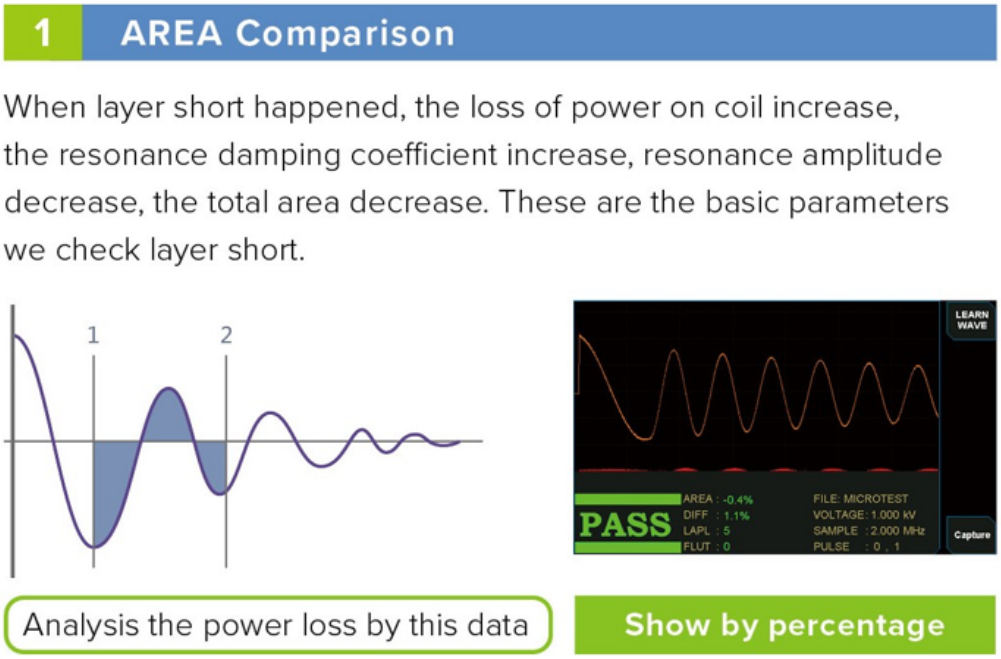


Figure2.1-1

Area difference comparison - DIFF	The sum of the differences between the standard wave and the DUT wave is called "area difference". When there is a inter-turn short circuit in the DUT, the inductance decreases (similar to when the secondary coil of a transformer is shorted, the primary coil inductance decreases), causing a change in the oscillation frequency of the later waveform and a change in the phase of the resonant waveform, and the area difference changes accordingly. This is used to compare the difference in inductance (as shown in Figure 2.1-2).

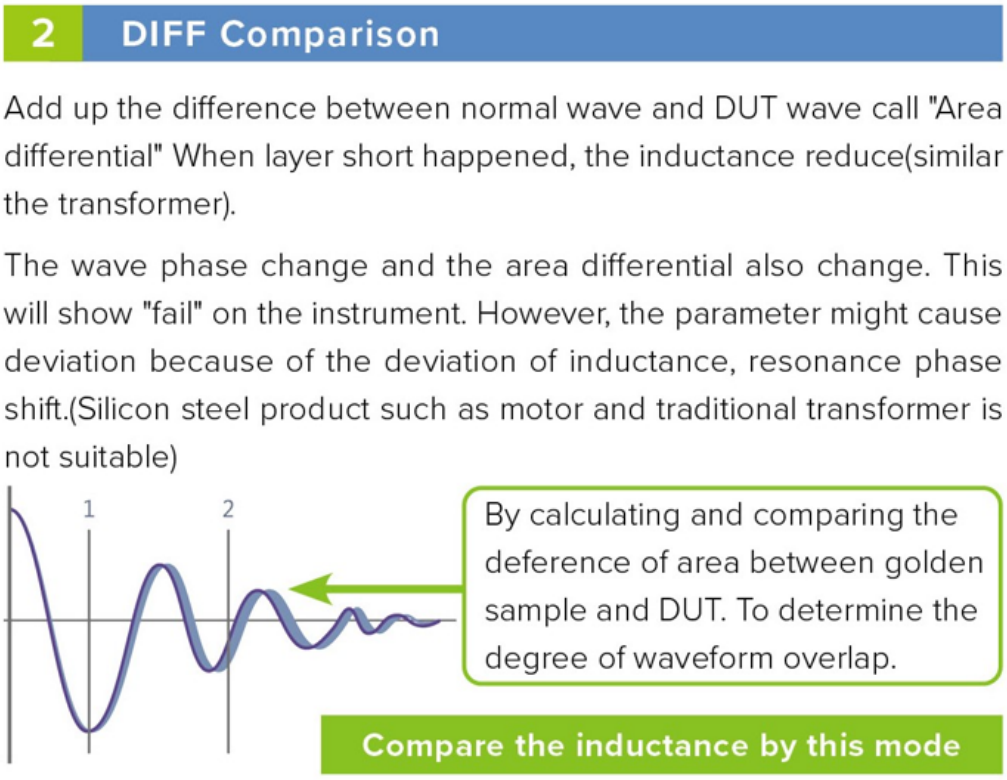


Figure2.1-2

Corona comparison - CORONA	**During high voltage pulse testing of the winding coil, if the self-insulation system is damaged and a corona discharge occurs, the corona phenomenon appears in the discharge curve through waveform display. This function can count the number of corona occurrences and determine them based on their deviation. It is used to detect whether there is any corona discharge in the internal insulation quality of the coil (as shown in Figure 2.1-3).**

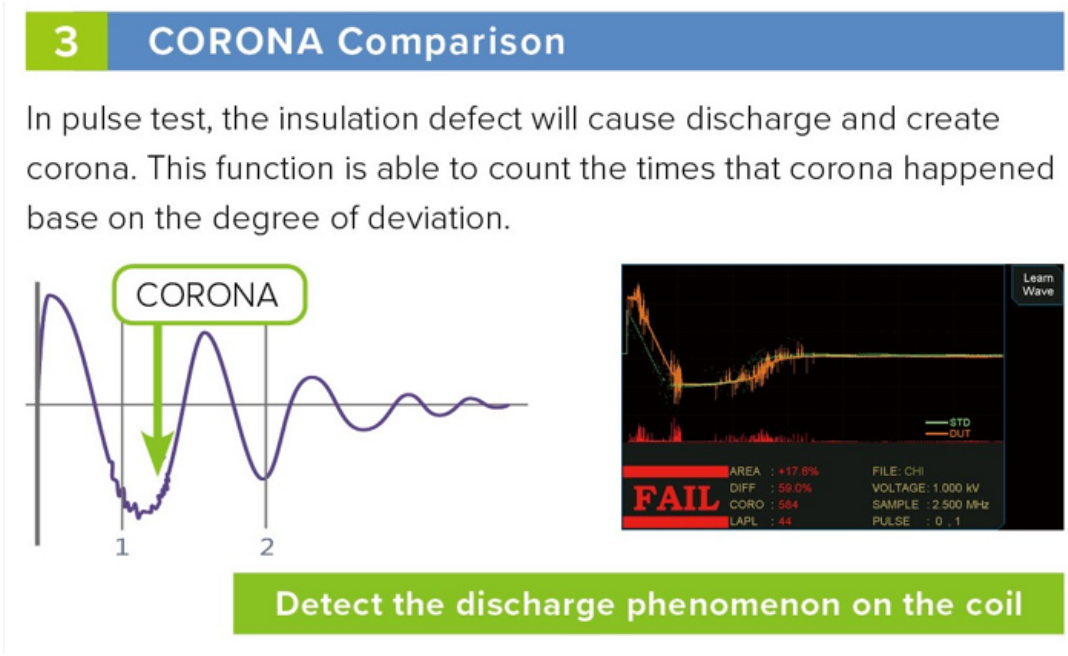


Figure2.1-3

Second-order differentiation - LAPLACIAN	**When the insulation quality of the coil is poor and a discharge occurs under high voltage impact, it causes a rapid change in the oscillation waveform. The 7750 second-order differentiation algorithm is used for comparison. It is used to detect quality issues caused by poor insulation performance due to poor welding (as shown in Figure 2.1-4).** △ **Please note the model: 7750-5E does not have this feature.**

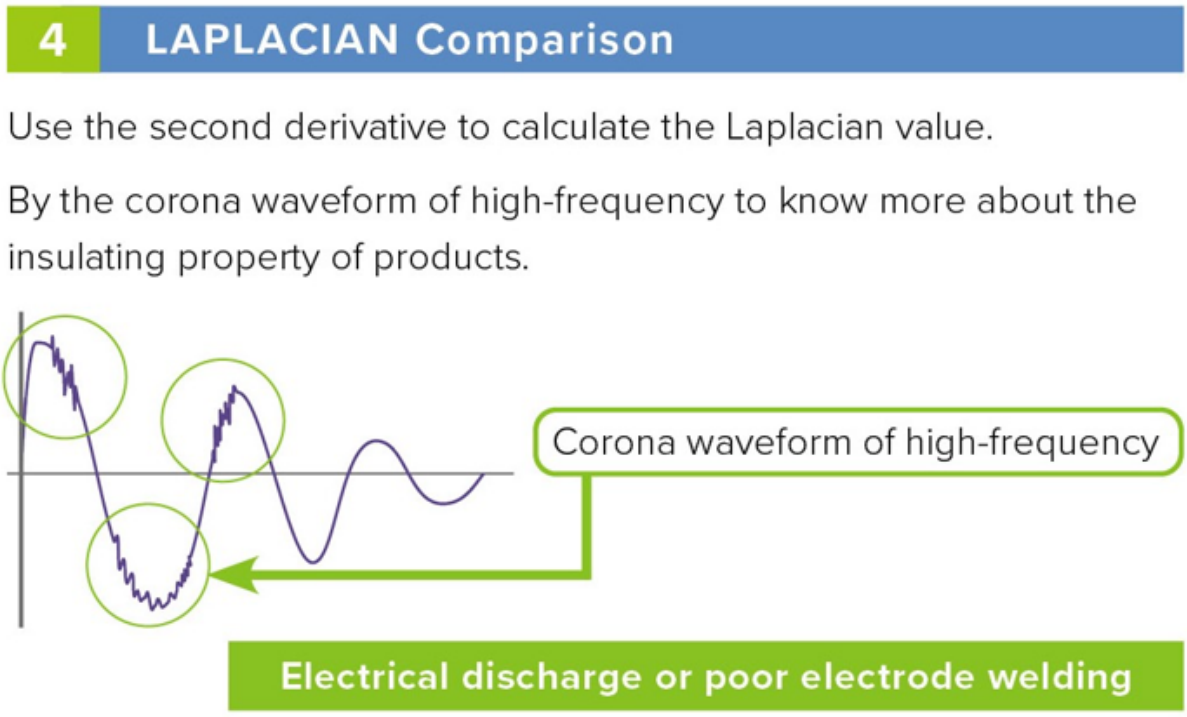
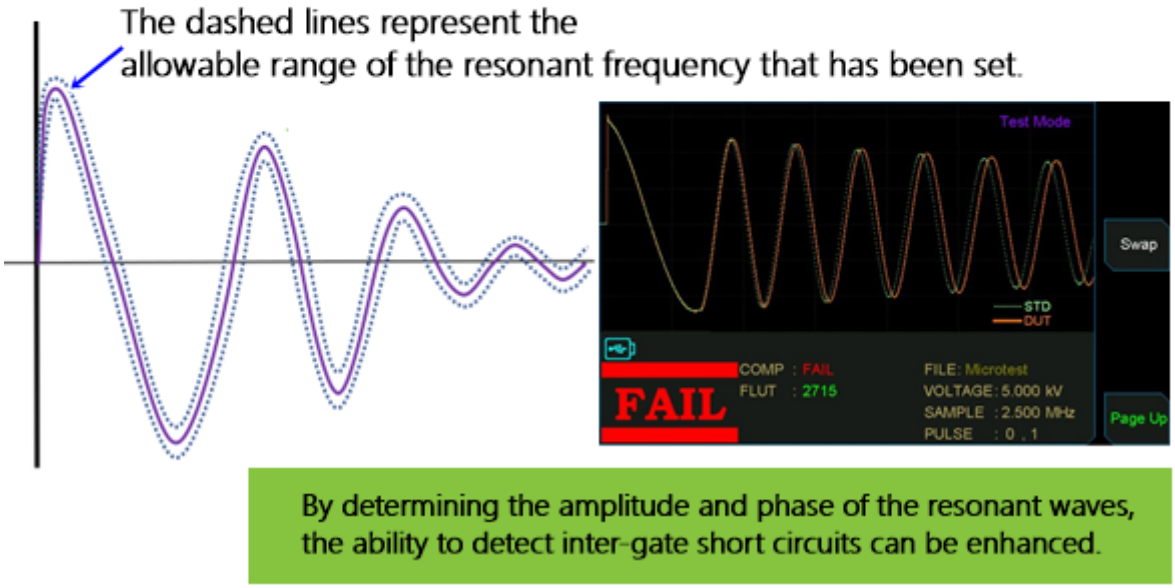


Figure2.1-4

WAVEFORM COMPARISON	By setting a standard waveform, an acceptable range of resonant waves can be established, and then compared with the resonant waves. Through this process, the amplitude and phase of the resonant waves can be determined, which enhances the ability to detect inter-turn short circuits.

K WAVEFORM COMPARISON

By setting a standard waveform, an acceptable range of wave propagation can be established,and then compared with the resonant waves.



By determining the amplitude and phase of the resonant waves, the ability to detect inter-gate short circuits can be enhanced.

Figure2.1-5

FLUTTER	When there is inter-turn discharge in the winding coil, the waveform will experience oscillations. Therefore, the instrument quantifies the degree of waveform oscillations into a sum of numerical values for comparison. Through this process, the degree of inter-turn discharge in the coil can be understood.

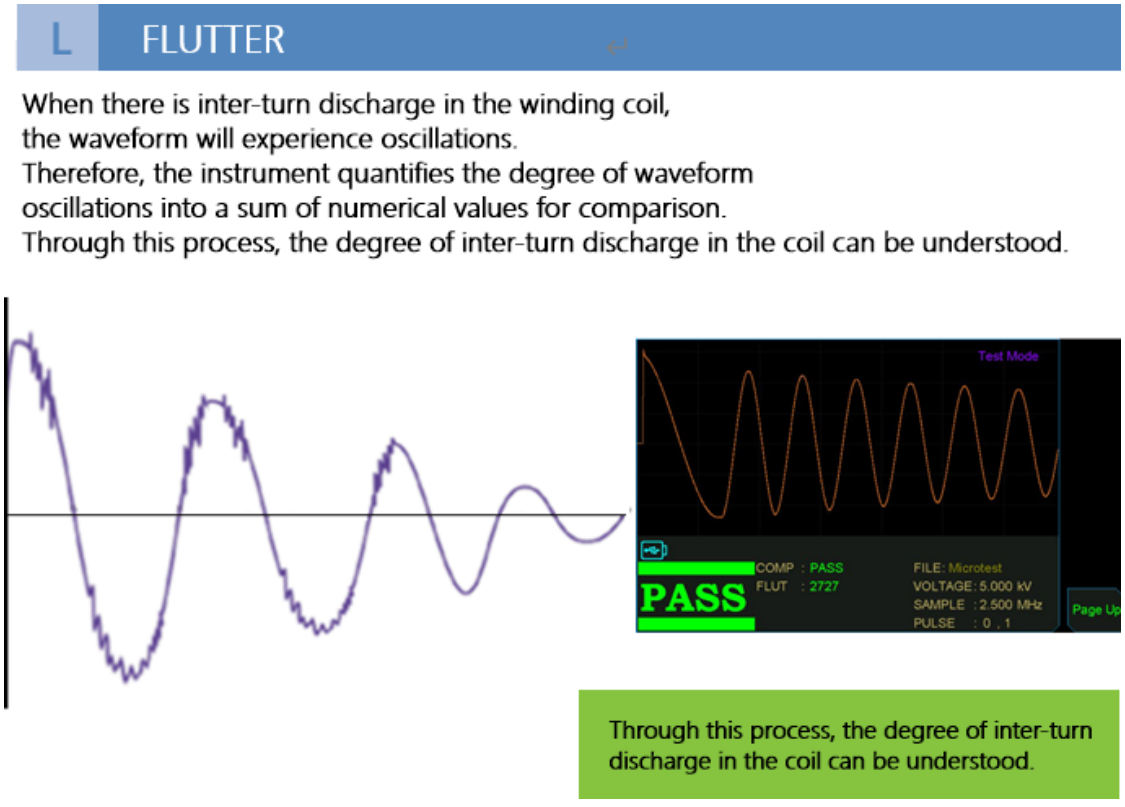


Figure2.1-6

Section 2.2 Packaging and Accessories

The standard accessories included in the packaging of the 7750 interlayer short circuit testing instrument should be as follows:

Standard accessories

-7750
-Power cord
-2-point high-voltage terminal test cable
-SIGNAL I/O plug

Optional accessories

-RS232 connection cable
-Remote control cable
-GPIB communication interface

Section 2.3 Front Panel Functions

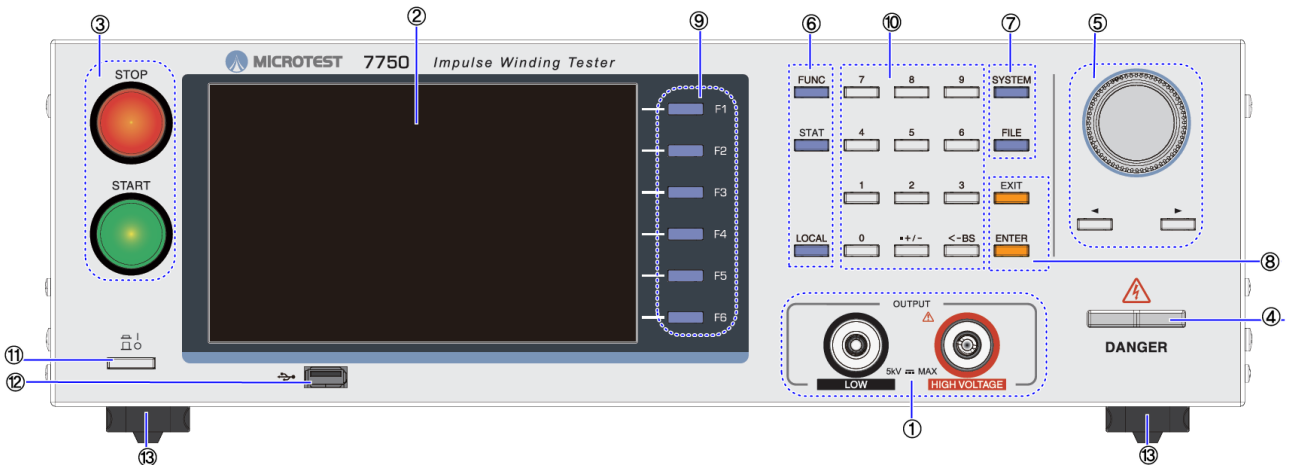


Figure2.3-1

Number	Name	Function
1	OUTPUT PORT	The output test port, when the Danger light is on, this port will output high voltage. Please do not touch the output port, high-voltage test cables, or test materials. This port is connected in parallel with the output test port on the rear panel.
2	LCD	Display instrument function screen.
3	START/STOP	The function of the Test button is to start the test, and the function of the Stop button is to stop the test and switch the screen back to the standby state.
4	DANGER	High voltage danger warning light (when the light is on, it means that there is voltage output on the output test port to avoid touching the output terminal).
5	Left/Right key/knob	◄ , ► The key can switch between setting the cursor for measurement parameters and changing the setting status of certain functions. By pressing the rotary button, you can enter parameter editing mode, and while in parameter editing mode, rotating the knob adjusts the values of measurement parameters. If you do not press the rotary button and rotate it, it will switch the selection cursor for certain functions. If you have inserted a USB flash drive in FAT format, you can take a screenshot by first pressing the Local key and then pressing the rotary button
6	FUNC/STAT/LOCAL	Entering the high voltage output menu page, please refer to Section 3.2 "FUNC High Voltage Output Mode Menu" for details. Entering the statistical function

Number	Name	Function
		page, please refer to Section 3.5 "STAT Statistics" for details. Returning remote control to panel operation, please refer to Section 3.4 "LOCAL" for details.
7	SYSTEM/FILE	Entering the system menu page, please refer to Section 3.3 "SYSTEM System Menu" for details. Entering the file management page, please refer to Section 3.6 "FILE File Management" for details.
8	EXIT / ENTER	Exit key: Functions include returning to the previous page and canceling the modification of the unconfirmed input test parameters. Confirm key: Functions include confirming the changes made to the input test parameters and confirming the selection of the option indicated by the cursor. For example, when the screen is on the System Menu page and the cursor is on the Test Setting option, pressing ENTER will switch the screen to the Test Setting page.
9	F1~F6 function keys	Execute the screen menu functions corresponding to each key.
10	Numeric keys	When entering a numerical value to adjust the test parameters, please press the ENTER key to confirm the changes. In some function pages, you can also input the corresponding numerical value on the screen to switch between pages and make selections. For example, pressing the number 6 on the System Menu will switch the screen to the System Information page.
11	Power keys	Power on/off switch.
12	USB Port(HOST)	When a USB flash drive is inserted, it can be used to store test data and screenshots. The USB disk format only supports the FAT format. If you want to save the test result data to the USB flash drive during testing, please refer to the "Upload Data" section under "System Settings" in Section 3.3.2 for more information.
13	Foot pads/stands	Adjusting the instrument height.

Section 2.4 Rear Panel Function.

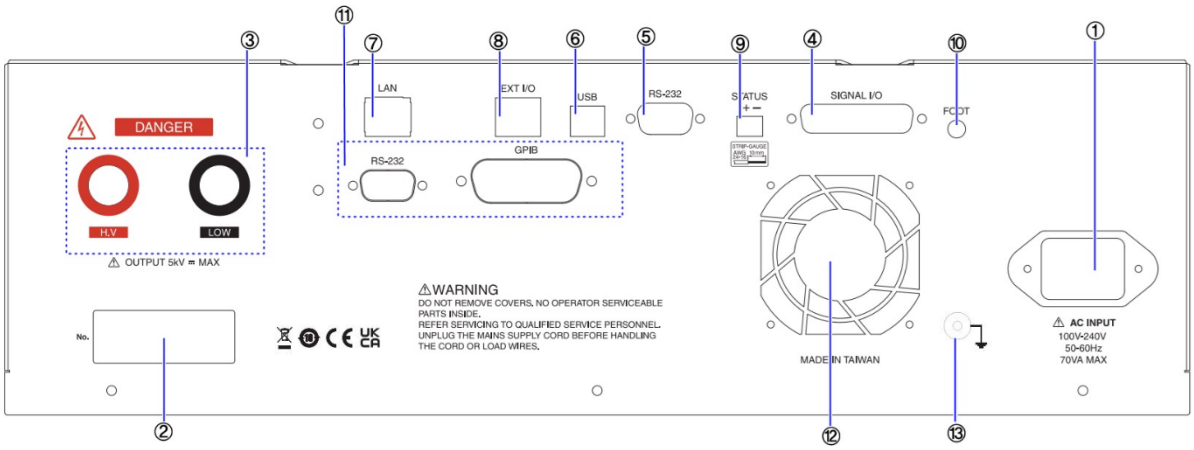


Figure2.4-1

Number	Name	Function
1	AC INPUT Port	AC power input port: Connect the power cord for this product. Please refer to Section 1.5 "Powe
2	Serial number.	Production serial number.
3	OUTPUT Port	Output test port: When the Danger light is on, this port will output high voltage. Do not touch the output port, high voltage test leads, or test materials. This port is connected in parallel with the output port on the front panel.
4	SIGNAL/IO Port	If the connector for controlling the input and output signals of this product through external devices is used, and a standard SIGNAL I/O plug is inserted, the instrument will be able to perform voltage output and measurement. If the SIGNAL I/O plug is removed, the instrument will lock the voltage output and measurement will not be allowed
5	RS-232 Port	To store test result data on a computer or other device during testing using the RS232 port for remote control, please refer to the "Data Upload" instructions under the "System Settings" section in 3.3.2.
6	USB Port	The USB cable port is used for remote control.
7	LAN Port	The LAN cable port is used for remote control.(7750-5E & 5H do not have this feature)
8	EXT I/O	Connect an external fixture or scanning box.

