

Dear Client

Thank you for Purchasing our **UHV-285 Portable Hipot Tester**.

Please read the manual in detail prior to first use, which will help you use the equipment skillfully.



Our aim is to improve and perfect the company's products continually, so there may be slight differences between your purchase equipment and its instruction manual. You can find the changes in the appendix. Sorry for the inconvenience. If you have further questions, welcome to contact with our service department.



The input/output terminals and the test column may bring voltage, when you plug/draw the test wire or power outlet, they will cause electric spark. PLEASE

**CAUTION RISK OF ELECTRICAL SHOCK!**

**Company Address:**

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Wuhan
- ◆ Sales Hotline: 86-27- 87457960
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- Website: [www.cnuhv.com](http://www.cnuhv.com)

## ◆ **SERIOUS COMMITMENT**

All products of our company carry one-year limited warranty from the date of shipment. If any such product proves defective during this warranty period, we will maintain it for free. Meanwhile we implement lifetime service. Except otherwise agreed by contract.

## ◆ **SAFETY REQUIREMENTS**

Please read the following safety precautions carefully to avoid personal injury and to prevent the product or any other attached products being damaged. To avoid possible danger, this product can only be used within the scope of the provision.

*Only qualified technician can carry out maintenance or repair work.*

**--To avoid fire hazard or personal injury:**

### **Use Proper Power Cord**

Only use the power wire supplied by the product or meet the specifications of this product.

### **Connect and Disconnect Correctly**

When the test wire is connected to the charged terminal, please do not connect, or disconnect the test wire at will.

### **Grounding**

The product is grounded through the power cord; besides, the ground pole of the shell must be grounded. To prevent electric

shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, please do check that the product is properly grounded.

### **Pay Attention to the Ratings of All Terminals**

To prevent the fire hazard or electric shock, please be care of all ratings and labels/marks of this product. Before connecting, please read the instruction manual to acquire information about the ratings.

### **Do Not Operate without Covers**

Do not operate this product when covers or panels removed.

### **Use Proper Fuse**

Only use the fuse with type and rating specified for the product.

### **Avoid Touching Bare Wire and Charged Conductor**

Do not touch the bare connection points and parts of energized equipment.

### **Do Not Operate with Suspicious Faults**

If you encounter operating faults/suspect there is damage to this product, do not continue. Please contact with our maintenance staff.

### **Do Not Operate in Wet/Damp Conditions.**

### **Do Not Operate in Explosive Atmospheres.**

### **Ensure Product Surfaces Clean and Dry.**

## **—Security Terms**

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Warning: indicates that death or severe personal injury may result if proper precautions are not taken

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Caution: indicates that property damage may result if proper precautions are not taken.

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# I. Overview

UHV-285 Portable Hipot Tester is AC high voltage safety measuring instrument, widely used in electronic instruments, electronic equipment, electronic components, electrical equipment, Bakelite appliances, rubber, high voltage cable and motor and other withstand voltage test, also suitable for household appliances withstand voltage test.

