

HT8000 Series
High Voltage Isolating Probes

Instruction Manual

Please read the instruction manual carefully to avoid injury and prevent damage to this product.

Preface

At first, thank you very much for using our product HT8000 Series high voltage isolating probes. This instruction manual includes safety summary, brief introduction, main specifications and operating basics etc. Please read the manual carefully prior to use the product.

Warranty

Hantek warrants that this product will be free from defects in materials and workmanship for a period of one (1) year from the date of shipment. If any such product proves defective during this warranty period, Hantek, at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. Parts, modules and replacement products used by Hantek for warranty work may be new or reconditioned to like new performance. All replaced parts, modules and products become the property of Hantek.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care.

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1. Safety Summary

Please Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

Use proper AC adapter. Use only the AC adapter specified for this product.

Connect and disconnect properly. Connect the probe output to the measurement instrument before connecting the probe to the circuit under test. Disconnect the probe input from the circuit under test before disconnecting the probe from the measurement instrument.

Do not connect or disconnect probes while they are connected to a voltage source.

Ground the product. This product is indirectly grounded through the grounding conductor of the mainframe power cord. To avoid electric shock, the grounding conductor must be connected to earth ground.

Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Do not operate without covers. Do not operate this product with covers or panels removed.

Power disconnect. The power cord disconnects the product from the power source. Do not block the power cord; it must remain accessible to the user at all times.

Do not operate in an explosive atmosphere.

Do not operate in wet/damp conditions.

2. Brief introduction

HT8000 Series high voltage isolating probe applies differential input mode. It is used at the location need to measure high voltage or isolate from ground usually.

HT8000 Series high voltage isolating probe supplies two attenuation ranges 1/50 and 1/500 to be selected. The Maximum measurable differential voltage are 130V (DC + peak AC) and 1300V (DC + peak AC) accordingly.

HT8000 Series high voltage isolating probe has over range alarm function. It indicates with a red LED.

HT8000 Series high voltage isolating probe is small and robust. It has very high stability, reliability and accuracy.

It may be used at the following location usually:

- Measure without connect to ground
- Measure a high voltage or strong electricity
- Switch-mode power supplies design
- Power convert design
- AC inverter and UPS
- Transducer design
- Electronic ballast design
- Electromotor drive design
- CRT display design
- Electric and electronic experiment

3. Main Specifications

Electrical Specification		
Model	HT8050	HT8100
Bandwidth (-3dB)	50MHz	100MHz
Rise time	$\leq 7\text{ns}$	$\leq 3.5\text{ns}$
Accuracy	$\pm 2\%$	
Attenuation	1/50, 1/500	
Input resistance	Between each input to ground: $4\text{M}\Omega \pm 1\%$ Between inputs: $8\text{M}\Omega \pm 1\%$	
Input capacitance	Between each input to ground: $\leq 8\text{pF}$ Between inputs: $\leq 4\text{pF}$	
Maximum measurable differential voltage	1/50: $\pm 130\text{V}$ (DC + peak AC) 1/500: $\pm 1300\text{V}$ (DC + peak AC)	
Maximum input voltage-to-earth	1000Vrms, CAT II 600Vrms, CAT III	
Noise	1/50: $\leq 2\text{mVrms}$ 1/500: $\leq 1\text{mVrms}$	
Linearity	$\pm 1\%$	
Delay time	$\leq 10\text{ns}$	
CMRR	DC: $\geq 80\text{dB}$ 100Hz: $\geq 60\text{dB}$ 1MHz: $\geq 50\text{dB}$	

Differential overvoltage detection level	1/50: $\geq 130\text{V}$ (DC + peak AC) 1/500: $\geq 1300\text{V}$ (DC + peak AC)
AC adapter output	DC9V, 1000mA
AC adapter input	AC100~240V, 50~60Hz
Typical mechanical specification	
Input cable length	HT8050: $\approx 60\text{cm}$; HT8100: $\approx 25\text{cm}$
Output cable length	$\approx 90\text{cm}$
Alligator clips	$\approx 84 \times 35 \times 13$ (mm)
Pincer clips	$\approx 160 \times 47 \times 16$ (mm)
Probe body	$120 \times 55 \times 24$ (mm)
Weight (probe only)	$\approx 156\text{g}$
Environment Specification	
Operating temperature	0~40°C
Storing temperature	-10~45°C
Operating humidity	85%RH
Storing humidity	90%RH
Operating altitude	3000m
Storing altitude	12000m

4. Unpacking and Preparation for Use

4-1 Unpacking

This product has been checked and tested for the quality before it comes out of the factory. Please check if there is damage during the transportation when unpacking. If there is, please inform the transportation company and the local agent immediately.