Number	Name	Function
9	STATUS	Please refer to section 3.3.1, "Status Output Settings," under "Test Settings" for information on the output ports for Ready, Pass, Fail, Testing, H.V. Out, and Off status outputs.
10	Foot	Connect a foot switch.
11	RS-232 / GPIB	Optional RS-232 & GPIB connector for expansion.
12	fan	Cooling fan.
13	Ground terminal.	Ground terminal.

Section 2.5 Power ON/OFF Confirmation.

1. Connect the AC power supply to the AC power input port of the instrument using the standard power cord provided. Please refer to section 1.5 "Power" for details. (As shown in Figure 2.4-1, labeled as①)
2. Press the Power button. (As shown in Figure 2.5-1)
3. Check if the instrument starts up normally, and if the information displayed on the startup screen of the LCD (as shown in Figure 2.5-2), including the instrument model and firmware version, matches the agreed-upon content at the time of purchase.
4. To shut down, press the power button once, the same as turning on.

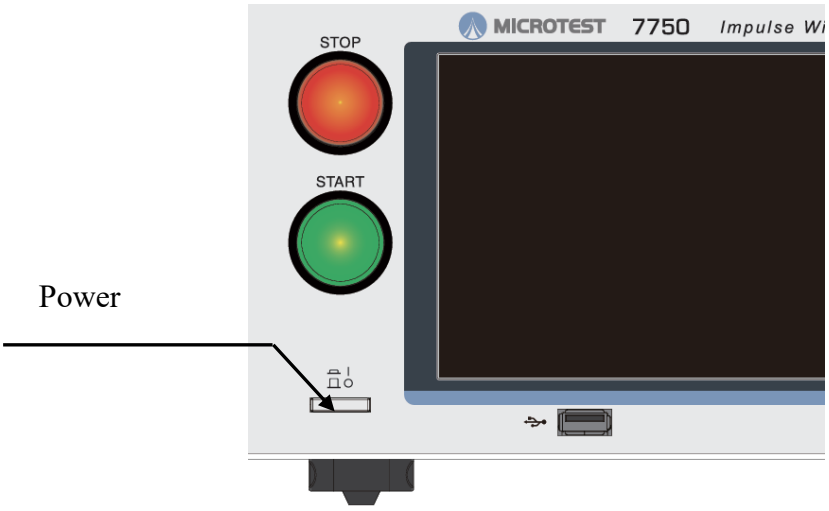


Figure2.5-1



boot-up screen

Figure2.5-2

Section 2.6 Connecting the High Voltage Test Cable to the Instrument.

1. Before inserting the two-point high-voltage terminal into the OUTPUT output terminal, please ensure that it is inserted firmly to avoid falling off.
2. Confirm that the positive and negative poles of the output terminal and the positive and negative poles of the two-point high-voltage cable are consistent.
3. Clamp the test material for testing.

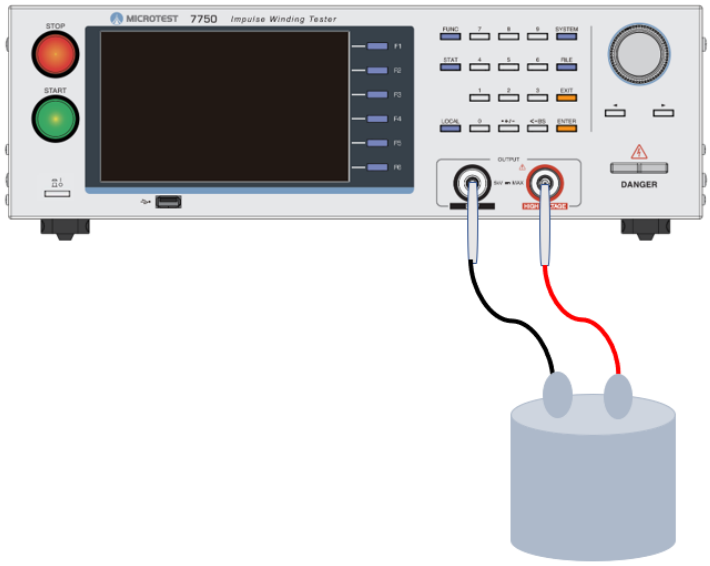


Figure2.6-1

Warning:

Do not touch the test material or output cables when the high voltage indicator light is on to avoid the risk of electric shock.

Chapter 3 Panel Functions.

△ Please note that all the examples in this chapter use the model 7750-5S. If the user's instrument model is not 7750-5S, there will be some differences in certain functions and settings.
When the instrument is turned on, it enters the standby page. (As shown in Figure 3.0-1)

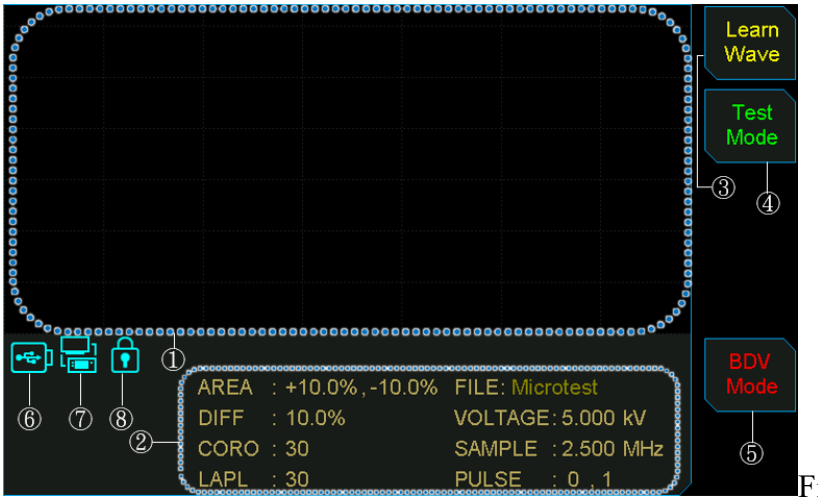


Figure 3.0-1

1. Displays the waveform of the standard product that has been learned.

2. The left side shows the acceptance criteria for good products, while the right side shows the set values for measurement parameters.

3. Learn Mode:
   Enters the page for learning the standard waveform, where parameter adjustment and modification are performed.

4. Test Mode:
   Enters the test mode.

5. Please enter the breakdown voltage testing page. (7750-5E & 5H do not have this feature).

6. Icon for indicating that a USB flash drive has been inserted into the instrument.

7. Icon for indicating the status of remote control. This symbol appears when the instrument is controlled through interfaces such as USB, LAN(7750-5E & 5H do not have this feature), RS232, (GPIB optional) on the rear panel.

8. Icon for indicating that the keyboard is locked. During the locking period, modification of learning, test parameters, test settings, and system settings is not allowed. Only the test (START) and stop test (STOP) operations can be performed.

Section 3.1 Learning the Standard Waveform.

The function of this page is to establish the waveform of the standard product, which will be compared with the waveform of the tested product produced on the production line during the test mode. It also sets the output specifications during testing. Users should adjust each parameter to the appropriate setting according to the test object.

If the main affecting parameters of the learned standard waveform [F1 (Set Volt), F2 (Sampling Rate), F3 (Dummy Pulse)] are changed, the learned standard waveform before the change will disappear and it will be necessary to re-learn the standard waveform.

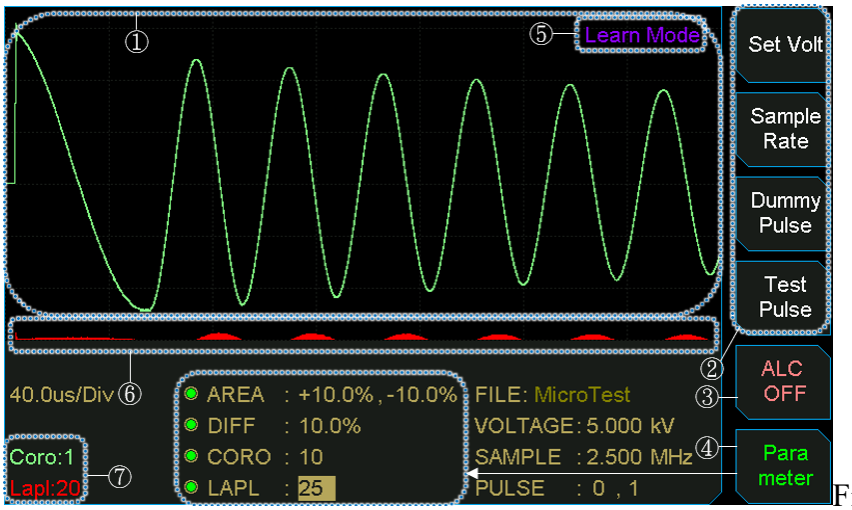


Figure3.1-1

1. Please insert the standard SIGNAL I/O plug, enter the learning parameters, and press the START button to start the learning process. The waveform of the standard product will be displayed here.
2. Pressing the F1F4 function keys on the learning page will move the cursor to the corresponding setting item. The following are the parameter setting items for the corresponding standard wave based on the order of F1F4:

   A. Set voltage: Please adjust the testing voltage according to the specifications and characteristics of the test object (as shown in Figure 3.1-2). The voltage upper and lower limits that can be set may vary depending on the model. For pulse voltage information, please refer to section 2.1 "Specifications." Users can change the settings by pressing and rotating the knob or by directly entering numeric values and pressing Enter. If changes are made to this setting, the previously

learned standard waveform will be erased. Users should relearn the standard waveform after making modifications.

Application	Magnetic Material	Relay	Motor	Coil/Inductance
				
AERA	●	●	●	●
DIFF	●			
CORONA	●	●	●	●
LAPLACIAN	●	●	●	●

Figure3.1-2

The factors to consider when setting the test voltage include:

a. The voltage withstand characteristic of the enameled wire itself.

b. The distance between each coil.

c. The voltage division between each coil.

d. Other insulation restrictions (such as insulation layer and pressing degree).

B. Sampling Rate: The sampling frequency of this instrument varies based on the model, with 9(E), 10(H), 11(S) setting options available for users to choose from. The minimum setting is 0.625MHz, and the maximum settings are 50M(E), 100M(H), and 200(S)MHz. When the sampling rate is changed to a different setting, the LCD waveform display range will also change accordingly. Users can adjust the setting values by pressing and rotating the knob as per their needs. It should be noted that if changes are made to this setting, the standard waveforms learned before the change will be lost. Users are advised to relearn the standard wave after making any changes.

C. Dummy Pulse: During the learning or testing process, the instrument will first output the set voltage and pulse count. This allows the test object to stabilize after the voltage impact before the test pulses are output. The pulse count can be set with a range from 0 (minimum) to 32 (maximum). Users can adjust this setting as needed by pressing and rotating the knob or by directly entering numeric values and pressing Enter. If changes are made to this setting, the previously learned standard waveform will be erased. Users should relearn the standard waveform after making modifications.

D. Test Pulse: The number of pulses for testing. During the test, the instrument will output the set voltage pulses to the test object and acquire its waveform. If, during the test, the result of a test

pulse is determined to be faulty, the test will immediately stop and display the faulty result. The pulse count can be set with a range from 1 (minimum) to 32 (maximum). Users can adjust this setting as needed by pressing and rotating the knob or by directly entering numeric values and pressing Enter. Changing this setting will not cause the learned waveform to disappear, and there is no need to relearn the standard waveform.

3. ALC ON/OFF:
   When the instrument outputs the test voltage, the impedance of the device under test will be divided by the internal impedance of the instrument, resulting in the actual output voltage on the device under test being lower than the set voltage value. When this function is enabled to learn the standard waveform, the instrument will continuously increase the output high-voltage pulse, and measure the actual voltage value on the device under test at each output. When the measured value is the same as the set value, the learning action is completed. When waiting for the test, the compensated voltage value will be added to the set voltage value before the test is performed.

4. Para meter:
   Enter the parameter settings page. The parameter settings include options for area/area difference/corona/second-order differentiation (the 7750-5E model does not have this feature). These function parameters serve as criteria for judging the quality of test waveforms. For explanations of these functions, please refer to section 2.1.1 "Explanation of Comparison Functions". Details on setting these parameters are explained in sections 3.1.1 "Parameter Settings (I)" and 3.1.2 "Parameter Settings (II)".

5. "Learn Mode"。

6. After learning the standard product waveform, perform a second-order differentiation calculation to obtain the waveform abnormal discharge results, and then graphically transform these results into a bar chart. In the bar chart, taller lines indicate more severe abnormal discharge (the 7750-5E model does not have this feature).

7. The instrument learns the number of corona occurrences in the standard product waveform, the maximum value of the abnormal discharge results obtained from the second-order differentiation calculation of the standard product waveform (the 7750-5E model does not have this feature), and the statistical results of the jitter count in the standard product waveform.

   To exit this page, please press the EXIT key.

Section 3.1.1 Parameter Setting

Click on the F6 button in the learning standard wave page to enter the parameter setting page. This function allows the user to set the parameter values for total area comparison, area difference comparison, corona number comparison, and second-order differential(7750-5E does not have this feature) comparison.

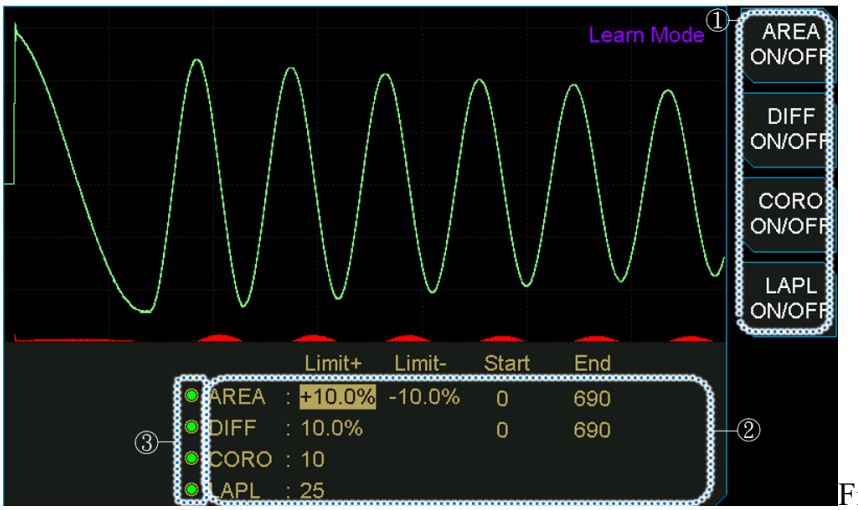


Figure 3.1.1-1

1. Press the corresponding F function key to move the cursor to the desired location. You can also move the cursor by pressing the "◄ ,► " key and rotating the knob. Pressing the corresponding F function key again on the selected cursor item will toggle the function on or off. For example, pressing the F1 key will move the cursor to the area upper limit position. You can then press the "◄ ,► ," key or rotate the knob to move the cursor and adjust the area-related parameters by pressing and rotating the knob or by directly entering numeric values and pressing Enter. If the cursor selection is still on area-related parameters, pressing F1 again will turn off the area function.

2. ReThe result judgment function parameter value setting. If the test result exceeds the judgment parameter setting value, it will be judged as a defective product. The following will explain the corresponding judgment function parameter settings in order of F1 to F4:

   A. Area: Acceptable difference value for total area comparison between two waveforms. The upper limit value can be set to +99.9%, with a minimum of 0%. The acceptable lower limit is -99.9%, with a minimum of 0%. The starting point of the total area comparison range can be set to a minimum of 0, with the maximum value not greater than or equal to the ending point. The ending point of the total area comparison range can be set to a maximum of 690, with a

minimum value not less than or equal to the starting point.

B. DIFF:
The setting for the area difference parameter determines the acceptable difference in area between two waveforms, with an upper limit value that can be set up to +99.9%, and a lowest value of 0%. The starting point for the area difference comparison range can be set as low as 0, and the highest value cannot be greater than or equal to the ending point. The ending point for the area difference comparison range can be set as high as 690, and the lowest value cannot be less than or equal to the starting point.

C. CORO:
Setting for the total number of acceptable corona discharges in the test waveform. The minimum value that can be set is 0 and the maximum is 1000.

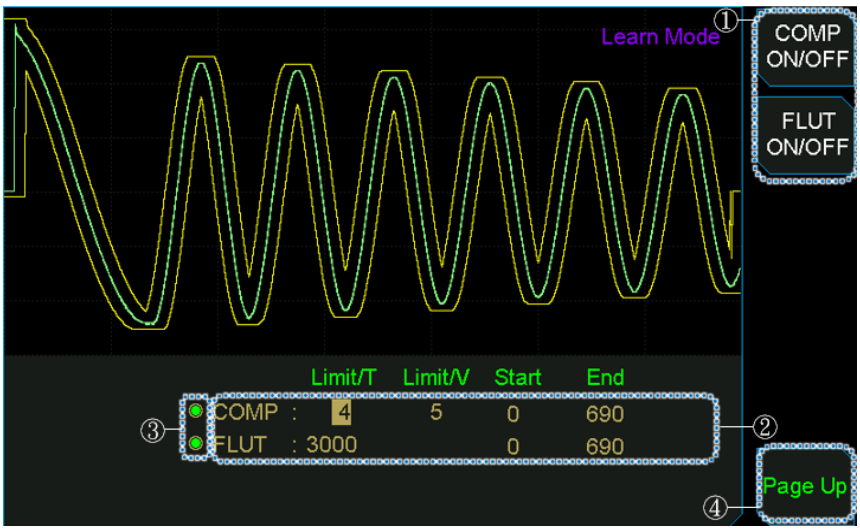
D. APL:
Second Derivative(7750-5E does not have this feature): Setting the allowable range of the maximum value obtained by the test
waveform using the second derivative algorithm. The minimum value can be set to 0, and the maximum value can be set to 1000

3. The green indicator light displays whether the function is turned on or off. A green light indicates that the function is enabled. To exit this page, press the EXIT button.

4. Press the Next Page (F6 function key) to enter the next page for adjusting the judgment function parameters. For more details, please refer to section 3.1.2 "Parameter Settings (2)".

Section 3.1.2 Parameter Settings (2)

Press the Next Page (F6 function key) on the first page of the parameter settings to enter the second page of the parameter settings, which is used for setting the judgment parameters of waveform comparison and waveform oscillation.



1. Press the corresponding F function key to move the cursor to the corresponding position. Pressing the comma key (",") can also move the cursor. Pressing the corresponding F function key again on the item selected by the cursor toggles its function on or off.

2. The setting of the judgment parameter values for the result judgment function. The test result will be judged as either good or defective according to the judgment function parameters. The following are the explanations of the corresponding judgment function parameter settings based on the order of F1 and F2:

A. Waveform Comparison: Based on a standard waveform, a permissible range of waveforms for a test wave is set. If the test wave falls within this range, it is judged as PASS; otherwise, it is judged as FAIL. The horizontal range of acceptable waveforms (upper limit/T) can be set between 1 and 32. The vertical range of acceptable waveforms (upper limit/V) can also be set between 1 and 32. The starting point for the waveform comparison function can be set to a minimum of 0, and the maximum value cannot be greater than or equal to the end point. The end point for the waveform comparison function can be set to a maximum of 690, and the minimum value cannot be less than or equal to the starting point.

B. Waveform Oscillation Count: The upper limit of the quantified statistical value of the degree of waveform oscillation acceptable for a test wave can be set between 0 and 9999. The starting point for the waveform comparison function can be set to a minimum of 0, and the maximum value cannot be greater than or equal to the end point. The end point for the waveform comparison function can be set to a maximum of 690, and the minimum value cannot be less than or equal to the starting point.

3. The green indicator light indicates whether a function is on or off. A lit green light indicates that the function is enabled.

4. Press the Previous Page (F6 function key) to return to the previous page of the parameter settings. For more details, please refer to section 3.1.1 "Parameter Settings (1)".

   To exit this page, please press the EXIT key.

Section 3.2 FUNC High Voltage Output Mode Menu

This function is a selection screen for entering high voltage output related modes. Choose to enter the H.V Output Test or Calibration . Users should ignore the high voltage output calibration function to avoid causing measurement errors.

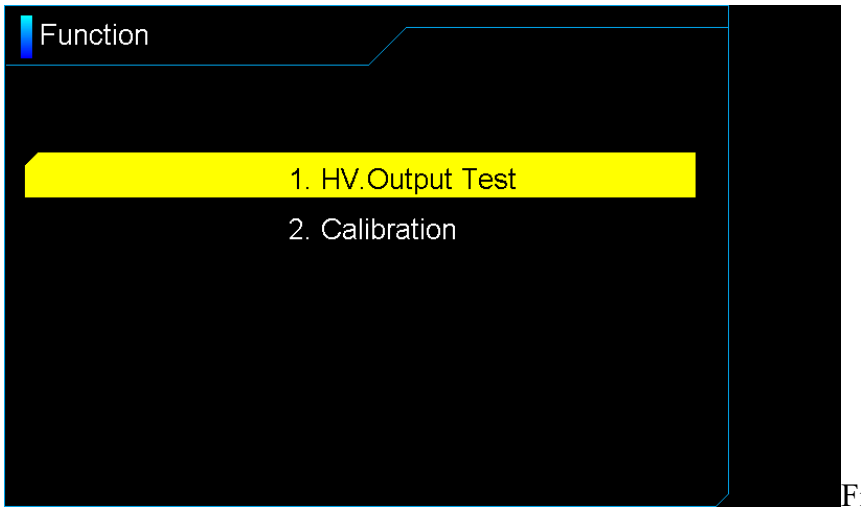


Figure3.2-1

Section 3.2.1 High Fuction test

This function is for conducting high voltage output test to verify the accuracy of the high voltage output value.

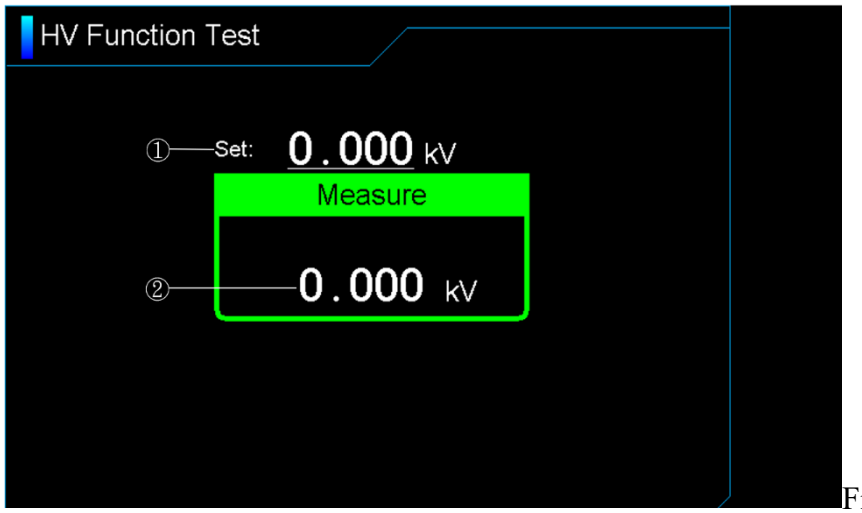


Figure3.2.1-1

1. Set the test voltage value (the voltage range that can be set may vary depending on the model).

2. Actual measured value by the instrument.

Please make sure that the standard accessory SIGNAL I/O plug is inserted, press the START TEST button to perform the measurement.
To stop the high voltage output test, press STOP. To exit this page, press EXIT.