## II. Main technical indicators and parameters

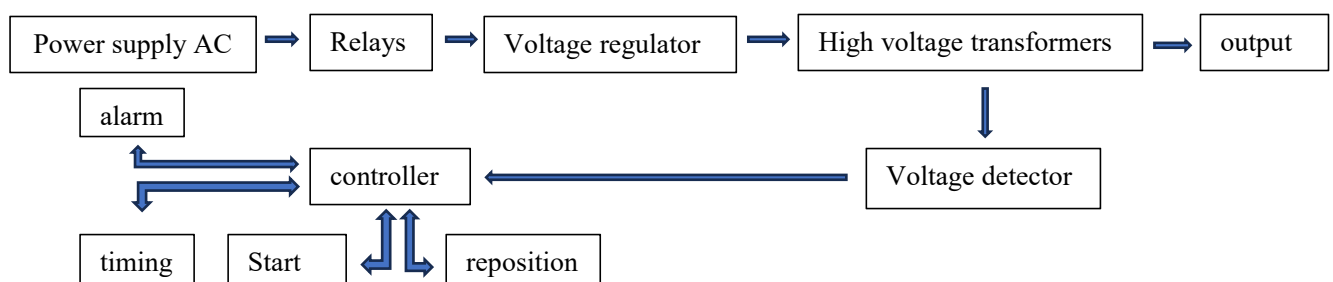
1. Test voltage: AC: 0.5 kV~5kV  $\pm 5\%$
2. Leakage current setting value: AC: 0.2~200(mA) set arbitrarily.
3. Leakage current setting accuracy:  $\pm 5\%$
4. Output waveform: 50Hz sinusoidal waveform.
5. Output power: 1000VA.
6. Time control: 1~99(s) $\pm 5\%$  manual control $\infty$  arbitrary preset.
7. Power supply voltage: AC: 220V $\pm 10\%$  50Hz $\pm 2$ Hz.
8. Environmental requirements: relative humidity $\leq 75\%$ RH; ambient temperature: 0°C~40°C.

There is no strong electromagnetic field interference source around, no large amount of dust and corrosive gas, and good ventilation.

9. Power consumption: static power consumption $< 30$ VA.

## III. The working principle

1. Working principal block diagram:



**Figure (1) Schematic diagram of the test circuit of the UHV-285 Portable Hipot Tester**

2. Description of each part of the block diagram:

(1) Relay: The relay controls whether the 220V power supply is connected to the voltage regulator, thereby controlling the output high voltage to turn on or off.

(2) Voltage regulator: mainly composed of voltage regulator, the change of voltage is realized by the regulation of the voltage regulator.

(3) High voltage transformer: increase the output voltage of the voltage regulator according to the ratio of about 1:25, to obtain the output high voltage of 0~5 (kV).

(4) Current detector: This part of the circuit converts the current flowing through the test piece into a voltage, compares it with the reference voltage, and then outputs a detection signal to the controller.

(5) Controller: According to the signal from the current detector and the start and reset button, control whether the relay is turned on and whether the alarm circuit alarms.

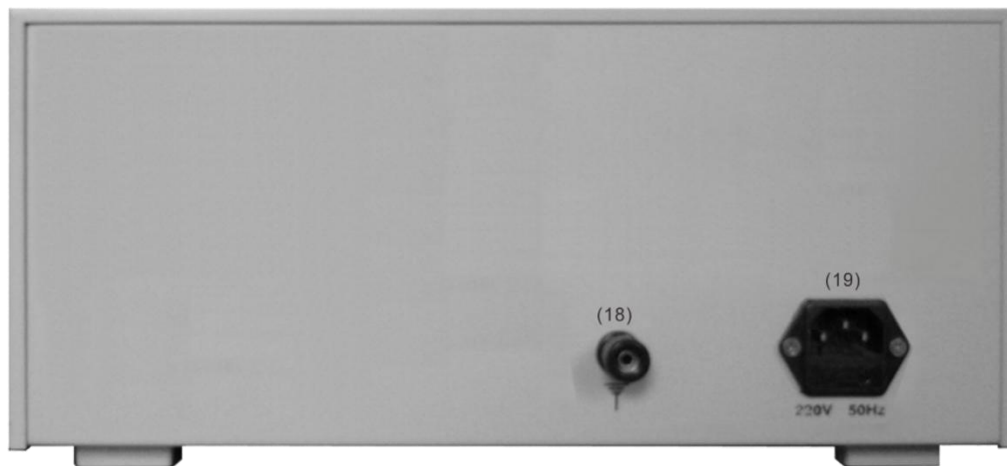
(6) Alarm: The buzzer and the super leakage lamp are pushed by the driving block to send out sound and light alarms.