Packing list:

High voltage isolating probe	1pcs
Instruction manual	1pcs
AC adapter	1pcs
Red alligator clip	1pcs
Black alligator clip	1pcs
Red pincer clip	1pcs
Black pincer clip	1pcs

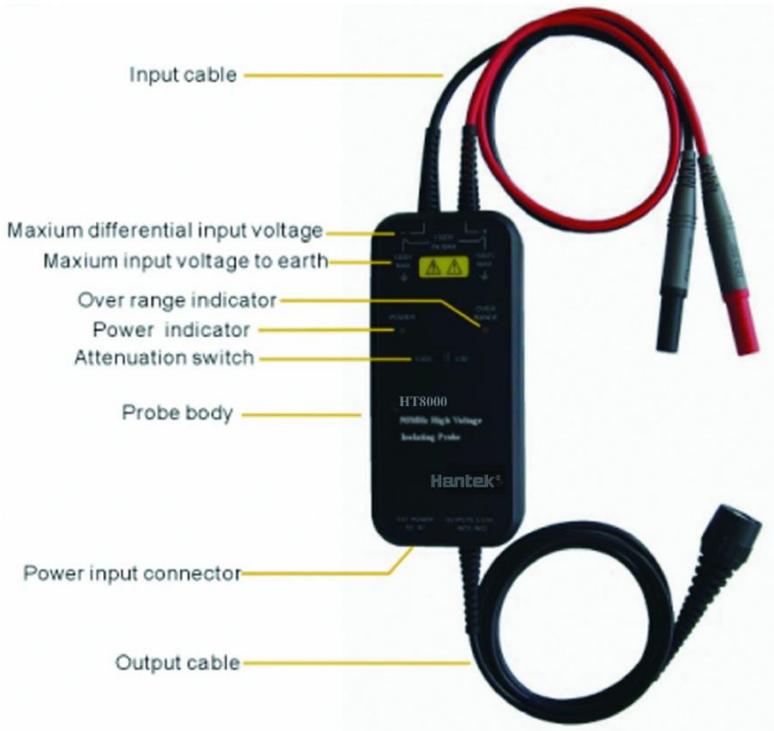
4-2 Preparation for use

Please check the line voltage prior to connect the AC adapter to the electric outlet. The line voltage should be coincident the following list. If the incorrect line voltage is used, it will damage the product and the AC adapter.

AC adapter input voltage	Frequency
AC100V~240V	50~60Hz

Warning: Use only the AC adapter specified for this product to avoid injury and prevent damage to this product.

5. General View of Product



6. General View of Accessories

HT8000 Series high voltage isolating probe includes following accessories: An AC adapter, a couple of alligator clips and a couple of pincer clips.

1. AC adapter



2. Alligator clips



3. Pincer clips



7. Operating Basics

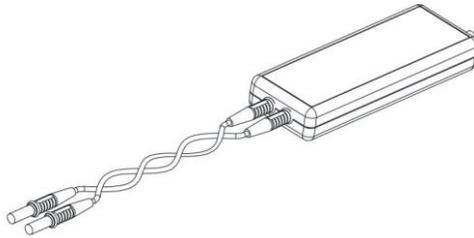
HT8000 Series high voltage isolating probe is very convenient to operate. But we suggest every new user should read the manual perfectly prior to begin operating.

7-1 Operation steps

- a. Check and affirm the AC adapter input voltage is correct prior to use.
- b. Guesstimate the voltage to measure and set the correct attenuation switch. If the input voltage is over range, perhaps it will damage the probe.
- c. Connect the BNC output terminal to oscilloscope or other measuring instrument. Connect the input cables to the adapt clips well.
- d. Connect the AC adapter output to probe power input connector. The green POWER indicator lights.
- e. Select adapt attenuation range according to measured voltage. When the measured voltage is over range, the red OVER RANGE indicator lights, the attenuation should increase or disconnect the power and the input measured voltage.
- f. Set the measuring oscilloscope or other instrument sensitivity according to displayed altitude of signal.
- g. Connect the adapt clips to input cables.
- h. Connect the clips to measured targets to start measuring. The probe body should be far from high voltage pulse circuits to reduce the noise or errors.
- i. When the test is finished, disconnect the power at first, then disconnect input from measured target, disconnect the output BNC terminal from the oscilloscope or other measuring instrument at last.

7-2 Attention to use:

- a. Twisting the input leads as following helps to cancel noise that is induced into the input leads and to improve the high frequency response of the inputs.



- b. Do not extend input cables if not necessary, this will lead to more noise. If it is necessary to extend input cables, the extend cables length should be same. And the measured signal frequency should be lower than 10MHz. Otherwise the errors will be larger.
- c. The probe and measuring instrument should warm up for 20 minutes if want to get high accuracy measuring result.

7-3 Troubleshooting

The Power LED does not remain lit	Check that the AC adapter is plugged in and functional.
The measured waveform can't be displayed right and stability	Check that the probe accessories that you are using are fully mated. Check the probe connection on your circuit. Perform a functional check on the probe. Change a different channel on the oscilloscope or change a different oscilloscope.