Measurement method:

The accuracy of the high voltage output is tested by connecting the high voltage cable in series with a high voltage meter through the output terminal. For newly purchased instruments, calibration has already been completed.

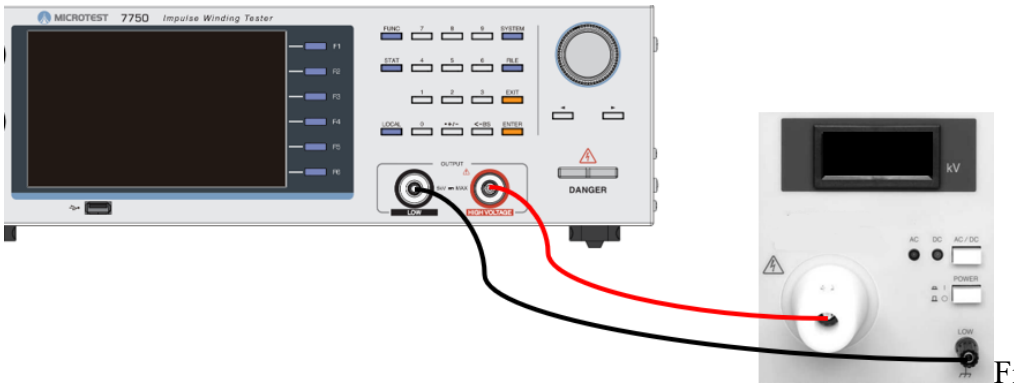


Figure3.2.1-2

Section 3.3 System Menu

At this page, pressing F1/F2/F3 will switch the interface language to English, Traditional Chinese, or Simplified Chinese, respectively. It also includes the following function options:
“1. Test Control”
“2. Config”
“3. Date/Time ”
“4. Password ”
“5. Lan Setup”
“6. Information”

Please enter the corresponding number or move the cursor to the option and press ENTER to enter the corresponding function page.

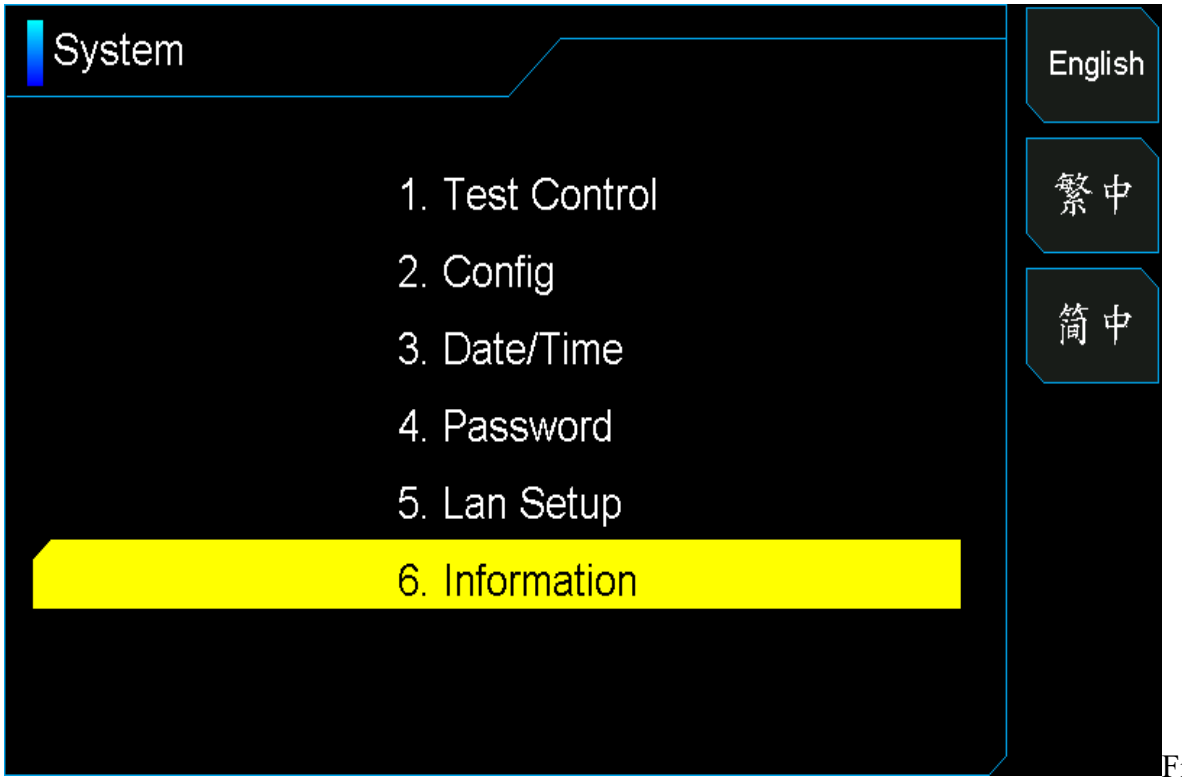


Figure3.3-1

To exit this page, please press the EXIT button.

Section 3.3.1 Test settings.

This page includes Keyboard Lock、Trigger Delay、Pass Hold Time、Status Trigger Lock and Status Output。

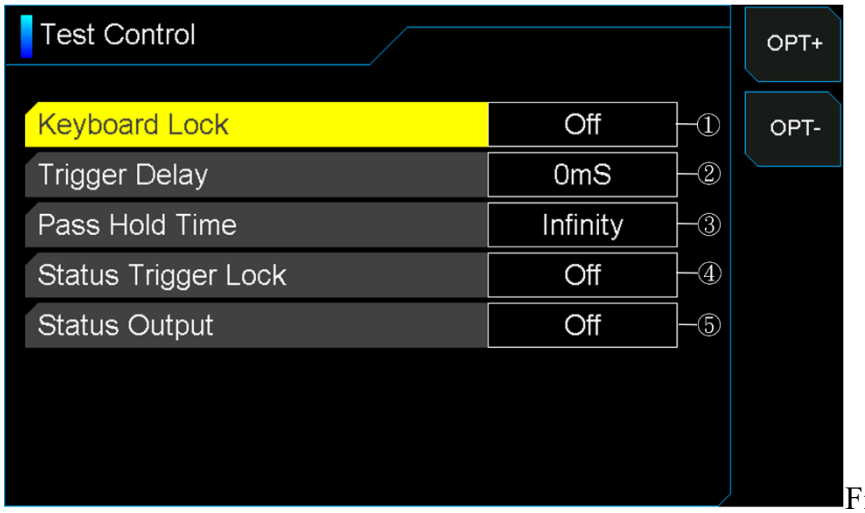


Figure3.3.1-1

1. Keyboard Lock:

When the keyboard lock is enabled, the instrument will lock the keys that can change the setting values on the learning mode , Collapse Test (7750-5E & 5H do not have this feature), test settings, and system configuration pages. The status Figure on the main page and the test mode page will display to indicate that the lock is on. This function aims to prevent the set parameters and settings from being modified and affecting the test results. If you press the lock button while it is locked, a keyboard locked reminder message will appear in the upper left corner of the screen. To unlock the keyboard, you must enter the current instrument's set password. The lock setting can be turned on or off using the ◄, ► key or F1/F2.

2. Trigger Delay:

Trigger Delay Time: In the testing mode and the collapse test (7750-5E & 5H do not have this feature), when the instrument receives a test command trigger, such as pressing the START test button or receiving a START command from a remote control, etc., the delay time between the trigger and the output pulse can be set. The options for setting the delay time are as follows: 0mS, 50mS, 100mS, 200mS, 500mS, 1S, 2S, 5S. The delay time can be selected using the comma key (",") or the F1/F2

keys.

3. Pass Hold Time:

When the instrument has obtained the test result and is about to display it on the LCD in the testing mode or the collapse test (7750-5E & 5H do not have this feature), if the result is PASS, the hold time for displaying the good result will be based on this setting. When the hold time for the good result has been reached, it will return to the test state. The options for setting the hold time for the good result are as follows: Infinity (permanent hold), 1mS, 3mS, 10mS, 50mS, 100mS, 200mS, 500mS, 1S, 2S, 5S.

If the hold time for the good result is set to be less than 100ms, the waveform for good and bad results will not be displayed to speed up the measurement process.

4. Status Trigger Lock:

When the state trigger lock is turned on, the instrument can only trigger the test in the test mode and the collapse test (7750-5E & 5H do not have this feature) under the test condition, such as when the status is PASS or FAIL, the instrument cannot trigger the test. If you want to measure again, please press the STOP button to stop the instrument. After returning to the test mode, you can trigger the test again. Conversely, when the status is PASS or FAIL, you can immediately trigger the test by pressing the START test button.

5. Status Output:

Setting the status output to Off, Ready, Pass, Fail, Testing, or H.V.Out can be done using the , ◄ , ► key or F1/F2. When the instrument enters the set status, a 24V signal will be outputted from the STATUS OUT at the back of the instrument.

To exit this page, please press the EXIT key.

Section 3.3.2 System Settings

This page includes the following options: Upload Data, Buad Rate, Keystroke Sound, Alarm, Pass Volume, Fail Volume and GPIB Address.

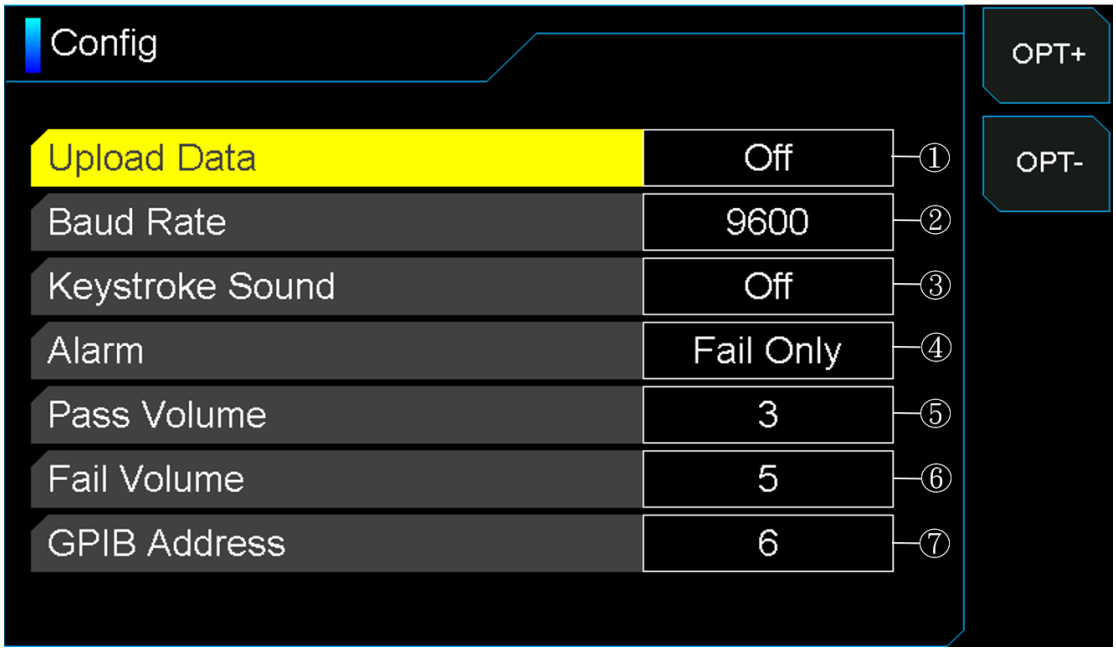


Figure3.3.2-1

1. Upload Data:

Selecting the method for uploading test results, you can choose from OFF, Rs232, Flash, or Rs232+Flash. When set to Flash: please insert a USB drive (FAT format) into the front panel before testing. After completing the test, the instrument will create a "7750_Result" folder on the storage device. Inside the folder, a .csv file with the same name as the instrument's test file will be generated, and the test results will be sequentially recorded in that file.

When set to RS232: please connect the RS232 transmission cable to the computer before testing. While the instrument is conducting the test, it will upload a "START" string to the computer. Once the test is complete, it will also upload the test results to the computer.

When set to Flash+RS232: both of the above actions will be performed simultaneously.

When the function is set to OFF, this feature is disabled.

When you enable the RS232 and Flash functions, please note that data transmission may take some time (depending on the set transmission rate and storage device), which may cause a slight delay in continuous testing. The uploaded format will include the test number, test result, total area comparison, area difference, corona count, second-order differential maximum value(7750-5E will always display 0), and error number, in that order. For example: "997, FAIL, -2.090326e-03, 8.596832e-03, 1, 20, 0, 0, 2" represents the 997th test, with the result "FAIL," a total area error of -0.2%, an area difference of -0.9%, a corona count of 1, a second-order differential(7750-5E will always display 0) maximum value of 20, waveform comparison result (not enabled/PASS), jitter count (not enabled/PASS), and an error item number of 3. The error number is only present in the case of a FAIL, and it represents the number of the failed test item, as listed in Table 3.3.2-1.

faulty test items	error number (decimal)
Total area failure	1
Area difference failure	2
Corona count failure	4
Second derivative failure (7750-5E will not display any numbers related to this)	8
Waveform comparison failure	16
Vibration count failure	32

Table 3.3.2-1

If there are two or more failures, the return value is the sum of the corresponding decimal numbers. For example, if the return value is 3, it means failures in both total area and area difference.

2. Buad Rate:

The baud rate can be set to 9600/19200/38400/115200, and can be adjusted using the ◄, ► key or

F1/F2. When the instrument communicates with a remote control device, the baud rate of the remote device must be consistent with the instrument's setting.

3. Keystroke Sound:

   Turn on or turn off the keypad sound by using the ◄,► key or F1/F2 keys for adjustment.

4. Alarm:

   When the test is finished and the test result is obtained, the alarm will be triggered based on the result and the conditions set for triggering the alarm. The volume of the alarm sound will be adjusted according to the settings of 5. Pass Volume and 6. Fail Volume below. The options for setting the trigger conditions for the alarm include All (Pass + Fail), Off, Pass Only, and Fail Only. Use the◄, ► key or F1/F2 to adjust the trigger conditions.

5. Pass Volume:

   If the measurement result is a pass and the alarm trigger condition includes pass, the volume of the triggered alarm is determined by the pass volume setting, which can be adjusted using the ◄,► key or F1/F2. The pass volume setting options range from 0 to 9, with higher numbers indicating louder volume. 0 is equivalent to turning off the pass alarm.

6. Fail Volume:

   If the measurement result is a failure and the alarm trigger condition includes failures, the volume of the triggered alarm sound can be adjusted. The options for setting the volume of the failure alarm sound range from 0 to 9, with higher numbers indicating a louder sound, and 0 is equivalent to turning off the sound. Use the , key or F1/F2 to adjust the volume of the failure alarm sound.

7. GPIB Address :

   Set the GPIB address from 1 to 32, use , key or F1/F2 to adjust the address. (Optional)

Section 3.3.3 Time Setting

This page allows you to set the current date and time. The instrument will save the current time along with the data when saving.

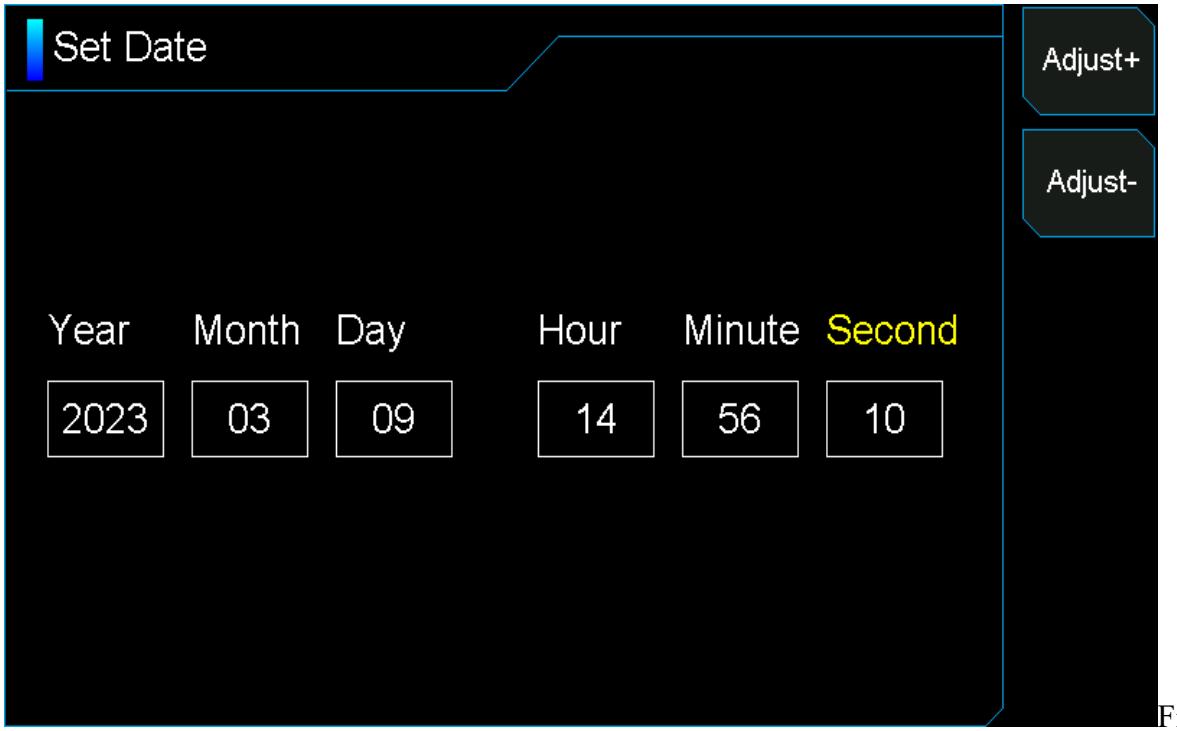


Figure3.3.3-1

Use the ◄, ► key to select the year, month, day, hour, minute, and second, and use the F1 and F2 function keys or knob to adjust the numbers.

To exit this page, please press the EXIT key.

Section 3.3.4 Password Setting

This page is used to update the password for the instrument. The password can be up to 8 characters long. If more than 8 characters are entered, the last character of the password will be continuously replaced by the last entered digit. The password is required to access certain function setting options.

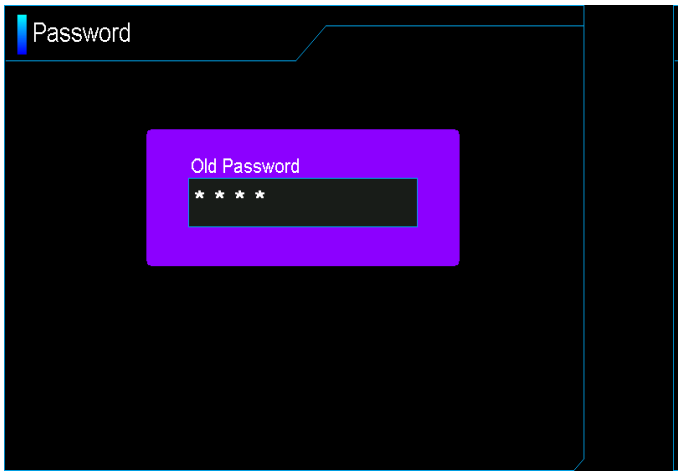


Figure3.3.4-1

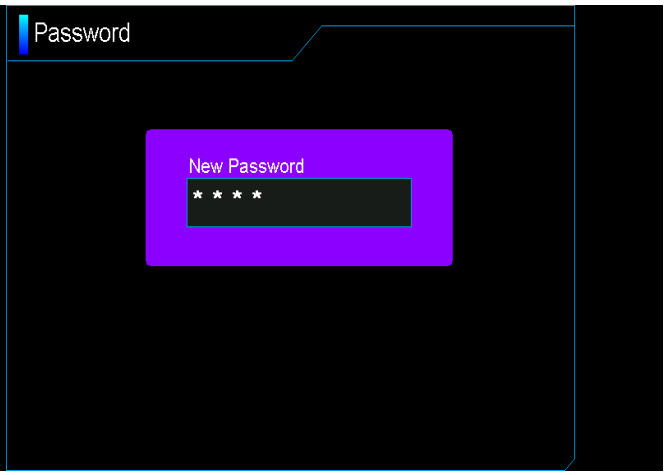


Figure3.3.4-2

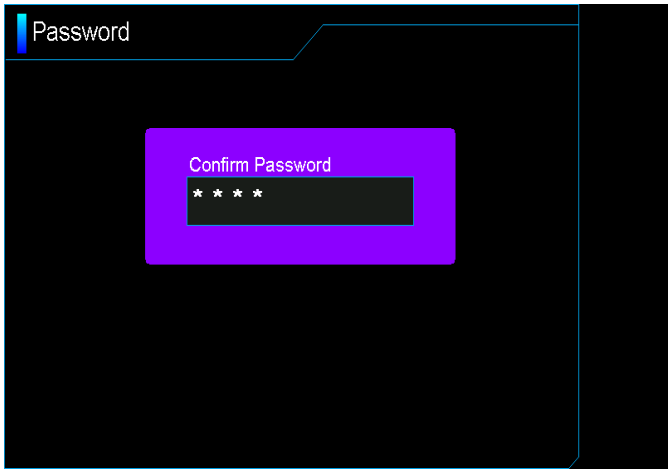


Figure3.3.4-3

a. Enter the password using the numeric keys and press ENTER to confirm.
b. Please enter a new password and press ENTER to confirm.
c. Please enter the password again and press ENTER to confirm.
d. A message will pop up to inform that the input was successful.

To exit this page, please press the EXIT button.

Section 3.3.5 Network Settings

The function of this page is to set the parameters for network remote control.

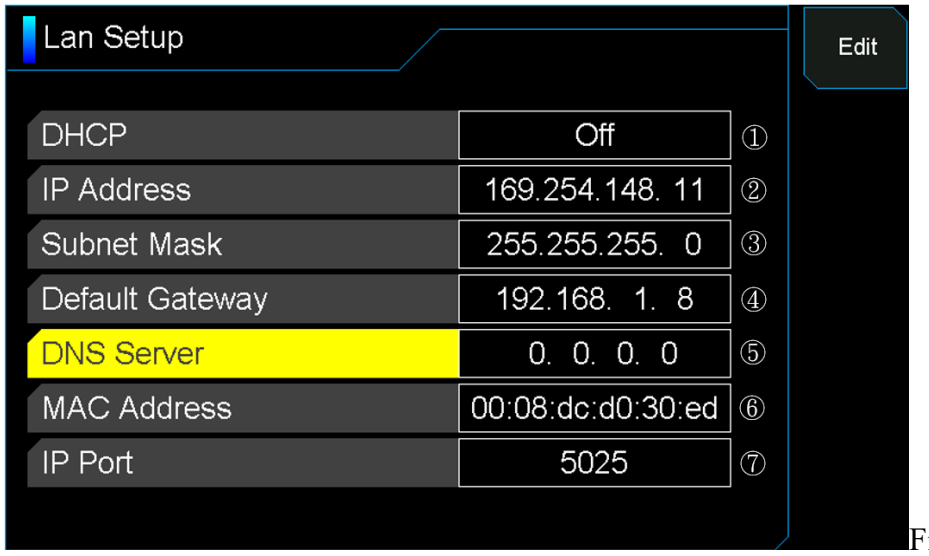


Figure3.3.5-1

1. DHCP:
   The setting options are "off" and "on". When set to "on", all settings on this page cannot be set by the user. The instrument will automatically request an IP address from the host via the network interface. When it successfully obtains an IP address, the word "on" will change from dark yellow to green.