## IV. Instrument panel structure and description

1. The panel structure of the UHV-285 Portable Hipot Tester is shown in figures (2) and (3):



Figure (2) Schematic diagram of UHV-285 front panel



**Figure (3) Schematic diagram of the UHV-285 rear panel**

## **2. Description of each part:**

- (1) Power switch: Before turning on this switch, be sure to read the "Precautions for Use" section.
- (2) "REST": reset button, after the end of the withstand voltage test, press this button to reset the output voltage (that is, disconnect the electricity), when the over-leakage alarm, press this button to reset the instrument.
- (3) "TEST": start button, when the instrument is not in the "over-leakage" state, press this button, the "test" light will light up, adjust the "voltage adjustment" knob to the voltmeter to indicate the required voltage.
- (4) "External control": used to remotely control the start and reset of the instrument.
- (5) "Preset adjustment" knob: used to adjust the upper limit of leakage current preset value.
- (6) "Preset/Measure" button: toggle the mA display value to preset value or measured value.
- (7), (8), (9) "leakage current selection" button: when the 2mA gear key is pressed into other gears and pops up, the maximum display is 1.999mA; When the 20mA gear key is pressed into other gears and pops up, the maximum gear can display 19.99mA; When the 200mA gear is pressed into other gears and pops up, the maximum display is 199.9mA; When three leakage current measurement file buttons pop up at the same time, a 200mA leakage current can be displayed.
- (10) "Timing button": used to switch the timer timing or irregular timing.
- (11) "Timer": used to set the test voltage output duration, which can be



selected within 1~99 (s).

- (12) "Display": used to display time, current, voltage values.
- (13) "Voltage adjustment" knob, used to adjust the size of the test voltage, counterclockwise rotation becomes smaller.
- (14) "Test" lamp: This lamp lights up to indicate that the high voltage is sent to the output, and the high voltage is disconnected when the light is off.
- (15) "Super leakage" lamp: This lamp will light up when the current in the measured object is greater than the present value of the leakage current switch.
- (16) "High voltage output port": AC test voltage output terminal.
- (17) "RETURN": The other connection end of the test high voltage, generally connected to the shell or the other end of the test object, is also called the return end of the test current.
- (18) "Ground terminal": the instrument shell is reliably connected to the earth.
- (19) "Power socket": input AC220V, 50Hz power supply, built-in 5A fuse.

## V. Methods of use

**Note:** In the case of high voltage output and no load of the instrument, it is strictly forbidden to directly short circuit with the terminal, otherwise it will be dangerous and burn the instrument.

**1. Power supply:** After making sure that the "voltage regulation" knob has been placed in the "0" position, turn on the power switch.

**2. Set the leakage current preset value:** press the leakage current selection button, and turn the "preset adjustment" knob to preset the leakage current value, so that it corresponds to the leakage current reference value required by the measured object.

**3. Connect the measured object:** In the case of determining that the output voltage meter indicates "0" and the "test" lamp is not on, first connect the test object with the wire (black) of the test end, and then connect the test rod at the high voltage end to the test object.

### **4. Test:**

(1) Manual test:

- a. Pop out the timing key switch (that is, irregularly), press the "start" button, the "test" indicator light is on, slowly adjust the voltage adjustment knob, adjust to the required test voltage, and add the test voltage to the measured object.

b. When the test is completed, press the "Reset" button to cut off the output voltage.

c. If the current flowing in the measured object is greater than the upper limit value of the set leakage current, the instrument judges that the measured object is "unqualified", and will automatically cut off the output voltage, and issue a "super leakage" alarm, the super leakage indicator is on, and an alarm sound is emitted. Press the "Reset" button to clear the alarm signal.

(2) Timing test:

a. Press the timer key switch in and adjust the timer to the desired test time.

b. Press the "start" button, the "test" light is on, adjust the voltage adjustment knob, adjust to the required test voltage, so that the high voltage is added to the measured object, the timing time is up, the instrument automatically resets, that is, disconnect the test voltage, if the measured object passes the test, the instrument does not produce an alarm signal.

c. If an "over-leakage" signal is generated during the test, operate according to the operation method C in the manual test method.