2. IP Address:
   Address setting: XXX.XXX.XXX.XXX; can only be set when DHCP is turned off.

3. Subnet Mask:
   Subnet mask setting XXX.XXX.XXX.XXX; can only be set when DHCP is turned off.

4. Default Gateway:
   Set to XXX.XXX.XXX.XXX; can only be set when DHCP is turned off.

5. DNS Server:
   Set X.X.X.X; can only be set when DHCP is turned off.

6. MAC Address:
   The MAC address of each instrument is unique and determined at the factory. It cannot be changed.

7. IP Port:
   5025; fixed value and cannot be changed.
   Press the EXIT key to leave this page.

Section 3.3.6 System Information

This page is used to view information about the instrument's Serial Number, Model, Version, FPGA_Version, and GPIB Address. When the GPIB address displays NULL, it means that the instrument does not have the GPIB device option installed.

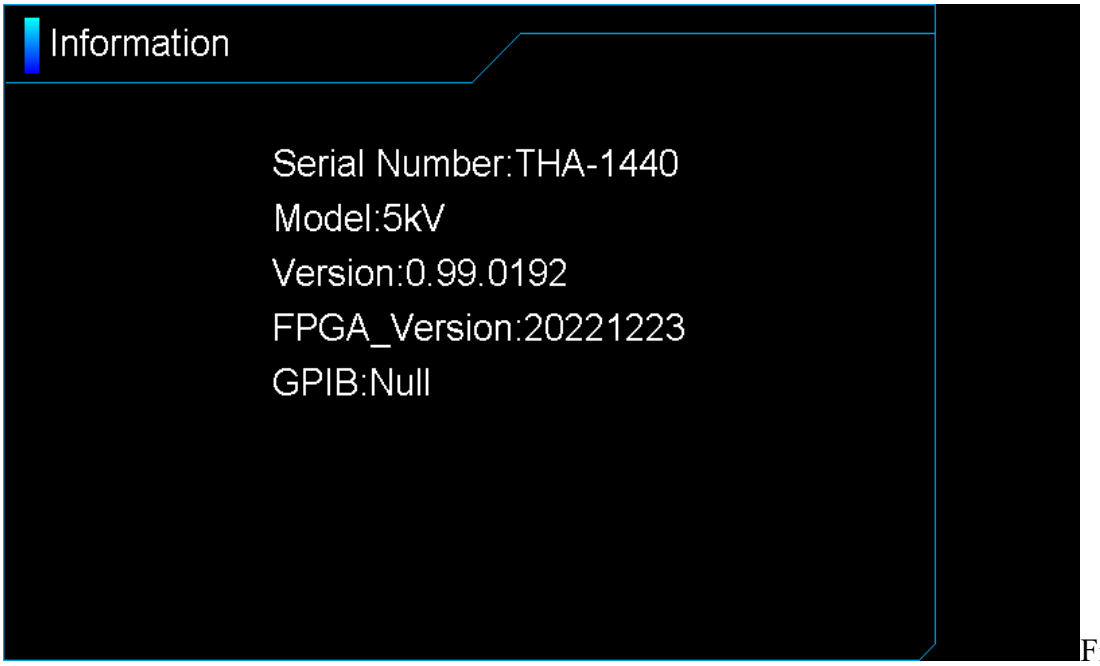


Figure3.3.6-1

Press the EXIT key to leave this page.

Section 3.4 LOCAL

This function is to release the remote control status and unlock the privilege to operate the instrument panel.

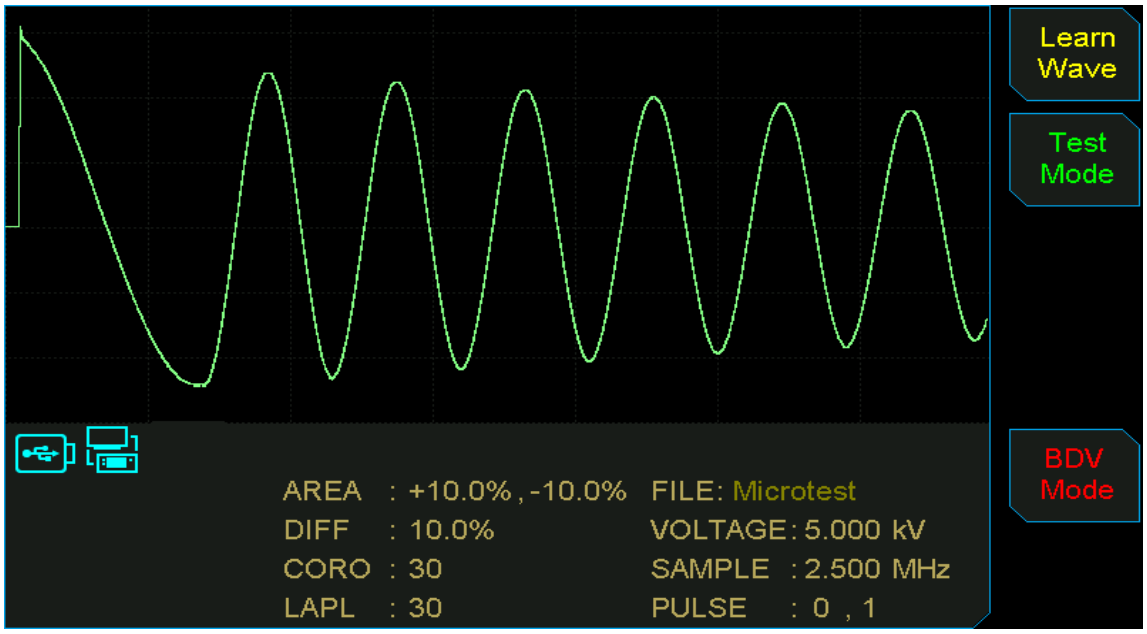


Figure3.4-1

Press the LOCAL function key to release the remote control state.

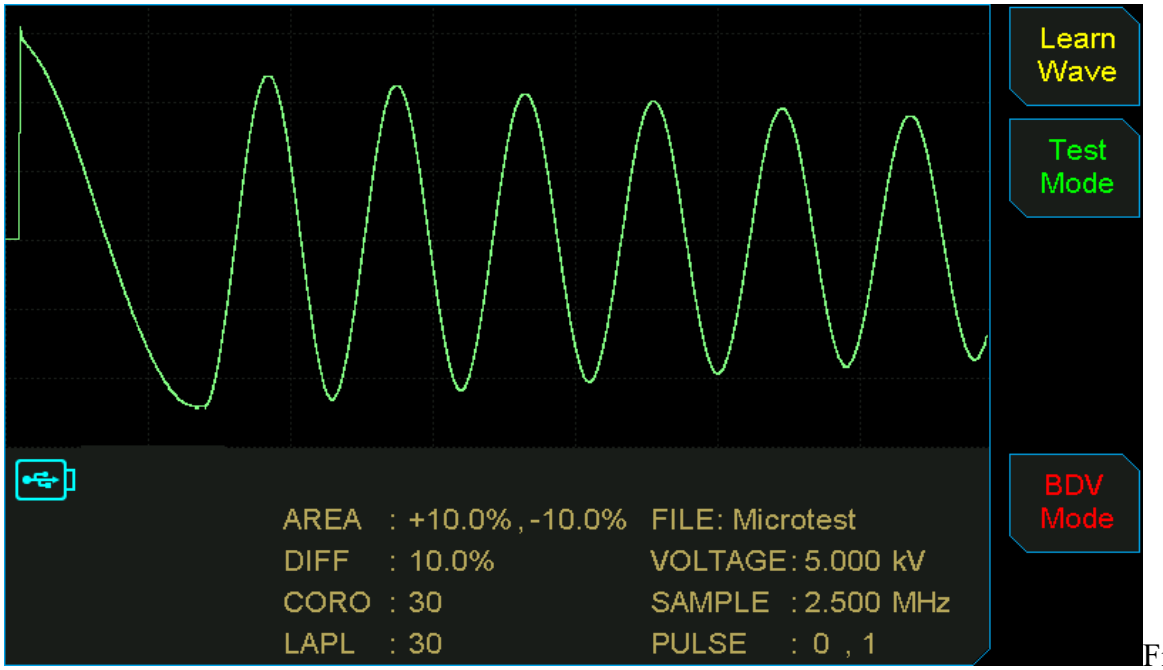


Figure3.4-2

Section 3.5 Statistics

This function page displays the total number of tests and allows for clearing of data using the F4 function key. The total number of tests is the sum of the number of good and bad products in the collapse test(7750-5E & 5H do not have this feature) and test mode. The number of bad products is further divided into area defects, area difference defects, second-order differential defects, corona defects, waveform comparison defects, and jitter defects. The user can switch the display item of the number of bad products by using the previous/next page (F6 function key) or rotating the knob, and the percentage of the pass rate and the failure rate is displayed at the bottom of the screen.

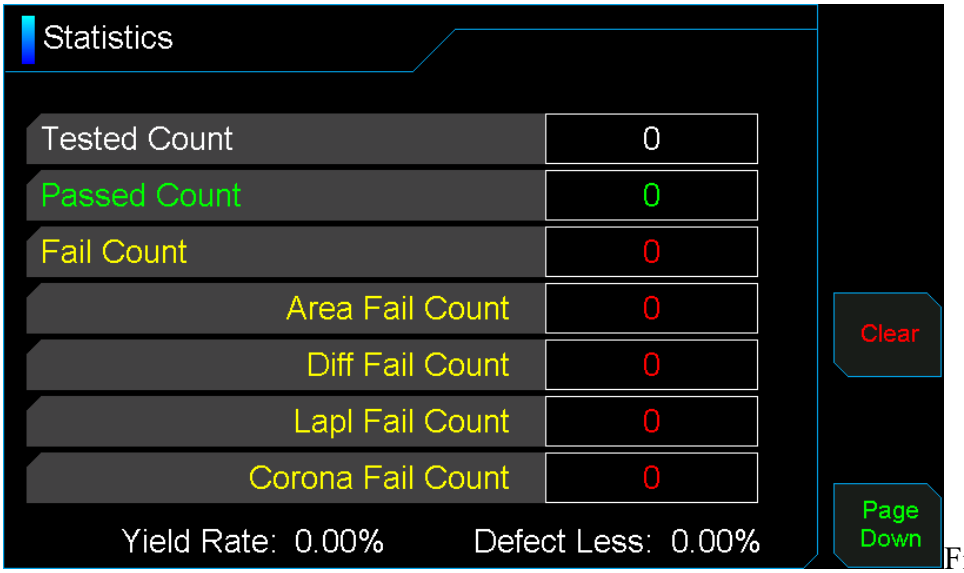


Figure 3.5-1

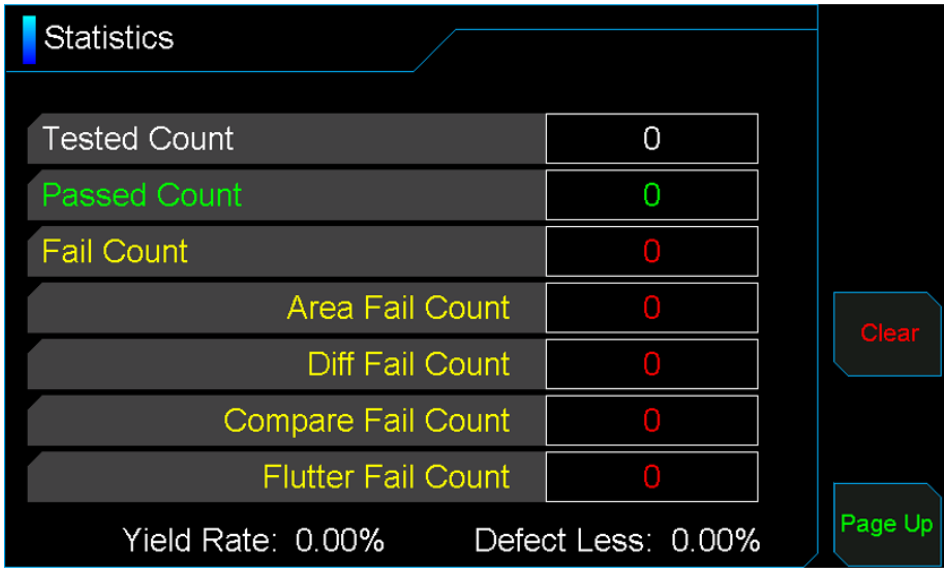


Figure 3.5-2

Press the EXIT key to leave this page.

Section 3.6 File Management

This function page allows for creating new files, saving files, loading files, deleting files, and viewing settings. If a USB flash drive is inserted into the front panel, the title of this page will show "(Internal Memory)" and the F6 function key will add the "USB (External Memory File Management)" option. The maximum number of files that can be stored in both internal and external memory is 128.

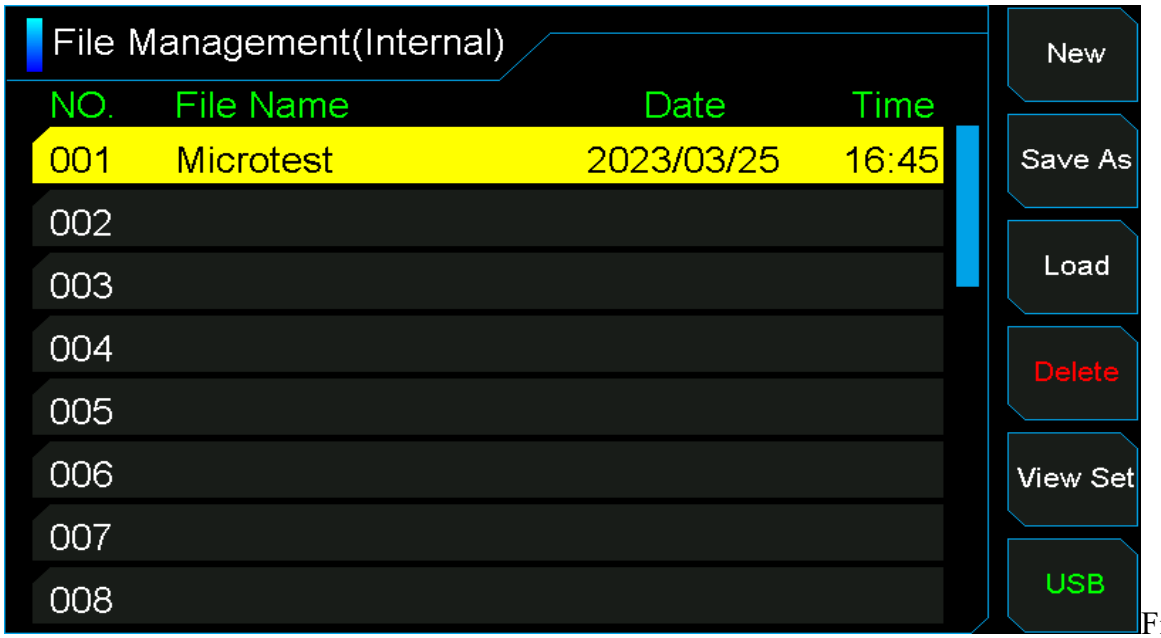


Figure3.6-1

1. New :
   To create a new file in the current cursor-selected column, the file name can be selected using the rotary knob and pressing the F1 function key to confirm, or directly inputted using the number keys. The default settings for the new file are 0.5KV voltage, 2.5MHZ sampling rate, 1 test pulse, 0 pre-pulse, +10% upper limit for area, -10% lower limit for area, 10% upper limit for area difference, 100 for corona and 100(7750-5E will permanently disable this feature) for second-order differential. File names can be the same, but if the instrument is in remote control mode and using file name as a parameter for the command, the instrument will only perform actions on the file with the smallest number that matches the file name. Therefore, when using remote control mode, please avoid duplicate file names to prevent errors. If only operating the instrument panel, it will not be affected, but users must remember the usage status of the file number-to-file content correspondence.

2. Save As :

Save the current file (including settings and statistical data, but not the file name) to the selected field of the current cursor. The file name can be selected by rotating the knob and pressing the F1 key to input, or directly inputting the number keys. When managing files in the internal memory, file names can be the same, but when operating in external memory management, file names cannot be the same. Otherwise, the existing file with that name will be overwritten. If the instrument is operated in remote control mode using a file name parameter command, the instrument will only perform actions on the file with the smallest number that matches the file name. Therefore, to use remote control mode, avoid duplicate file names to prevent errors. If only operating on the instrument panel, it does not affect the corresponding usage status of file numbers that the user needs to remember.

3. Load :

Load the selected file (including settings and statistical data) at the current cursor position.

4. Delete :

Delete the file selected by the cursor. If the selected file is in use (the last file read in the internal memory) on the internal memory management page, it cannot be deleted. However, there is no such limitation when deleting the selected file on the external memory management page.

5. View Set :

Switch the display items of the files. If switched to "View Date", the date will be displayed in the format of year/month/day, and time in 24-hour format (hour:minute). If switched to "View Setting", the display will show the voltage (X.XXXkV) and sampling rate (in formats of XXX.XMHz, XX.XXMHz, or X.XXXMHz, depending on the setting).

6. USB/INT. :

If a USB device is inserted into the front panel, an option to switch between internal and external memory file management pages will appear on the F6 function key. If you leave the file management page, the next time you press FILE, it will return to the page you left off on.

To exit this page, please press the EXIT key.

Section 3.6.1 Create new file.

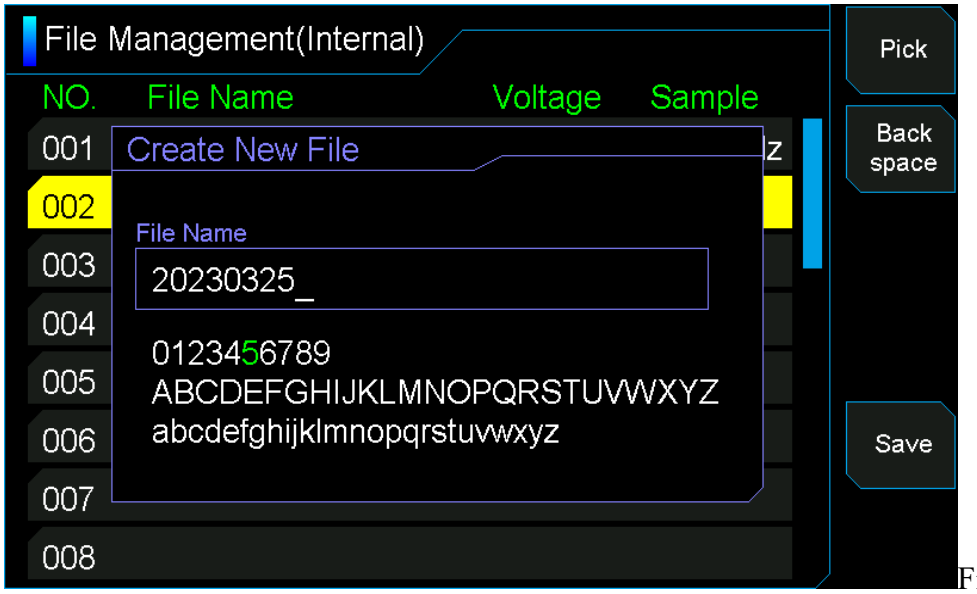


Figure3.6.1-1

1. Turn the knob to an empty file number position, then press the "Create File" button (F1).
2. Enter the file name by rotating the knob to the desired number or letter position and pressing select (F1).
3. After inputting the file name, press the save button (F5).

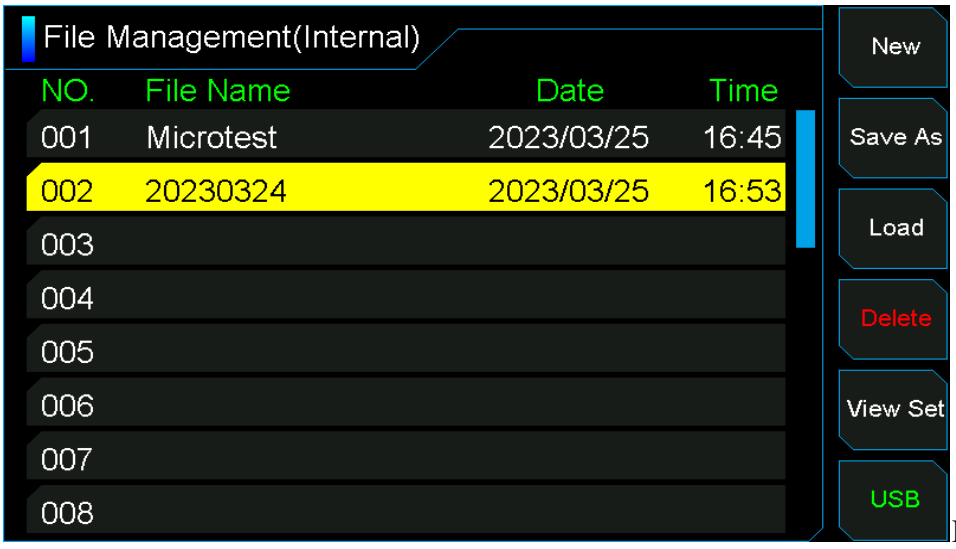


Figure3.6.1-2

4. The newly created file with the file name entered during file creation will appear in column 002.

Section 3.6.2 Save File.



Figure3.6.2-1

1. Modify the test voltage value to 1KV.
2. Press the FILE function key to enter the file management page.
3. Press the Save File (F2) button and then press Save (F5) to save the file. ◦

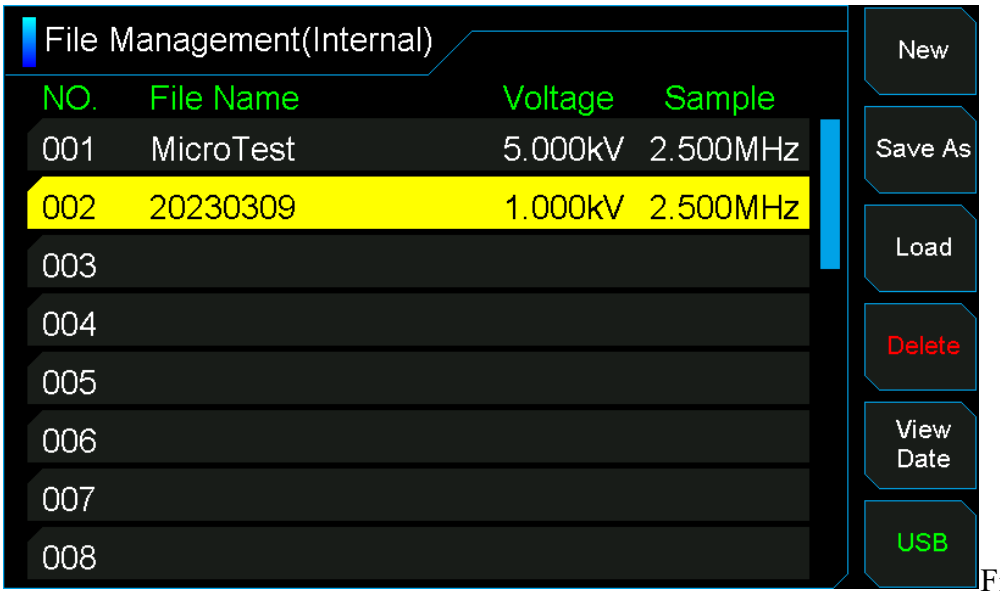


Figure3.6.2-2

4. The voltage value has been saved after modifying it to 1KV.

Section 3.6.3 Read file

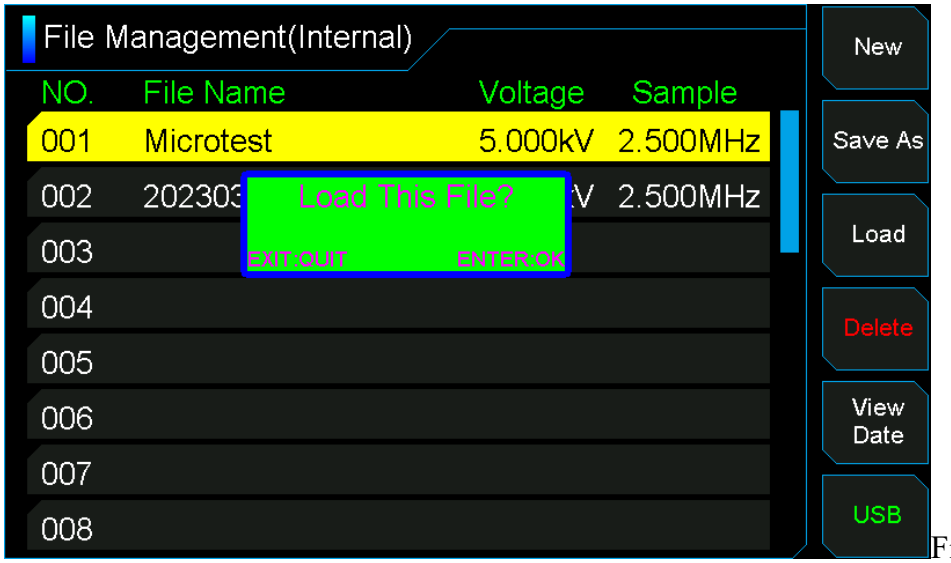


Figure3.6.3-1

1. Turn the knob to position 001 and press the Load File button (F3 function key).
2. A confirmation window for loading the file will appear.
3. Press ENTER.
4. Press EXIT to exit this page.

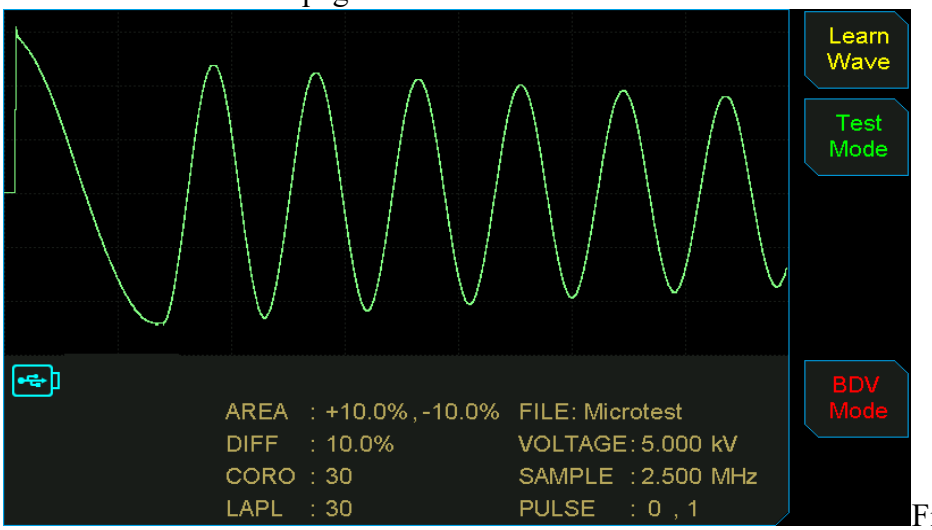


Figure3.6.3-2

Section 3.6.4 Delete file

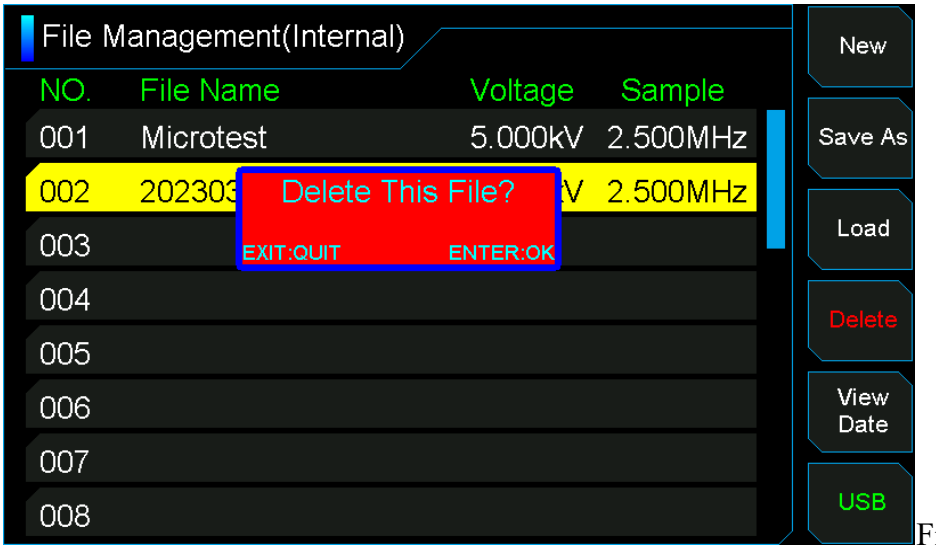


Figure3.6.4-1

1. Rotate the knob to position 002, then press the delete file (F4) button.
2. A confirmation window for deleting the file will appear.
3. Press the ENTER key to confirm the deletion.
4. Verify that file number 002 has been deleted.

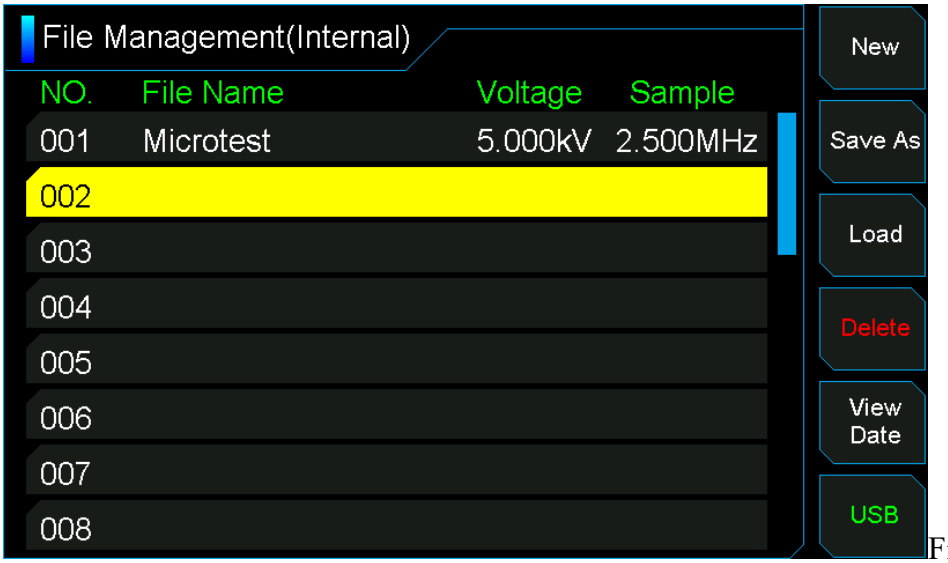


Figure3.6.4-2

Section 3.6.5 View Setting

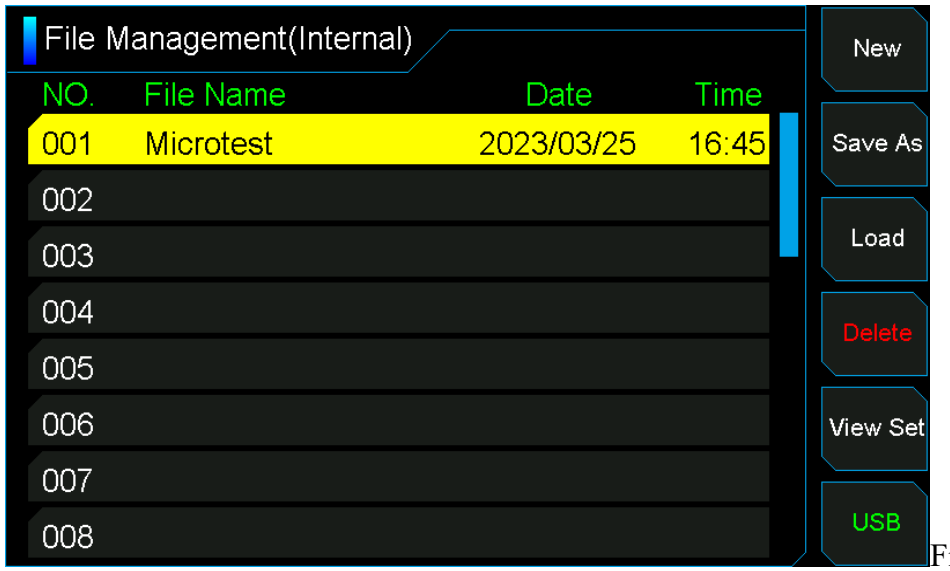


Figure3.6.5-1

1. Press the VIEW SETTINGS (F5) button.

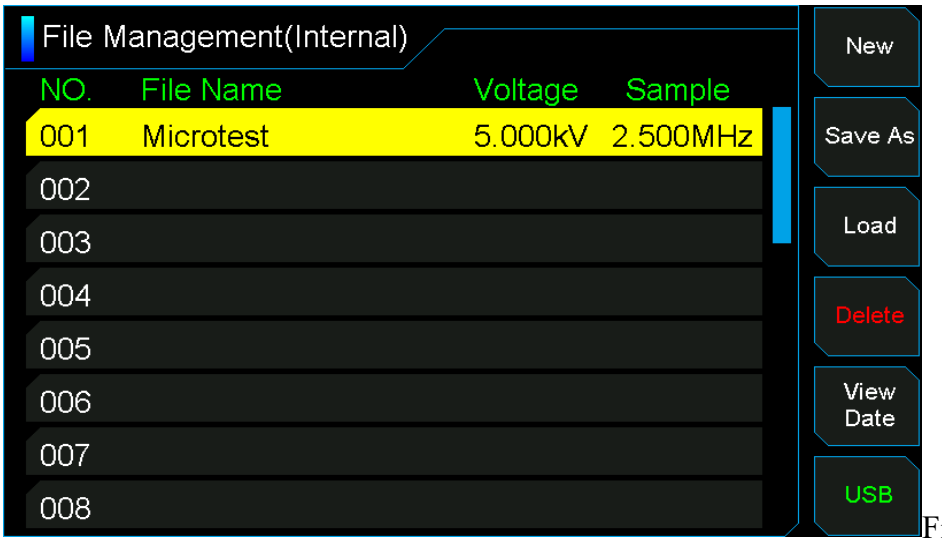


Figure3.6.5-2

2. Switch the date/time display to voltage and sampling rate.

Section 3.6.6 USB (External Memory File Management)

1. If you press the USB function key (F6) in the internal memory management page, you will enter the external memory file management page. The function of the external memory file management page is to manage files on a USB in FAT format. The folder name where the instrument stores files on the USB is "7750_SET". The key functions for external memory are generally the same as those for internal memory, and INT. (F6) is used to switch back to the external memory file management page. However, please note that when saving files in the external memory file management page, you need to ensure that the file names are not the same. If the file names are the same, the existing file with the same name will be overwritten directly. Also, the delete file function on this page will not be restricted. Please refer to items 2-6 in section 3.6 for the key function descriptions.

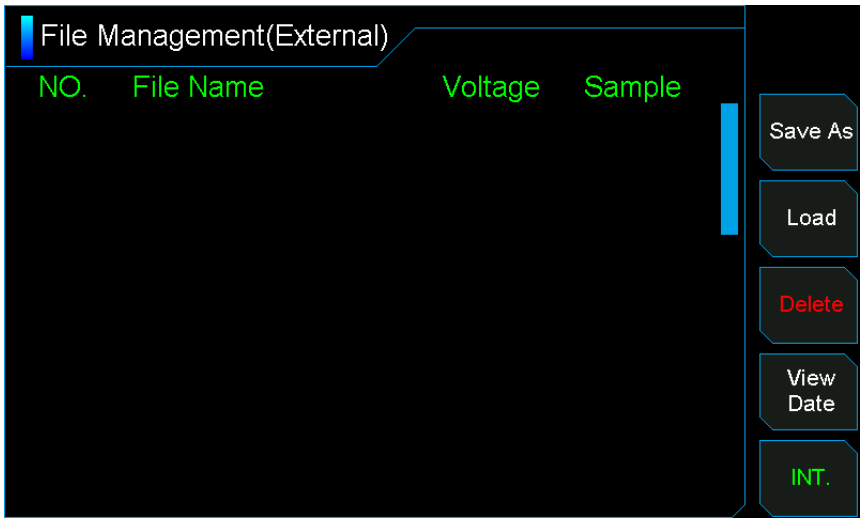


Figure3.6.6-1

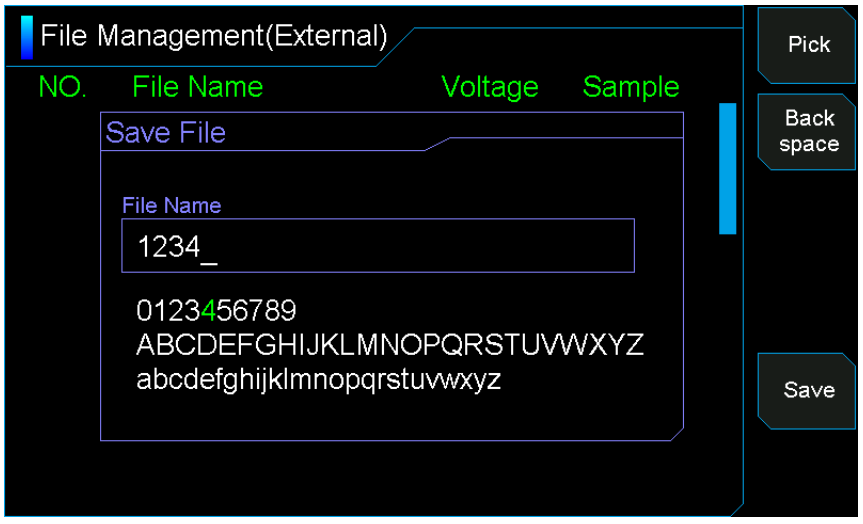


Figure3.6.6-2

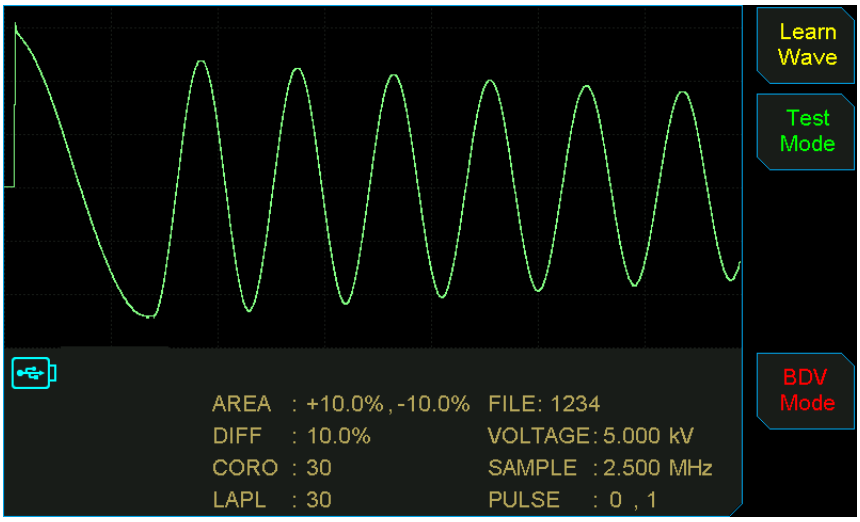


Figure3.6.6-3

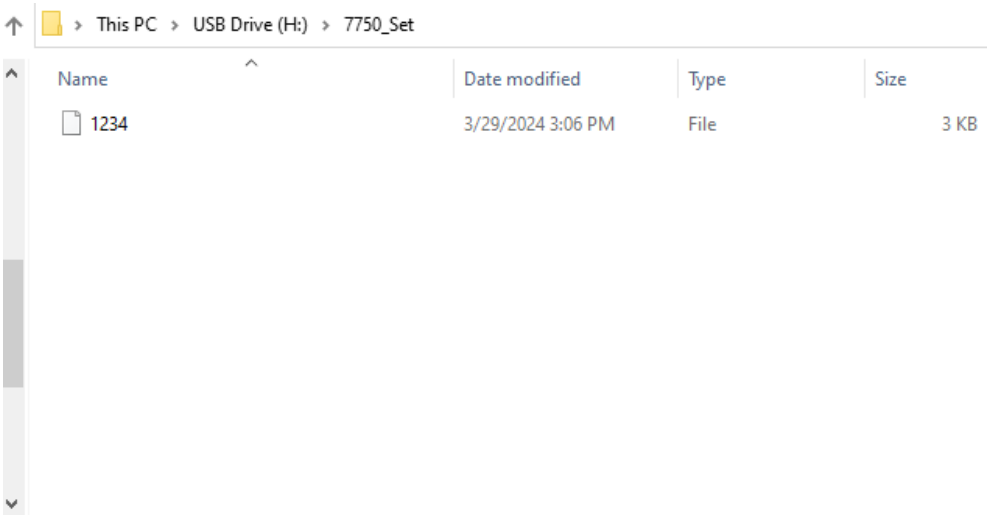


Figure3.6.6-4

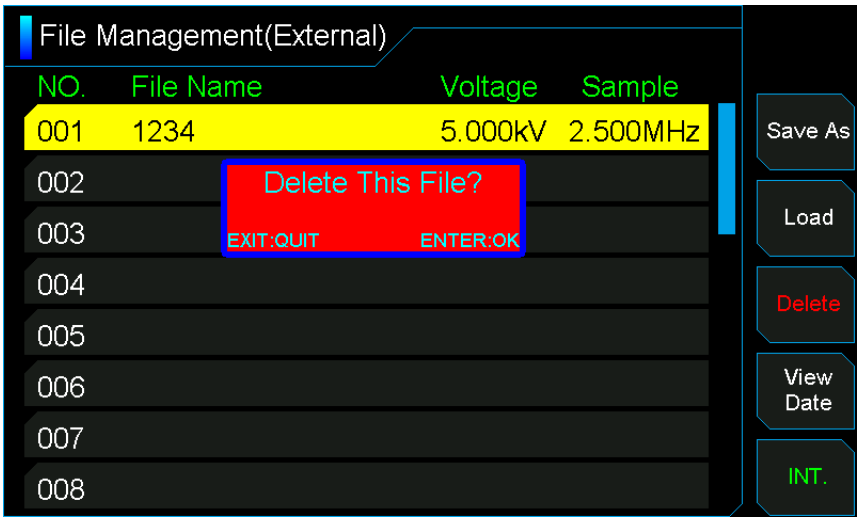


Figure3.6.6-5

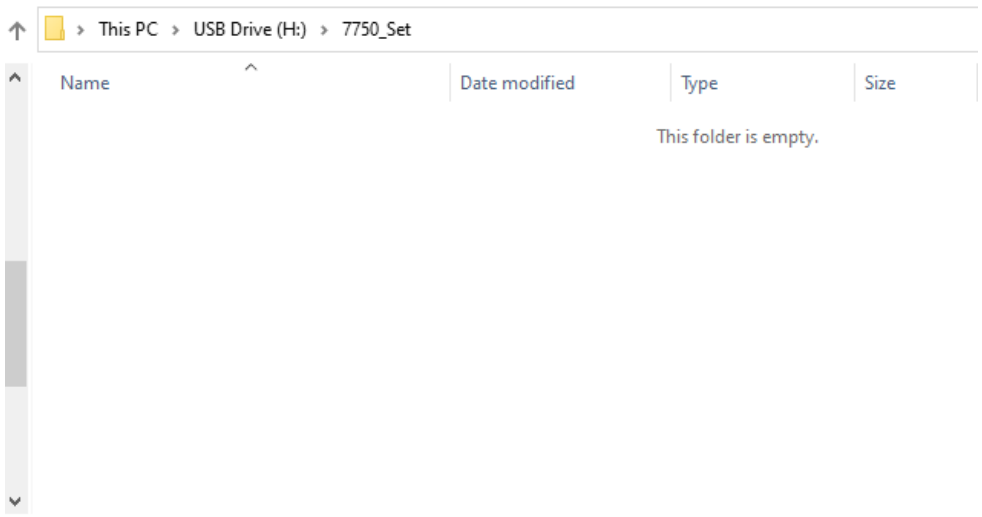

This PC
USB Drive (H:)
7750_Set
Name
Date modified
Type
Size
This folder is empty.

Figure3.6.6-6

Section 3.7 BDV Mode (7750-5E & 5H do not have this feature)

When you press the F5 key on the main page, you will enter the breakdown test page (as shown in Figure 3.7-1). The main function of this test page is to test the breakdown voltage of the tested object. By setting the initial voltage, termination voltage, and step voltage (corresponding to the initial voltage %), the test voltage is applied to the tested object in a continuous pulse from the initial voltage to the termination voltage in an increasing step voltage manner. Then, the waveform obtained in each test is displayed and compared with the judgment parameters (corona number, second derivative) until it exceeds the judgment value (corona number, second derivative) or reaches the termination voltage or stops the test (press the STOP button, etc.), thus analyzing the breakdown voltage of the tested object.



Figure3.7-1

1. Press the F1~F5 function keys on the crash test page to move the cursor to the corresponding setting item. The following will explain the corresponding crash test parameter setting items in the order of F1~F5
   :

   A. StartVolt:
   This setting parameter is the starting voltage for the breakdown test, and its upper and lower limits are determined by the user's instrument model, as specified in Section 2.1 "Specifications" for pulse voltage. Users should set an appropriate initial voltage value based on the specifications and characteristics of the test object, and the set initial voltage value will also affect the size of the step voltage. Users can change the setting value by using the knob and numeric keys.

B. End Volt:
This setting parameter is the ending test voltage of the breakdown test, with an upper limit determined by the instrument model and a lower limit set to the initial voltage value. When the test voltage reaches this setting value, the test will stop. Users can change the setting value using the knob and number keys.

C. Step Volt:
This setting parameter is used to control the voltage increment for each test, and it is expressed as a percentage. The upper limit is 100%, and the lower limit is 1%. The voltage increment value is equal to the initial voltage multiplied by the percentage set in this parameter. Users can change the setting value using the knob or numeric keys.

D. Dummy Pulse:
This setting parameter is used to control the number of pre-pulses output before conducting the actual breakdown test. This is to allow the test object to stabilize after the voltage shock. The number of pre-pulses can be set from 0 to 32. The user can adjust the setting value using the rotary knob and numeric keys according to their need

E. Test Pulse:
After the pre-pulse ends, the corresponding number of test pulses will be output at each voltage value during the breakdown test. During the test, voltage pulses are output to the device under test and the instrument obtains its waveform. If the result of any test pulse is judged as defective during the test, the test will immediately stop and display the result. The setting range for this parameter is from 1 to 32, and users can adjust the value using the knob and numeric keys according to their needs.