## VI. Precautions for use

**The instrument has been designed with full consideration of safety issues, such as incorrect use of the instrument, may still cause serious safety accidents, so before use, we must pay attention to the following points:**

1. The power supply of the instrument must have a good grounding, otherwise, when the output of the instrument is short-circuited, the instrument shell has high voltage, and accidents will occur when people touch the shell.
2. Make the "test end" of the instrument well connected with the ground end, shell or one end of the measured object, otherwise the low end of the measured object has high voltage, and accidents may occur.
3. The user must wear insulating gloves and insulated leather pads under the feet to prevent electric shock.
4. Before turning on the power, be sure to adjust the "voltage adjustment" knob to the "0" position, for safety, after turning on the power, you must also press the "reset" button to disconnect the output voltage and the

- test light does not light up.
5. Before connecting or contacting the test wire, be sure to ensure that the output voltage meter is "0" and "reset" state, in the environment of power interference, please connect the measured object after shutting down.
  6. When the instrument is in the start-up state or the test high voltage is not released, it must not touch the test object, the test line, or the high voltage output.
  7. In case of emergency, the power supply should be cut off immediately and the high-voltage test line should be unplugged.
  8. The "test" lamp burns out and should be replaced immediately.
  9. When the instrument is stopped from use or stored, please avoid storing it in a place with direct light, high temperature, high humidity, or dust.
  10. The instrument must be used in strict accordance with the operating procedures, otherwise the instrument will be damaged or dangerous will occur.

## **VII. Maintenance and calibration**

**The instrument can produce 5kV dangerous high voltage, when the instrument is connected to the power, your hands must not approach the high voltage output, non-repair personnel must not open the body privately.**

### **1. Equipment required for calibration:**

- a. Digital high voltage meter with a range of 0~10 (kV) and an accuracy better than 1%.
- b. AC ammeter with a range of 0~200 (mA) and an accuracy better than 1%.
- c. Load resistance: 10/12.5/25/50/100/250/500/1000 (k $\Omega$ ), power 4W~50W.

### **2. Inspection before calibration:**

Before turning on the power of the instrument, adjust the "Voltage Regulation" knob to the "0" position, turn on the power, do not press the "Start" button, at this time the current voltage should display "0.00".

### **3. Voltmeter calibration:**

- a. Connect the digital high-pressure meter to the AC output of the instrument and press the "start" button of the instrument.
- b. Adjust the output voltage to 5kV, adjust the ACV potentiometer on the circuit board, so that the AC voltage value indicated on the digital display meter

is 5kV.

#### 4. Leakage current detection calibration:

a. After the instrument is connected to the power supply, without any load, there is a digital display, adjust the I0 potentiometer on the printed circuit board to make it zero.

b. Press the 20mA leakage current preset button to adjust the leakage current preset to 10mA.

c. Connect the 50k $\Omega$  load resistance and the 20mA ammeter in series to the high-voltage output and the test terminal.

d. Press the "Start" button, adjust the "Voltage Regulation" knob, gradually increase the output voltage, and observe the reading of the ammeter.

e. Adjust the ACI potentiometer on the circuit board in the instrument so that the ammeter reading is 10mA, and an alarm signal occurs.

f. In the range of 0.5mA~200mA, the test voltage is 500V, and the current and corresponding load resistance of the over-leakage alarm setting are shown in the following table:

Leakage current setting value (mA)	Load resistance (k $\Omega$ )	Load resistance power (W)
0.5	1000	>4
1	500	>4
2	250	>4
5	100	>4
10	50	>4
100	25	>100

## VIII. Attachment

1. Test rod	1
2. Power plug cable	1
3. Black Test wire	1
4. Fuse (5A)	2
5. Instruction manual	1
6. Certification	1
7. Inspection report	1