2. The current page is the Breakdown Test page.

3. Test result display area.

4. Test voltage display area.

Please press the EXIT key to leave this page.

Section 3.7.1 BDV Test operation. (7750-5E & 5H please skip this section)

Make sure to input the appropriate test parameters and judgment parameters (such as corona count and second derivative) for the DUT (Device Under Test), and insert the SIGNAL I/O plug. Connect the DUT to the test port, and press the START button to begin the breakdown voltage test. Then, analyze each test result waveform and compare it with the judgment parameters to determine whether it is a pass or fail. This process allows you to determine the breakdown voltage of the DUT.



Figure3.7.1-1

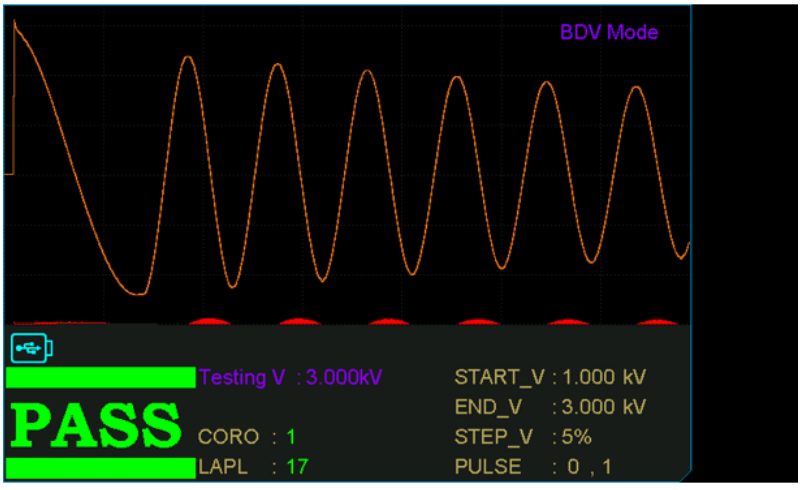


Figure3.7.1-2

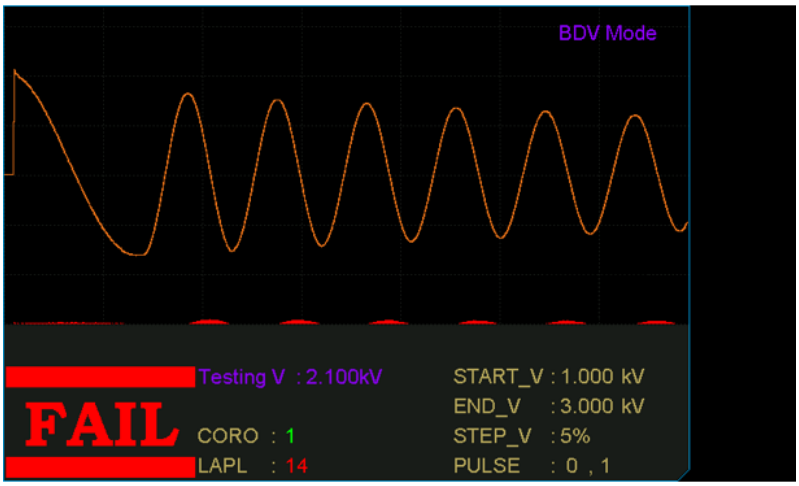


Figure3.7.1-3

Warning:

Do not touch the test components or output cables when the high-voltage lamp is on to avoid electric shock risk.

Section 3.8 Test Mode

Click on the F1 function key on the main page to enter the test mode page (such as Figure 3.8-1).

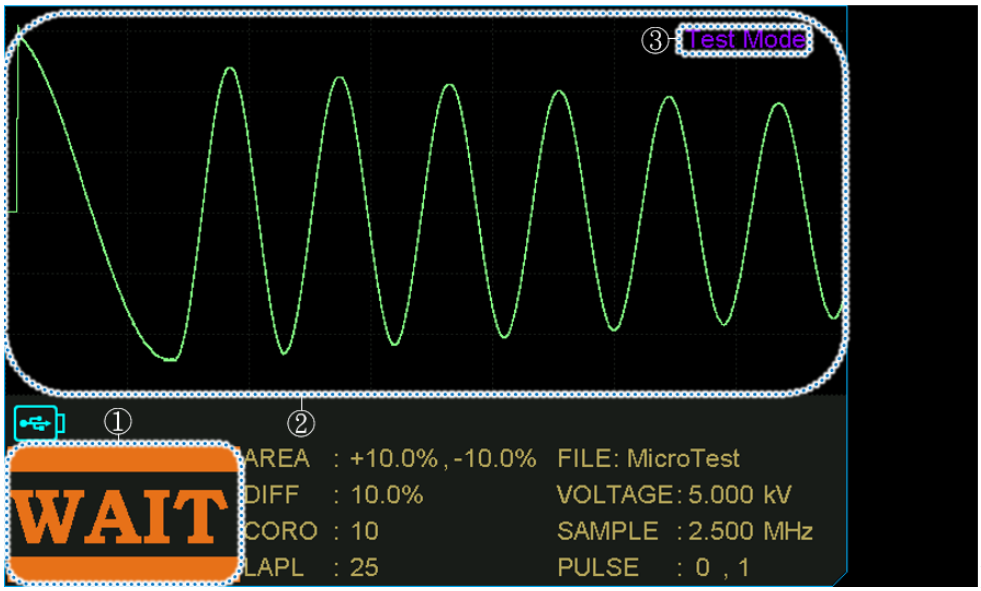


Figure3.8-1

1. The current testing status of the instrument, which will display different statuses based on the situation in the test mode. There are a total of four statuses: WAIT (waiting to be tested), PASS (passed), FAIL (failed), and LOCK (locked, please insert SIGNAL I/O plug to unlock).

2. Once a standard waveform has been confirmed and the SIGNAL I/O plug has been inserted, press the START button to begin testing. The orange waveform of the test item will be displayed here in the test result. If in standby mode, the waveform of the standard item will be displayed in green.

3. The current text displayed on the test mode page.

Section 3.8.1 Actual application

After confirming the standard wave of the learning standard and inserting the SIGNAL I/O plug, replace the standard with the test object. Enter the test mode and press the START Test button to measure the waveform of the test object, compare it with the standard wave to obtain the waveform difference, and then judge it as a pass or fail based on this difference. △ Please note for the model 7750-5E: The second-order differentiation on the test result screen is permanently set to OFF.

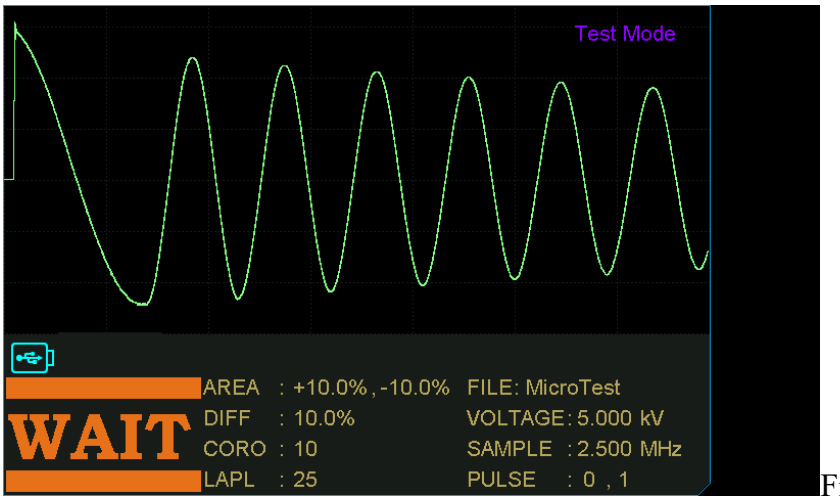


Figure3.8.1-1

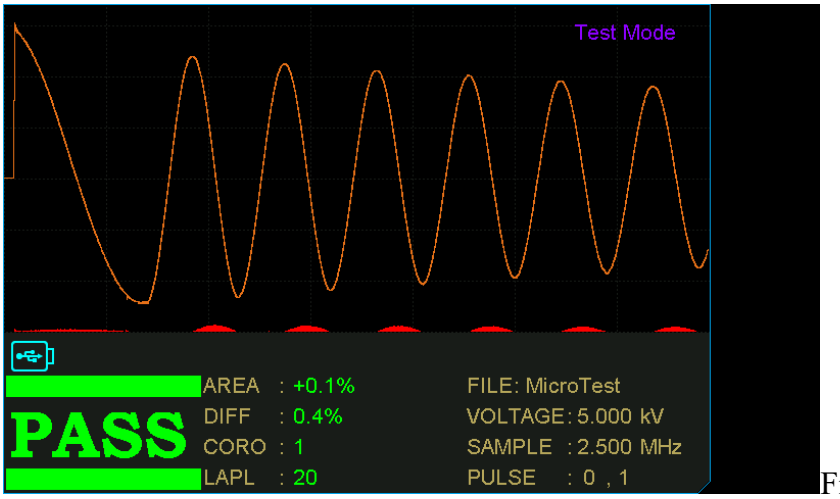


Figure3.8.1-2

Warning:

When the high voltage indicator is on, do not touch the tested parts or output cables to avoid electric shock.

Chapter 4 Signal I/O Interface

There is a remote control socket (Signal I/O) on the rear panel of the instrument. If you want to control the output of this instrument by an external signal, please insert the control cable into this socket. As the instrument is controlled by an external signal, please avoid contact with the high-voltage output to prevent danger.

Input/Output Control

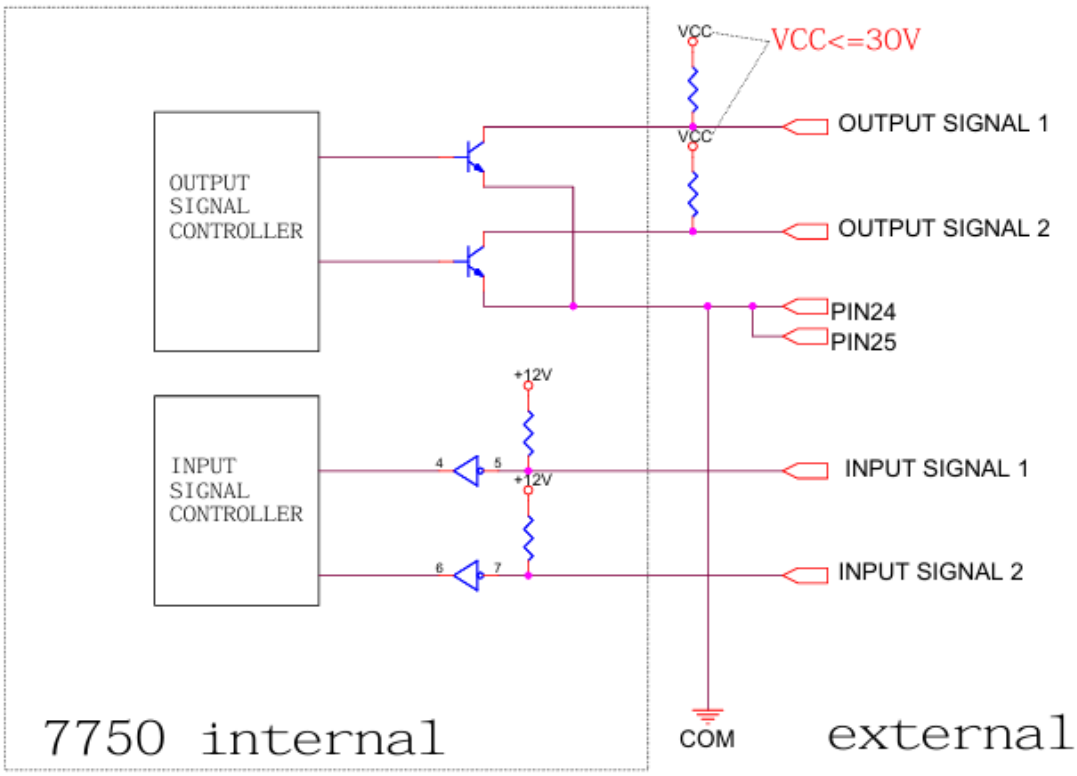


Figure4-1

SIGNAL I/O			
Pin	**Name**	**Input/ Output**	**Explanation**
1	INTERLOCK+		Safety lock: Short INTERLOCK for testing.
2	/START	IN	Connecting this PIN with PIN 24 and 25 will allow the instrument to perform a test.
3			
4	/STOP		Shorting this PIN with PIN 24 and 25 will stop the testing of the instrument.
5			
6	+24V		+24V
7	/Fail Area+	OUT	Test result exceeds the upper limit of the total area, output Low
8	/Fail Area-		Test result exceeds the lower limit of the total area, output Low
9	/Fail Diff		Test result exceeds the total area value, output Low
10	/Fail Laplac		Test result exceeds the second differential value, output Low
11	/Fail Flutter		Test result exceeds the shake count value, output Low
12	/Fail Compare		Test result exceeds the waveform comparison value, output Low
13	INTERLOCK-		The safety lock can be tested by shorting the INTERLOCK+ pin.
14	/PASS	OUT	When the test result is good, the output is LOW.
15	/FAIL		The output will be LOW when the test result is a failure.
16	/TESTING		Output is LOW during testing.
17	/READY		Output is LOW during waiting.
18	/HV		Output is LOW when the front and rear terminals output high voltage.
19			
20			
21			
22			
23			
24	COM		COM inside the instrument
25	COM		COM inside the instrument

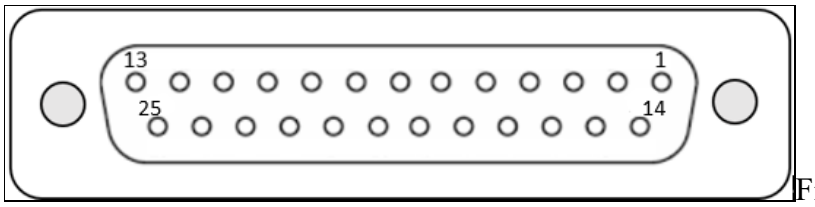
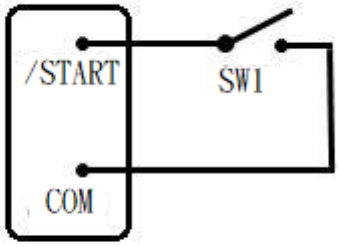


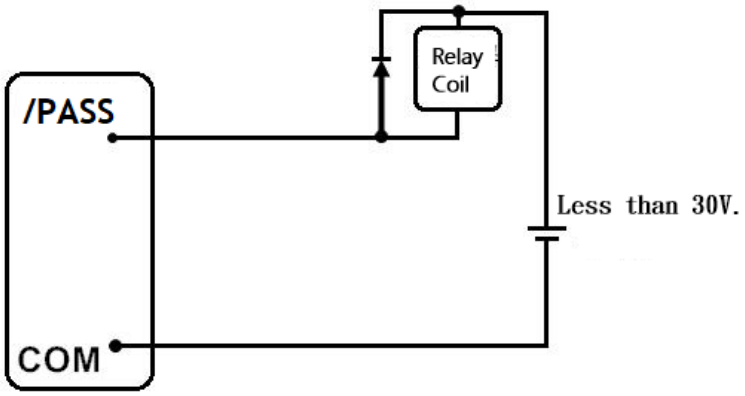
Figure4-2

Common usage scenario:

1. (Input Signal) Use the normally open contacts of a relay to control the machine for testing purposes.



2. (Output Signal) Control a relay using output signals. For enhanced safety, connect a voltage-stabilizing diode to the coil section of the relay.



Section 4.1 A Timing diagram

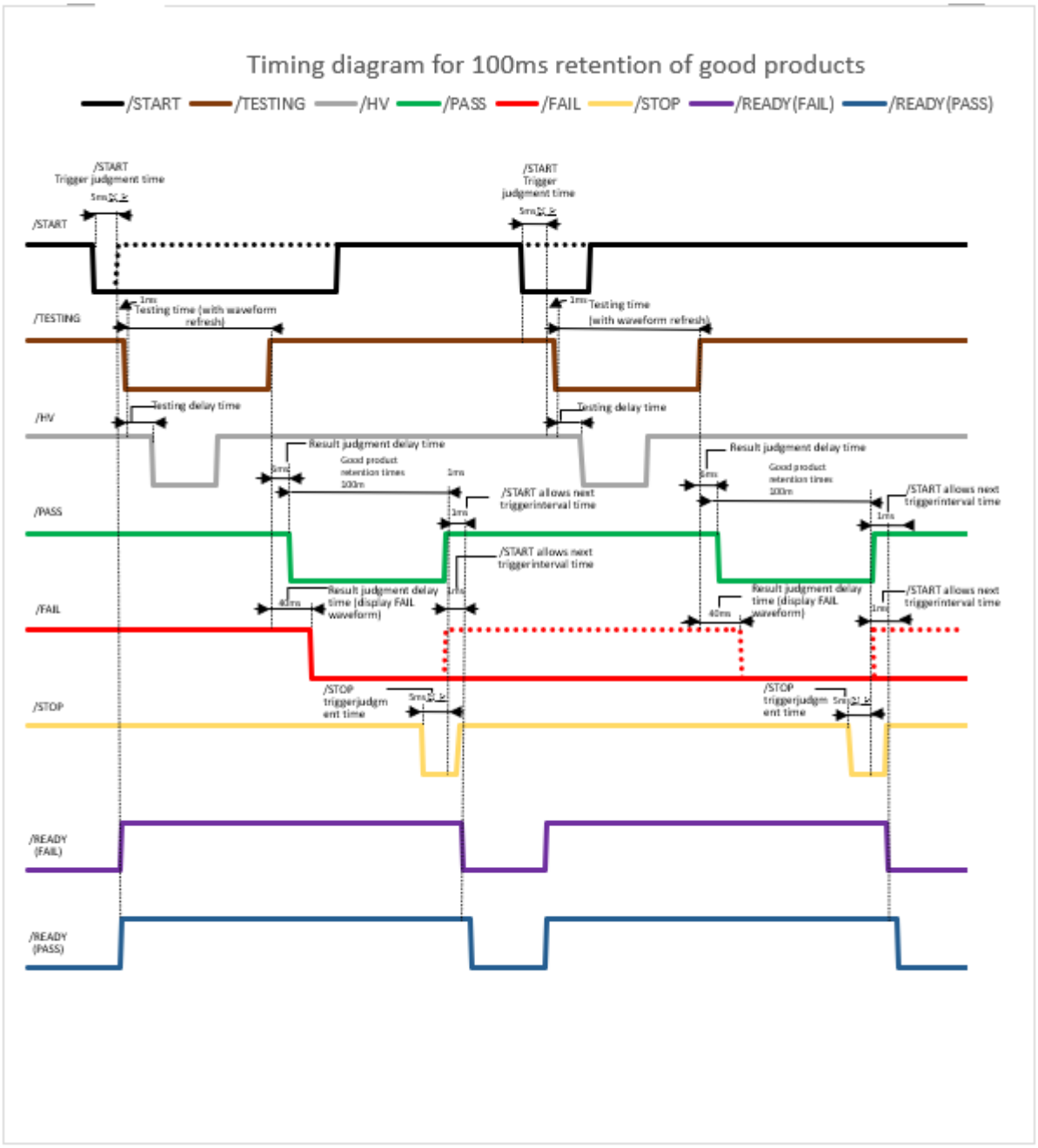


Figure4.1-1

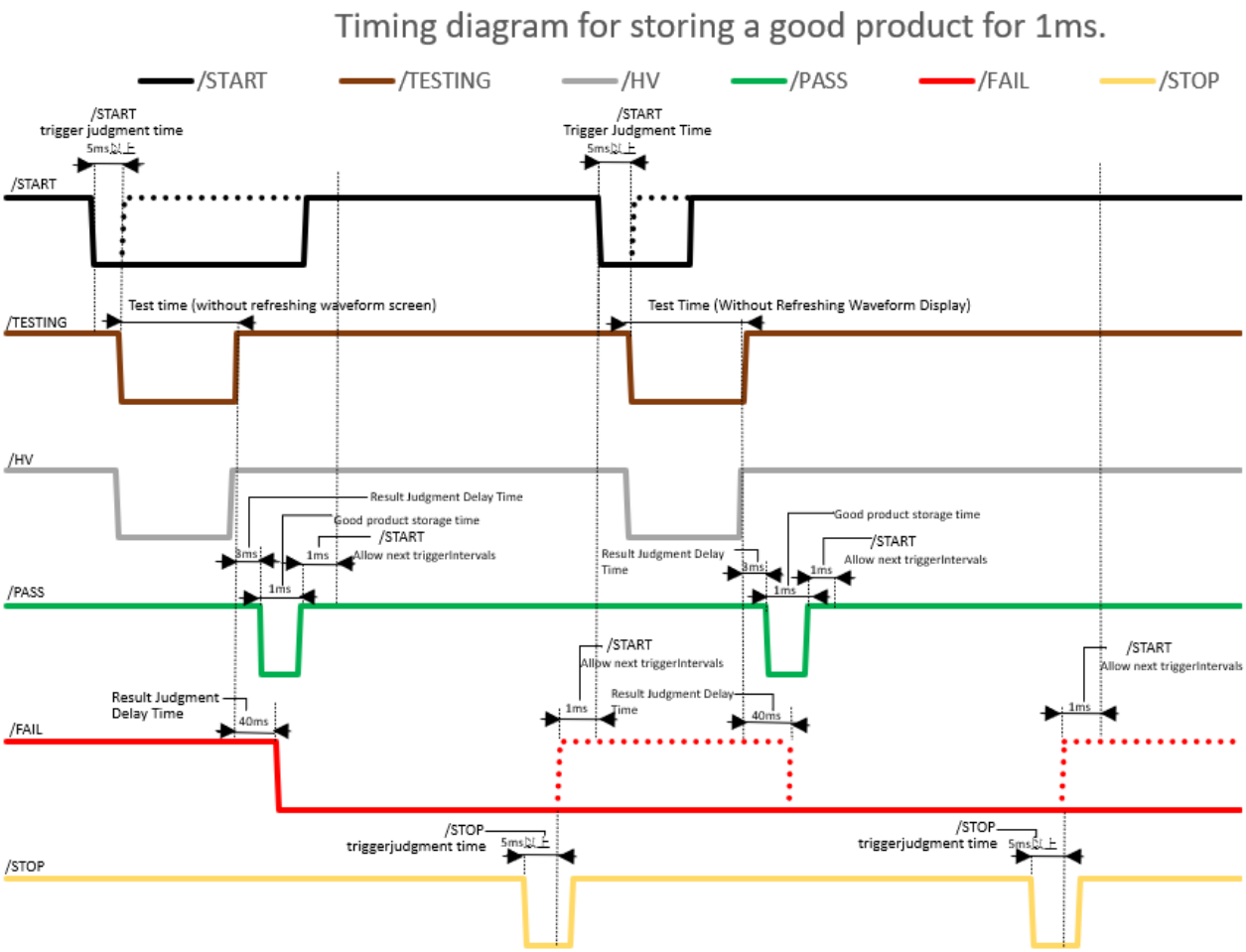

Timing diagram for storing a good product for 1ms.
/START
/TESTING
/HV
/PASS
/FAIL
/STOP
/START trigger judgment time
5ms
/START Trigger Judgment Time
5ms
/START
Test time (without refreshing waveform screen)
Test Time (Without Refreshing Waveform Display)
/TESTING
/HV
Result Judgment Delay Time
Good product storage time
/START
3ms
1ms
Allow next triggerIntervals
1ms
Result Judgment Delay Time
3ms
Good product storage time
/START
1ms
Allow next triggerIntervals
1ms
/PASS
/START
Allow next triggerIntervals
1ms
Result Judgment Delay Time
40ms
/START
Allow next triggerIntervals
1ms
Result Judgment Delay Time
40ms
/FAIL
/STOP triggerjudgment time
5ms
/STOP triggerjudgment time
5ms
/STOP

Figure4.1-2

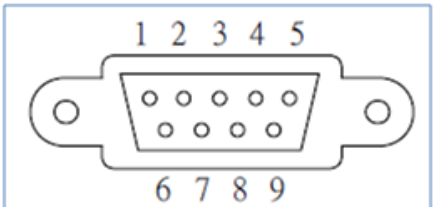
Chapter 5 The remote control interface.

The following is a description of remote control. The communication methods between the remote control host and the instrument include RS232, USB TYPE-B, LAN(7750-5E & 5H do not have this feature), and GPIB (optional).

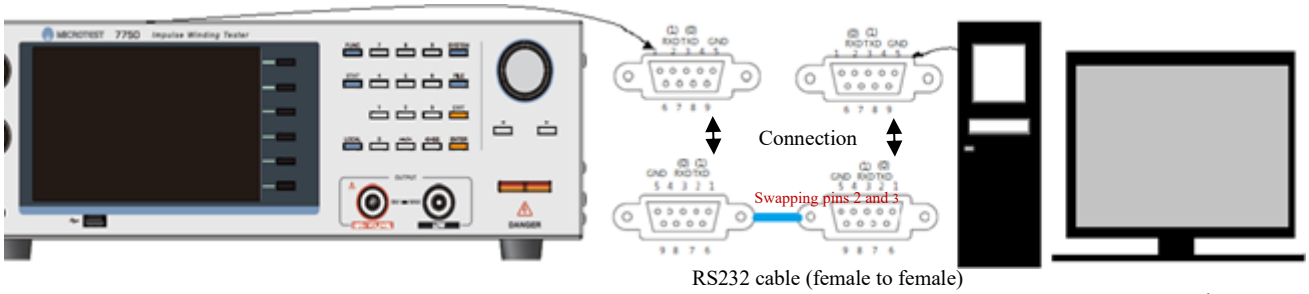
Section 5.1 RS232

This instrument uses a 9-pin male connector for the RS232 port. The following table describes the usage status of each pin:

Pin	Name	Description
1	CD	Not connected
2	RxD	Receive data
3	TxD	Transmit data
4	DTR	Not connected
5	GND	Signal Ground
6	DSR	Not connected
7	RTD	Not connected
8	CTS	Not connected
9	RI	Not connected



The male RS232 port on the rear panel of the instrument / The male RS232 port on the remote control host



RS232 cable (female to female)

Figure5.1-2

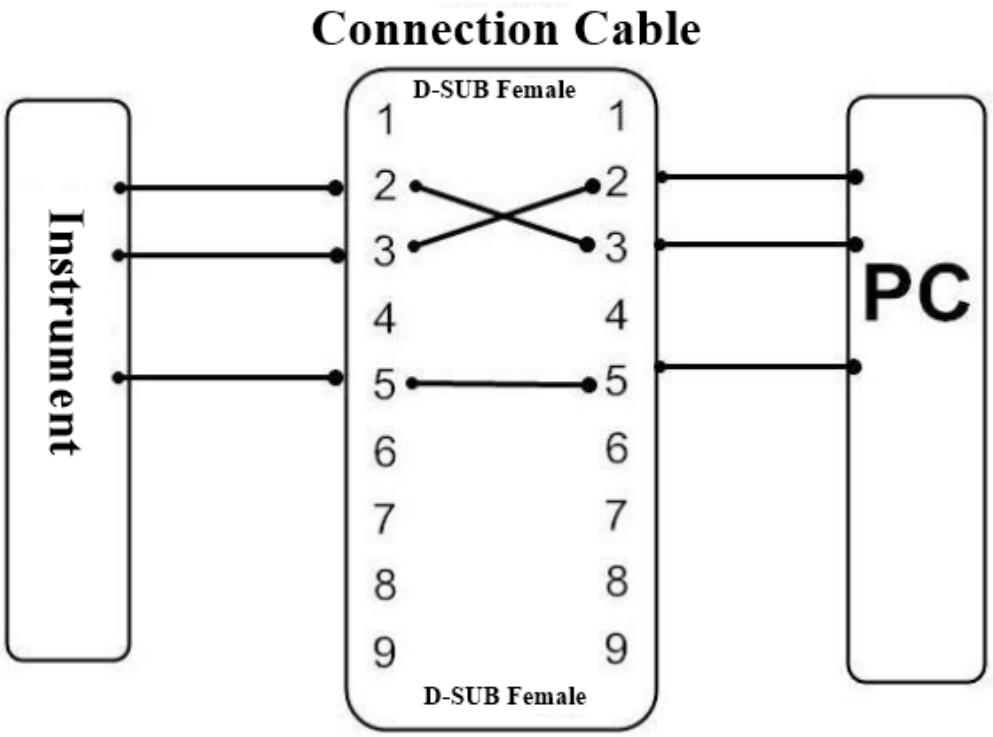

Connection Cable
D-SUB Female
1
2
3
4
5
6
7
8
9
1
2
3
4
5
6
7
8
9
D-SUB Female
Instrument
PC

Figure5.1-3

Section 5.1.1 RS232 Data format.

1. erial transmission rate: 9600, 19200, 38400, 57600, 115200. For instructions on setting the serial transmission rate of the instrument, please refer to section 3.3.2 "System Setup", item 2 "Baud Rate".
2. Start bit: 1
3. Data bits: 8
4. Stop bit: 1

Section 5.1.2 RS232 Instruction String Format

If the user uses the RS232 port of the instrument to receive ASCII command strings composed by the host computer to control the instrument, the structure of the command string must be (:1st command;:2nd command;:3rd... end bit), and the total length of the command string can be up to 3072 characters. The end bit should be set to: \n (LF) or \r\n (CRLF). The types of commands can be divided into inquiry commands (:command? parameter value) and operation commands (:command parameter value). If there are multiple parameters, they are separated by ",". If multiple commands are issued at one time, please connect them with ";" between the commands. For detailed command function instructions, please refer to Chapter 6 Command Set.

Section 5.2 USB[Type-B]

Connect the instrument's USB Type-B port to the remote control host using a USB Type-B cable. Open the remote control host's device and interface management interface to see if the instrument is detected. If the instrument is detected and the data is correct, you can use the remote command interface to control the instrument remotely.

Section 5.2.1 USB Instruction String Format

If the user uses the USB port on the instrument's rear panel to receive an ASCII command string from the host computer to control the instrument, the structure of the command string should be (:1st command;:2nd command;:3rd...end character). The total length of the command string can be up to 3072 characters, and the end character of the command string should be set to \n (LF) or \r\n (CRLF). The

command types can be divided into query commands (:command? parameter value) and operation commands (:command parameter value). If there are multiple parameters, separate them with a ",". If multiple commands are issued at once, please connect them with ";". For detailed command functions, please refer to Chapter 6 Command Set.

Section 5.3 LAN (7750-5E & 5H do not have this feature)

This instrument provides two methods for network settings. First, DHCP can be enabled to automatically obtain IP address and subnet mask settings. Alternatively, when DHCP is disabled, the user can manually input the IP address and subnet mask settings. The MAC address and communication port of the instrument are fixed and cannot be changed. Please refer to section 3.3.5 "Network Settings" for network setup. Once setup is complete, connect the instrument's rear panel port to the remote control host using an RJ45 network cable. Then, open the device and interface management interface on the remote control host and set up TCP connection according to the network settings of the instrument. After the connection is established, the remote command interface can be used to remotely control the instrument.

Section 5.3.1 LAN Instruction String Format (7750-5E & 5H please skip this section)

If the user uses the LAN port of the instrument to receive ASCII-formatted command strings from the host for controlling the instrument remotely, the structure of the command string should be as follows: (:1st command;:2nd command;:3rd... end bit). The total length of the command string can be up to 3072 characters, and the end bit of the command string should be set to: \n (LF) or \r\n (CRLF). The command types can be divided into inquiry commands (:command? parameter value) and operation commands (:command parameter value). If there are multiple parameters, separate them with "," and if multiple commands are issued at once, connect them with ";". For detailed command function description, please refer to Chapter 6 Command Set.

Section 5.4 GPIB(optional)

Please first set the GPIB address on the system settings page, and then use a GPIB cable to connect the GPIB port on the instrument's rear panel to the remote control host. Open the device and interface management interface of the remote control host and set the IP address of the GPIB connector in the

setting interface to the same value as the instrument's setting. Then perform the scan device function for GPIB to see if the remote control host detects the instrument. If it is successfully detected, the remote command communication interface can be opened to remotely control the instrument.

Section 5.4.1 GPIB Instruction String Format

If the user uses the GPIB port of the instrument to receive the ASCII-based instruction string sent by the host to control this instrument, the structure of the instruction string must be (:1st instruction;: 2nd instruction;:3rd…end character). The total length of the instruction string can be up to 3072 characters, and the end character of the instruction string should be set as: \n (LF) or \r\n (CRLF). The instruction types can be divided into inquiry instructions (:instruction? parameter value) and operation instructions (:instruction parameter value). If there are multiple parameters, please use "," to separate them, and if multiple instructions are issued at once, please use ";" to connect them. For detailed instruction functions, please refer to Chapter 6 Instruction Set.

Chapter 6 Instruction Set

Command Summary:

Command parameter categories	Parameter types:
NR1	Integer type
NR2	Floating-point number.
NR3	Exponentiation
NRF	NR1_NR2_NR3
Character	Character
String	String
Boolean	Boolean (0, 1, ON, OFF)
Numeric	Floating point + symbol + unit.

Instruction note:

- If there are [ ] brackets in the instruction, it means that the contents inside the brackets can be omitted or entered. If you want to enter the contents inside the brackets, please remove the [ ] brackets.

- If there are multiple parameters for the instruction, please use "," to separate them, and if multiple instructions are issued at one time, please connect them with ";" between instructions.

- For the instruction, lowercase fonts can be omitted. For example: "IMPulse:VOLTage?" can be written as "imp:volt?".

Common Commands:

Title	Parameter	Description
*IDN?	String	Reads the basic information of the device in comma-separated format.
*CLS		Clear all register values.
*OPC		Command for completing the operation.

*OPC?		Inquiry operation completion command. Returns 1 if the operation is completed, and 0 otherwise.
*RST	String	Clear all setup data (including standard waveforms)

Example: *IDN?

Description: <Company, instrument model, instrument serial number, firmware version>

Return: MICROTEST,7750-5,THA-XXXX,0.99.0157

SCPI 指令

:IMPulse	:VOLTage	<Numeric>			
	:END	:VOLTage	<Numeric>		
	:STEP	:VOLTage	<Numeric>		
	:STARt	:VOLTage	<Numeric>		
	:BDV	:VOLTage?	<Numeric>		
	:WIDTh	<NR1>			
	:SAMPle	<NR3>			
	:PULSe	<Numeric>			
	:ALC	<0,1,ON,OFF>			
		:VOLTage	<NR3>		
	:AREA	:JUDGement	<0,1,ON,OFF>		
		SCOPe	:BEGin	<NR1>	
			:END	<NR1>	
		:LIMit	PLUS	<NR3>	
			MINus	<NR3>	
:IMPulse	:DARe	:JUDGement	<0,1,ON,OFF>		
		:LIMit	<NR3>		
		:SCOPe	:BEGin	<NR1>	
			:End	<NR1>	
	:CORona	:JUDGement	<0,1,ON,OFF>		
		:LIMit	<NR3>		
	LAPLac	:JUDGement	<0,1,ON,OFF>		
		:LIMit	<NR3>		
		:SCOPe	:BEGin	<NR1>	
			:End	<NR1>	
	:COMPare	:JUDGemen	<0,1,ON,OFF>		
		:SCOPe	:BEGin	<NR1>	

			:End	<NR1>	
		:LIMit	:TIME	<NR1>	
			:VOLTage	<NR1>	
	:FLUTter	:JUDGement	<0,1,ON,OFF>		
		LIMit	<NR3>		
		:SCOPe:	:BEGin	<NR1>	
			:End	<NR1>	
:SYSTem	:CONtrol	:TIME	PASS	<NR3>	
		:TRIGger	[:DELay]	<NR3>	
		:STATus	[:TRIGger]	:LOCK	<0,1,ON,OFF>
			:OUTPut	<Character>	
	:KLOCk	<0,1,ON,OFF>			
	:CONFig	:UPLoad	<Character>		
		:BAUD	<Numeric>		
		:KEYSound	<0,1,ON,OFF>		
		:ALARm	<OFF,PASS,FAIL,ALL>		
:SYSTem	:CONFig	:PASS	:VOLum	<NR1>	
		:FAIL	:VOLum	<NR1>	
	:ERRor	[:NEXT]?	<String>		
	:TIME	<String>			
:MEMory	:DELete	:NUMBer	<NR1>		
		[:NAME]	<String>		
	:LOAD	:NUMBer	<NR1>		
		[:NAME]	<String>		
	:STORe	:NUMBer	<NR1>		
		[:NAME]	<String>		
	:NUMBer?	<NR1>			
	[:NAME]?	<String>			
:RESult?	<String>				
:RESult	:WAVeform?	<String>			
	:WAVeform	:FLASh?	<String>		
	:STATistics?	<String>			
	:STATistics	:CLEar			

	:LAPLace?	<String>			
:MEASure?	<String>				
STARt					
STOP					
:SOURce	:MODE	<String>			
	:STANdard	:WAVe?	String		
:SIGNal	:IN?	<NR1>			

Section 6.1 SCPI command explanation

SCPI commands

Title	Parameter	Description
:IMPulse:VOLTage <Numeric>	Numeric	Test voltage setting.

Example: :IMPulse:VOLTage 3Kv

Description: Set the test voltage to 3000V.

Title	Parameter	Description
:IMPulse:VOLTage? [<MAXimum,MINimum>]	Numeric	Query for test voltage.

Example1: :IMPulse:VOLTage?

Description: Query the value of the test voltage?

Return: 3.000000e+03

Example2: :IMPulse:VOLTage? MAX

Description: Query the maximum setting value of the test voltage.

Return: 5.200000e+03 < The maximum value that can be set for this setting is 5.2 kV.>

Title	Parameter	Description
:IMPulse:END:VOLTage <Numeric>	Numeric	The setting of the termination voltage for breakdown testing.

Example: :IMPulse:END:VOLTage 1.1e+3

Description: Set the termination voltage to 1.1KV.

Title	Parameter	Description
:IMPulse:END:VOLTage? [<MAXimum,MINimum>]	Numeric	Termination Voltage Query for Crash Test

Example1: :IMPulse:END:VOLTage?

Description: Query the current setting value of the termination voltage

Return: 7.000000e+02

Example2: :IMPulse:END:VOLTage? MIN

Description: Asking for the minimum value that can be set for the termination voltage in the breakdown test.

Return: 1.000000e+02

Title	Parameter	Description
:IMPulse:STEP:VOLTage <Numeric>	Numeric	The ratio of the step voltage to the initial voltage in the breakdown test.

Example: :IMPulse:STEP:VOLTage 0.07

Description: Set the step voltage to 7% of the initial voltage for the breakdown test.

Title	Parameter	Description
:IMPulse:STEP:VOLTage ? [<MAXimum,MINimum>]	Numeric	May I know what is the ratio of the step voltage to the initial voltage in the breakdown test currently set?

Example1: :IMPulse:STEP:VOLTage?

Description: What is the current setting for the step voltage to initial voltage ratio?

Return: 7.000000e-02

Example2: :IMPulse:STEP:VOLTage? MAX

Description: May I ask what is the maximum ratio that can be set for the step voltage to the initial voltage in the breakdown test?

Return: 1.000000e+00

Title	Parameter	Description
:IMPulse:STARt:VOLTage <Numeric>	Numeric	Setting the initial voltage for breakdown testing.

Example1: :IMPulse:STARt:VOLTage 0.5kV

Description: Set the initial voltage to 0.5KV.

Title	Parameter	Description
:IMPulse:BDV:VOLTage?	Numeric	Crash Test Result Voltage Inquiry

Example1: :IMPulse:BDV:VOLTage?

Description: To inquire about the voltage at the end of the crash test.

Return: 5.000000e+03< The voltage at the end of the crash test is 5kV. >

Title	Parameter	Description
:IMPulse:STARt:VOLTage? [<MAXimum,MINimum>]	Numeric	Inquiry of initial voltage setting for breakdown test.

Example1: :IMPulse:STARt:VOLTage?

Description: May I ask what is the current setting for the initial voltage in the breakdown test?

Return: 5.000000e+02

Example2: :IMPulse:STARt:VOLTage? MIN

Description: What is the minimum value that the initial voltage can be set to currently?

Return: 1.000000e+00

Title	Parameter	Description
:IMPulse:WIDTh <NR1>	NR1	Sample Rate Setting

Example: :IMPulse:WIDTh 4

Description: Set the sampling rate to 5.000MHz.

Title	Parameter	Description
:IMPulse:WIDTh? [<MAXimum,MINimum>]	NR1	Query the sampling rate (refer to Table 7-1). According to the model (E, H), the maximum frequency can be set to: 50M(E), 100M(H), 200M(S) Hz

Example: :IMPulse:WIDTh?

Description: What is the current set value of the sampling rate?

Return: 4[The current set value for the sampling rate is 5.000MHz.]

Return value	Sampling rate
1	0.625MHZ
2	1.250MHZ
3	2.500MHZ
4	5.000MHZ
5	10.00MHZ
6	20.00 MHZ
7	25.00 MHZ
8	33.33 MHZ
9	50.00 MHZ
10	100.0MHZ
11	200.0MHZ

Table 7-1

Title	Parameter	Description
:IMPulse:SAMPle<NR3>	NR3	Setting the sampling rate (frequency), please refer to (please refer to Table 7-1 for sampling rate). According to the model (E, H), the maximum frequency can be set to: 50M(E), 100M(H), 200M(S) Hz

Example: :IMPulse:SAMPle 5e+06

Description: Set the sampling rate to 5MHz.

Title	Parameter	Description
:IMPulse:SAMPle? [<MAXimum,MINimum>]	NR3	What is the current setting of the sampling rate (frequency)?

Example1: :IMPulse:SAMPle?

Description: What is the current sampling frequency?

Return: 2.500000e+06

Example2: :IMPulse:SAMPle? MAX

Description: What is the maximum sampling frequency that can be set currently?

Return: 2.000000e+08

Title	Parameter	Description
:IMPulse:PULSe <Numeric>	Numeric	Pulse Setting

Example: :IMPulse:PULSe 32,31

Description: Set the test pulse to 32 and the pre-pulse to 31.

Title	Parameter	Description
:IMPulse:PULSe?	Numeric	pulse query

Example: :IMPulse:PULSe?

Description: Query test pulse, pre-pulse setting value.

Return: 32, 31 <Test pulse is 32, pre-pulse is 31>.

Title	Parameter	Description
:IMPulse:ALC <0,1,ON,OFF>	Boolean	Setting of Voltage Compensation Function Switch

Example: :IMPulse:ALC 1

Description: Enable the voltage compensation function

Title	Parameter	Description
:IMPulse:ALC?	Boolean	Inquiry about the voltage compensation function switch

Example: :IMPulse:ALC?

Description: Inquire about the current status of the voltage compensation function switch

Return: ON

Title	Parameter	Description
:IMPulse:ALC:VOLTage	NR3	Compensated voltage value setting

Example: :IMPulse:ALC:VOLTage 500

Description: The compensated voltage value is set to 500V, and the actual output voltage is the test voltage plus the compensated voltage.

Title	Parameter	Description
:IMPulse:ALC:VOLTage?	NR3	Compensated voltage value inquiry

Example: :IMPulse:ALC:VOLTage?

Description: Inquiry about the compensated voltage value

Return: 5.000000e+02<The compensated voltage is currently set to 500V>

Title	Parameter	Description
:IMPulse:AREA:JUDGement <0,1,ON,OFF>	Boolean	Area function switch setting

Example: :IMPulse:AREA:JUDGement ON

Description: Activate the area function

Title	Parameter	Description
:IMPulse:AREA:JUDGement?	Boolean	Inquiry about the area function switch

Example: :IMPulse:AREA:JUDGement?

Description: Inquire about the current status of the area function switch

Return: ON

Title	Parameter	Description
:IMPulse:AREA:SCOPe:BEGin <NR1>	NR1	Setting the initial point for enabling the area function

Example: :IMPulse:AREA:SCOPe:BEGin 100

Description: Set the initial point for enabling the area function to 100

Title	Parameter	Description
:IMPulse:AREA:SCOPe:BEGin? [<MAXimum,MINimum>]	NR1	Inquiry about the initial point setting for enabling the area function

Example1: :IMPulse:AREA:SCOPe:BEGin?

Description: Inquiry about the initial point setting for enabling the area function

Return: 100

Example2: :IMPulse:AREA:SCOPe:BEGin? MIN

Description: Inquiry about the minimum setting value for the initial point setting for enabling the area function

Return: 0 The minimum value that can be set for this setting is 0

Title	Parameter	Description
:IMPulse:AREA:SCOPe:END <NR1>	NR1	Setting the end point for enabling the area function

Example: :IMPulse:AREA:SCOPe:END 600

Description: Set the end point for enabling the area function to 600

Title	Parameter	Description
:IMPulse:AREA:SCOPe:END?	NR1	Inquiry about the end point setting for enabling the area function

Example: :IMPulse:AREA:SCOPe:END?

Description: Inquire about the current setting value of the end point for enabling the area function

Return: 600

Title	Parameter	Description
:IMPulse:AREA:LIMit:PLUS <NR3>	NR3	Setting the upper limit for the area

Example: :IMPulse:AREA:LIMit:PLUS 1.000000e-01

Description: Set the upper limit for the area to 10%

Title	Parameter	Description
:IMPulse:AREA:LIMit:PLUS? [<MAXimum,MINimum>]	NR3	Inquiry about the upper limit for the area

Example: :IMPulse:AREA:LIMit:PLUS?

Description: Inquire about the current setting value for the upper limit of the area

Return: 1.000000e-01 <10%>

Title	Parameter	Description
:IMPulse:AREA:LIMit:MINus <NR3>	NR3	Setting the lower limit for the area

Example: :IMPulse:AREA:LIMit:MINus 5.000000e-02

Description: Set the lower limit for the area to 5%

Title	Parameter	Description
:IMPulse:AREA:LIMit:MINus? [<MAXimum,MINimum>]	NR3	Inquiry about the lower limit for the area

Example: :IMPulse:AREA:LIMit:MINus?

Description: Inquire about the current setting value for the lower limit of the area

Return: 5.000000e-02 <5%>

Title	Parameter	Description
:IMPulse:DARea:JUDGement <0,1,ON,OFF>	Boolean	Setting the area difference function switch

Example: :IMPulse:DARea:JUDGement 0

Description: Disable the area difference function

Title	Parameter	Description

:IMPulse:DARea:JUDGement?	Boolean	Inquiry about the area difference function switch

Example: :IMPulse:DARea:JUDGement?

Description: Inquire about the current status of the area difference function switch

Return: OFF

Title	Parameter	Description
:IMPulse:DARea:LIMit <NR3>	NR3	Setting the upper limit for the area difference

Example: :IMPulse:DARea:LIMit 3.000000e-02

Description: Set the upper limit for the area difference to 3%

Title	Parameter	Description
:IMPulse:DARea:LIMit? [<MAXimum,MINimum>]	NR3	Inquiry about the upper limit for the area difference

Example: :IMPulse:DARea:LIMit?

Description: Inquire about the current setting value for the upper limit of the area difference

Return: 3.000000e-02 <3%>

Title	Parameter	Description
:IMPulse:DARea:SCOPe:BEGin <NR1>	NR1	Setting the initial point for enabling the area difference function

Example: :IMPulse:DARea:SCOPe:BEGin 50

Description: Set the initial point for enabling the area difference function to 50

Title	Parameter	Description
:IMPulse:DARea:SCOPe:BEGin? [<MAXimum,MINimum>]	NR1	Inquiry about the initial point setting for enabling the area difference function

Example: :IMPulse:DARea:SCOPe:BEGin?

Description: "Inquire about the current setting value for the initial point of the area difference function

Return: 50

Title	Parameter	Description
:IMPulse:DARea:SCOPe:End <NR1>	NR1	Setting the end point for enabling the area difference function

Example: :IMPulse:DARea:SCOPe:End 650

Description: Set the end point for enabling the area difference function to 650

Title	Parameter	Description
:IMPulse:DARea:SCOPe:End? [<MAXimum,MINimum>]	NR1	Inquiry about the end point setting for enabling the area difference function

Example: :IMPulse:DARea:SCOPe:End?

Description: Inquire about the current setting value for the end point of the area difference function

Return: 650

Title	Parameter	Description
:IMPulse:CORona:JUDGement <0,1,ON,OFF>	Boolean	Setting the electric arc count function switch

Example: :IMPulse:CORona:JUDGement 1

Description: Enable the electric arc count function

Title	Parameter	Description
:IMPulse:CORona:JUDGement?	Boolean	Inquiry about the electric arc count function switch

Example: :IMPulse:CORona:JUDGement?

Description: Inquire about the current status of the electric arc count function switch

Return: ON

Title	Parameter	Description

:IMPulse:CORona:LIMit <NR3>	NR3	Setting the upper limit for the electric arc count

Example: :IMPulse:CORona:LIMit 1.0e+1

Description: Set the upper limit for the electric arc count to 10

Title	Parameter	Description
:IMPulse:CORona:LIMit? [<MAXimum,MINimum>]	NR3	Inquiry about the upper limit for the electric arc count

Example: :IMPulse:CORona:LIMit?

Description: Inquire about the current setting value for the upper limit of the electric arc count

Return: 10

Title	Parameter	Description
:IMPulse:LAPLac:JUDGement <0,1,ON,OFF>	Boolean	Setting the second derivative function switch (7750-5E will not be able to activate this feature)

Example: :IMPulse:LAPLac:JUDGement OFF

Description: Disable the second derivative function

Title	Parameter	Description
:IMPulse:LAPLac:JUDGement?	Boolean	Inquiry about the second derivative function switch

Example: :IMPulse:LAPLac:JUDGement?

Description: Inquire about the current status of the second derivative function switch

Return: OFF

Title	Parameter	Description
:IMPulse:LAPLac:LIMit <NR3>	NR3	Setting the upper limit for the second derivative

Example: :IMPulse:LAPLac:LIMit 20

Description: Set the upper limit for the second derivative to 20

Title	Parameter	Description
:IMPulse:LAPLac:LIMit? [<MAXimum,MINimum>]	NR3	Inquiry about the upper limit for the second derivative

Example: :IMPulse:LAPLac:LIMit?

Description: Inquire about the current setting value for the upper limit of the second derivative

Return: 20

Title	Parameter	Description
:IMPulse:LAPLac:SCOPe:BEGin <NR1>	NR1	Setting of Initial Point for Enabling Second Derivative Function

Example: :IMPulse:LAPLac:SCOPe:BEGin 10

Description: Set the initial point for the enabled second-order differentiation function to 10.

Title	Parameter	Description
:IMPulse:LAPLac:SCOPe:BEGin? [<MAXimum,MINimum>]	NR1	Query for the initial point setting for the activation of the second derivative function.

Example: :IMPulse:LAPLac:SCOPe:BEGin? MAX

Description: What is the maximum value that can be set for the initial point of the second derivative function activation?

Return: 689

Title	Parameter	Description
:IMPulse:LAPLac:SCOPe:End <NR1>	NR1	Setting for end point of second-order differentiation function activation.

Example: :IMPulse:LAPLac:SCOPe:End 680

Description: Set the end point of the second derivative function to 680.

Title	Parameter	Description
:IMPulse:LAPLac:SCOPe:End? [<MAXimum,MINimum>]	NR1	Querying the end point of the activated second derivative function.

Example: :IMPulse:LAPLac:SCOPe:End? MIN

Description: What is the minimum value that can be set for the end point of the second derivative function?

Return: 1

Title	Parameter	Description
:IMPulse:COMPare:JUDGement <0,1,ON,OFF>	Boolean	Setting the on/off switch of the waveform comparison function.

Example: : IMPulse:COMPare:JUDGement 1

Description: Turn on the waveform comparison function.

Title	Parameter	Description
:IMPulse:COMPare:JUDGement?	Boolean	Inquire the on/off status of waveform comparison function.

Example: :IMPulse:COMPare:JUDGement?

Description: May I know the current status of the waveform comparison function?

Return: ON

Title	Parameter	Description
:IMPulse:COMPare:SCOPe:BEGin	NR1	Waveform comparison function initial point setting.

Example: :IMPulse:COMPare:SCOPe:BEGin 20

Description: Set the initial point of the waveform comparison function to 20.

Title	Parameter	Description
:IMPulse:COMPare:SCOPe:BEGin?	NR1	Query for the initial point setting of the waveform comparison function.

Example: :IMPulse:COMPare:SCOPe:BEGin?

Description: What is the current setting value of the initial point for waveform comparison function?

Return: 20

Title	Parameter	Description
:IMPulse:COMPare:SCOPe:END	NR1	Setting of waveform comparison function end point.

Example: :IMPulse:COMPare:SCOPe:END 670

Description: Set the end point for waveform comparison to 670 for the waveform comparison function.

Title	Parameter	Description
:IMPulse:COMPare:SCOPe:END?	NR1	Query for the setting of the endpoint of the waveform comparison function.

Example: :IMPulse:COMPare:SCOPe:END? MAX

Description:

What is the maximum value that can be set for the endpoint of the waveform comparison function currently?

Return: 690

Title	Parameter	Description
:IMPulse:COMPare:LIMit:TIME	NR1	Adjust the time settings for waveform comparison (horizontal axis: phase).

Example: :IMPulse:COMPare:LIMit:TIME 3

Description: Adjust the time setting (phase) for waveform comparison to 3.

Title	Parameter	Description
:IMPulse:COMPare:LIMit:TIME?	NR1	Inquiry about the current time setting value for waveform comparison (horizontal axis: phase).

Example: :IMPulse:COMPare:LIMit:TIME? Max

Description:

Querying for the maximum value that can be set for the time setting of waveform comparison (horizontal axis).

Return: 32

Title	Parameter	Description
:IMPulse:COMPare:LIMit:VOLTage	NR1	Waveform comparison voltage setting (vertical axis: amplitude)

Example: :IMPulse:COMPare:LIMit:VOLTage 10

Description: Set the voltage value for waveform comparison to 10.

Title	Parameter	Description
:IMPulse:COMPare:LIMit:VOLTage?	NR1	What is the current voltage setting for waveform comparison on the vertical axis (amplitude)?

Example: :IMPulse:COMPare:LIMit:VOLTage? min

Description:

What is the minimum value that can be set for the voltage in the waveform comparison (vertical axis: amplitude)?

Return: 1

Title	Parameter	Description
:IMPulse:FLUTter:JUDGement	Boolean	Vibration count function switch setting.

Example: :IMPulse:FLUTter:JUDGement off

Description: Disable the vibration count function.

Title	Parameter	Description
:IMPulse:FLUTter:JUDGement?	Boolean	Inquire about the on/off status of the vibration count function.

Example: :IMPulse:FLUTter:JUDGement?

Description: Inquire about the current status of the vibration count function.

Return: ON

Title	Parameter	Description
:IMPulse:FLUTter:LIMit	NR3	Setting upper limit value for vibration count.

Example: :IMPulse:FLUTter:LIMit 3000

Description: Set the upper limit of the vibration count to 3000.

Title	Parameter	Description
:IMPulse:FLUTter:LIMit?	NR3	Inquiry about the upper limit value of vibration count

Example: :IMPulse:FLUTter:LIMit?

Description: What is the current upper limit value for the vibration number?

Return: 3.000000e+03<3000>

Title	Parameter	Description
:IMPulse:FLUTter:SCOPe:BEGin	NR1	Setting the initial point for the vibration number function.

Example: :IMPulse:FLUTter:SCOPe:BEGin 30

Description: Set the initial point of the vibration number function to 30.

Title	Parameter	Description
: IMPulse:FLUTter:SCOPe:BEGin?	NR1	Query the current setting value of initial point for vibration number function.

Example: :IMPulse:FLUTter:SCOPe:BEGin? Max

Description: What is the maximum value that can be set for the initial point of the vibration count function?

Return: 689

Title	Parameter	Description
:IMPulse:FLUTter:SCOPe:End	NR1	Setting of the End Point for Enabling Vibration Number Function.

Example: :IMPulse:FLUTter:SCOPe:End 689

Description: Set the end point of the vibration number function enabled to 689.

Title	Parameter	Description
:IMPulse:FLUTter:SCOPe:End?	NR1	Inquire about the setting value of the end point for the vibration number function enabled.

Example: :IMPulse:FLUTter:SCOPe:End? Min

Description: What is the minimum value that can be set for the end point of the activated tremor function?

Return: 1

Title	Parameter	Description
:SYSTem:CONtrol:TIME:PASS <INFINITY,3mS,10mS,50mS,100mS,200mS,500mS,1S,2S,5S>	NR3	Setting the good product holding time

Example: :SYSTem:CONtrol:TIME:PASS 3mS

Description: Set the good product holding time to 3ms

Title	Parameter	Description
:SYSTem:CONtrol:TIME:PASS?	NR3	Inquiry about the good product holding time

Example: :SYSTem:CONtrol:TIME:PASS?

Description: Inquire about the current setting value for the good product holding time

Return: 3mS

Title	Parameter	Description
:SYSTem:CONtrol:TRIGger[:DELay] <0mS,50mS,100mS,200mS,500mS,1S,2S,5S>	NR3	Setting the status trigger delay time

Example: :SYSTem:CONtrol:TRIGger:DELay 1S

Description: Set the test delay to 1 second

Title	Parameter	Description
:SYSTem:CONtrol:TRIGger[:DELay]?	NR3	Inquiry about the status trigger delay time

Example: :SYSTem:CONtrol:TRIGger?

Description: Inquire about the current setting value for the status trigger delay time

Return: 1S

Title	Parameter	Description
:SYSTem:CONtrol:STATus[:TRIGger]:LOCK <0,1,ON,OFF>	Boolean	Setting the status trigger lock

Example: :SYSTem:CONtrol:STATus:TRIGger:LOCK ON

Description: "Enable the status trigger lock

Title	Parameter	Description
:SYSTem:CONtrol:STATus[:TRIGger]:LOCK?	Boolean	Inquiry about the status trigger lock switch

Example: :SYST:CON:STAT:TRIG:LOCK?

Description: Inquire about the current status of the status trigger lock switch

Return: ON

Title	Parameter	Description
:SYSTem:CONtrol:STATus:OUTPut <OFF,READY,PASS,FAIL,TESTing,HVOUT>	Character	Setting the status output

Example: :SYSTem:CONtrol:STAT:OUTP TESTing

Description: Set the status output to output during testing

Title	Parameter	Description
:SYSTem:CONtrol:STATus:OUTPut?	Character	Inquiry about the status output

Example: :SYSTem:CONtrol:STATus:OUTPut?

Description: Inquire about the current setting status of the status output

Return: TESTing

Title	Parameter	Description

:SYSTem:KLOCk <0,1,ON,OFF>	Boolean	Setting the keyboard lock

Example: :SYSTem:KLOCk ON

Description: Activate the keyboard lock

Title	Parameter	Description
:SYSTem:KLOCk?	Boolean	Inquiry about the keyboard lock

Example: :SYSTem:KLOCk?

Description: Inquire about the current status of the keyboard lock switch

Return: ON

Title	Parameter	Description
:SYSTem:CONFig:UPLoad <OFF,RS232,FLASH,BOTH(RS232+FLASH)>	Character	Setting the data upload method

Example: :SYSTem:CONFig:UPLoad RS232

Description: Set the data upload method to RS232

Title	Parameter	Description
:SYSTem:CONFig:UPLoad?	Character	What is the data upload method?

Example: :SYSTem:CONFig:UPLoad?

Description: Inquire about the current data upload method

Return: RS232

Title	Parameter	Description
:SYSTem:CONFig:BAUD <9600,19200,38400,115200>	Numeric	Baud rate setting

Example: :SYSTem:CONFig:BAUD 9600

Description: "Set the baud rate to 9600

Title	Parameter	Description
:SYSTem:CONFig:BAUD?	Numeric	Inquiry about the baud rate

Example: :SYSTem:CONFig:BAUD?

Description: Inquire about the current baud rate setting

Return: 9600

Title	Parameter	Description
:SYSTem:CONFig:KEYSound <0,1,ON,OFF>	Boolean	Key sound on/off setting

Example: :SYSTem:CONFig:KEYSound 0

Description: Turn off the key sound

Title	Parameter	Description
:SYSTem:CONFig:KEYSound?	Boolean	Key sound on/off status inquiry

Example: :SYSTem:CONFig:KEYSound?

Description: Inquire about the current status of the key tone switch.

Return: OFF

Title	Parameter	Description
:SYSTem:CONFig:ALARm <OFF,PASS,FAIL,ALL>	Character	Alarm Trigger Condition Setting

Example: :SYSTem:CONFig:ALARm FAIL

Description: Understood. The alarm trigger condition is set to "FAIL" now.

Title	Parameter	Description
:SYSTem:CONFig:ALARm?	Character	Inquiry about the alarm trigger condition.

Example: :SYSTem:CONFig:ALARm?

Description: What is the current trigger condition for the alarm

Return: FAIL

Title	Parameter	Description
:SYSTem:CONFig:PASS:VOLum <NR1>	NR1	Setting the volume of "pass" sound.

Example: :SYSTem:CONFig:PASS:VOLum 1

Description: Set the volume of the good product alarm to 1.

Title	Parameter	Description
:SYSTem:CONFig:PASS:VOLum? [<MAXimum,MINimum>]	NR1	Inquiry about the current setting of the volume for the pass signal.

Example: :SYSTem:CONFig:PASS:VOLum?

Description: What is the current volume setting for passing beep?

Return: 1

Title	Parameter	Description
:SYSTem:CONFig:FAIL:VOLum <NR1>	NR1	Setting of the volume for defective products.

Example: :SYSTem:CONFig:FAIL:VOLum 4

Description: Set the volume of the alarm for defective products to 4

Title	Parameter	Description
:SYSTem:CONFig:FAIL:VOLum? [<MAXimum,MINimum>]	NR1	Inquire about the current setting of the defective product alarm volume.

Example: :SYSTem:CONFig:FAIL:VOLum?

Description: Inquiry of the current volume setting for defective product alarm.

Return: 5

Title	Parameter	Description

:SYSTem:ERRor[:NEXT]?	String	Inquire error message.

Example: :SYST:ERR?
Description: What is the error message
Return: 0,No error

Title	Parameter	Description
:SYSTem:TIMe	String	System Time Setting.

Example: :SYST:TIMe 2022,12,25,13,38,25
Description: Set the system time to December 25th, 2022 13:38:25.

Title	Parameter	Description
:SYSTem:TIMe?	String	System time inquiry

Example: :SYSTem:TIMe?
Description: System time inquiry.
Return: 2022,12,25,13,38,25

Title	Parameter	Description
:SOURce:MODE	String	Switching modes and function pages (Please refer to Table 7-2 and switch modes according to the mode, do not switch modes based on corresponding numerical values)

Example: :SOURce:MODE LEARn
Description: Switch to Learning mode.

Title	Parameter	Description
:SOURce:MODE?	String	What is the current mode of the instrument? (Please refer to Table 7-2 for the return values) (7750-5E & 5H are unable to switch to the crash test page)

Example: :SOURce:MODE?

Description: The current mode is learning mode.

Return: 4

Mode	**Decimal value corresponding to mode**	**Explanation**
READy	1	Main Page
STATistics	2	Statistics function page.
LEARn	4	Learning Mode Page
FUNCtion	8	Function Page (High Voltage Output Menu)
FILE	16	File Management Function Page
PARameter	128	Learning Mode Parameter Setting Page
CONTrol	256	Test Setting Page
CONFig	512	System Configuration Page
DATe	1024	Time Setting Page
WAIT	2097152	Test Mode Page
WAIT_BDV	33554432	Page for Breakdown Test

Table7-2

Title	Parameter	Description
:SOURce:STANdard:WAVe?	String	May I ask if there is a standard waveform currently available?

Example: :SOURce:STANdard:WAVe?

Return: EXIST

Description: There is a standard waveform currently available.

Title	Parameter	Description

:MEMory:DELete:NUMBer	NR1	Delete file (using file number)

Example: :MEMory:DELete:NUMBer 1

Description: To delete the file with instrument number 1

Title	Parameter	Description
:MEMory:LOAD:NUMBer	NR1	Read file (using file number)

Example: :MEMory:LOAD:NUMBer

Description: To read the file with instrument number 2

Title	Parameter	Description
:MEMory:STORe:NUMBer	NR1	Save file using file number.

Example: :MEMory:STORe:NUMBer

Description: Save the current file to slot number 4.

Title	Parameter	Description
:MEMory:DELete[:NAME]	String	Delete file by file name.

Example: :MEMory:DELete NONAME

Description: Delete the file with filename "NONAME" in the instrument.

Title	Parameter	Description
:MEMory:LOAD[:NAME]	String	Read file (using file name)

Example: :MEMory:LOAD yyyyw

Description: Read the file named "yyyyw" in the instrument.

Title	Parameter	Description

:MEMory:STORe[:NAME]	String	Access file using filename and file number.

Example: :MEMory:LOAD :MEMory:STORe MICROTEST,2

Description: Save the current settings to number 2 with the file name “MICROTEST”.

Title	Parameter	Description
:MEMory:NUMBer?	NR1	File number inquiry.

Example: :MEMory:NUMBer?

Description: What is the current file number used by the instrument?

Return: 6 <The currently used file is file number 6.>

Title	Parameter	Description
:MEMory[:NAME]?	String	File name inquiry.

Example: :MEMory?

Description: What is the current file name being used by the instrument?

: Microtest <The current test file name is "Microtest".>

Title	Parameter	Description
:MMEMory:DELete	String	Delete the file named "abc" on the USB drive.

Example: :MMEM:DEL abc

Description: Delete the file "abc" on the USB drive.

Title	Parameter	Description
:MMEMory:LOAD	String	Read the file on USB.

Example: :MMEM:LOAD abc

Description: Read the file "abc" on the USB drive.

Title	Parameter	Description
:MMEMory:STORe	String	Save the current settings to a file with the input name on the USB.

Example: MMEM:STOR Microtest

Description: Save the current configuration to USB with filename "Microtest".

Title	Parameter	Description
:RESult?	String	Inquiry of the last test result. (Please refer to Table 7-3 for error numbers)

Example: :RESult?

Description: Request the result of the last test.

Return:

998,PASS,-1.707590e-03,8.343637e-04,1,17,0,0<Total test number, test results, total area error value, area difference value, corona number, second-order differential maximum value "(7750-5E will always be set to 0)", wave Row comparison results, tremor number results>

999,FAIL,-1.530943e-03,9.862804e-03,1,17,0,0,2<test number , test result, total area comparison, area difference, Corona number, highest value of second-order differential, wave comparison results, tremor number results, error number>

faulty test items	error number (decimal)
Total area failure	1
Area difference failure	2
Corona count failure	4
Second derivative failure (7750-5E will not display any related numbers),	8
Waveform comparison failure	16

Vibration count failure	32

Table 7-3.

If there are two or more failures, the return value is the sum of the corresponding decimal numbers. For example, if the return value is 3, it means failures in both total area and area difference.

Title	Parameter	Description
:RESult:WAVeform? <STD,DUT>	String	The final (standard/sample) waveform inquiry (in plain text representation).

Example: :RESult:WAVeform? (If waveform is not specified, default response will be for the test/sample waveform). Description: The final inquiry for the test/sample waveform.

Return: The upload format is text, separated by commas, with a total of 690 data points. The maximum value for each data point is +170 and the minimum value is -150. Each data point corresponds to waveform data on the instrument.

Title	Parameter	Description
:RESult:WAVeform:FLASh? <STD,DUT>	String	The final (standard/sample) waveform will be outputted to a USB flash drive in plain text format. The USB format must be FAT.

Example: : RES:WAV:FLAS? (If waveform is not specified, default response will be for the test/sample waveform).

Description: The final test/sample waveform will be outputted to a USB flash drive with a system format of FAT. The flash drive will have a folder named "7750LS_wave", inside which there will be a text file with the name of the current configuration file being used, containing the values of the waveform.

Return: The upload format is text, separated by commas, with a total of 690 data points. The maximum value for each data point is +170 and the minimum value is -150. Each data point corresponds to waveform data on the instrument.

Title	Parameter	Description
:RESult:STATistics?	String	Asking for statistical data.

Example: :RESult:STATistics?

Description: Asking for statistical data.

Return: 998,500,498,37,497,18,14,1,5

<Total number of tests, number of good products, total number of defective products, number of area defects, number of area difference defects, number of second-order differential defects, number of corona defects, waveform comparison defects, and vibration number defects>

Title	Parameter	Description
:RESult:STATistics:CLEar		Clearing statistical data.

Example: :RES:STAT:CLE

Description: Clearing statistical data.

Title	Parameter	Description
:RESult:LAPLace?	String	Inquiry for the second derivative value of the last test (in plain text representation).

Example: :RESult:LAPLace?

Description: Inquiry for the second derivative value of the last test, which needs to be multiplied by a specific factor to match the test result displayed on the instrument.

Return: The upload format is text, separated by commas, with a total of 690 data points. The maximum value for each data point is +170 and the minimum value is -150. Each data point corresponds to waveform data on the instrument.

Title	Parameter	Description
:MEASure?	String	To conduct a test and immediately upload the test results (7750-5E's second-order differential will always be set to 0)

Example: :MEASure?

Description: To conduct a test and immediately upload the test results

Return: 949,FAIL,4.846909e-03,8.363873e-03,1,17,0,0,2

<Total number of tests, test results, total area error value, area difference value, corona number, highest second-order differential value, wave comparison results, tremor number,Error number>

Title	Parameter	Description
STARt		Initiating test.

Example: STARt

Description: Initiating test.

Title	Parameter	Description
STOP		Stop test.

Example: STOP

Description: Stop test.

Appendix

Maintenance & Calibration

This product is factory-calibrated to ensure its performance. To maintain the instrument's performance, it is recommended to perform annual calibration. When performing calibration, please contact MICROTEST Co., Ltd.'s dealer or agent.

In case of malfunction

In the event of malfunctioning of this product, please record the current state and malfunction symptoms, and contact the sales department of our company for further repair arrangements. Do not disassemble the instrument for inspection or replace any parts by yourself.