Dear Client,

Thank you for purchasing our SGB-100C Digital Voltage Divider. 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:

- **3rd floor, 6 buildings, semiconductor photovoltaic lighting base, No. 84, Gaoxin 5th road, Wuhan East Lake New Technology Development Zone (Free trade zone Wuhan area)**
- Sales Hotline: 400-016-1896
- After Service Hotline: 027-8791 4451（Priority response）
- Technical support：188 2703 7017（Wechat same number）
- E-mail: qiao@hvtest.cc
- Website: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 body injury and prevent the product or other relevant subassembly to damage. In order to avoid possible danger, this product can only be used within the prescribed scope.

Only qualified technician can carry out maintenance or repair work.

--To avoid fire and personal injury:

Use Proper Power Cord

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

Connect and Disconnect Correctly

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

Grounding

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

shock, the grounding conductor must be connected to the ground.

Make sure the product has been grounded correctly before connecting with the input/output port.

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 Circuit and Charged Metal

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

Do Not Operate with Suspicious Failures

If you encounter operating failure, 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

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

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

Contents

I. Product introduction

This product is an idea device for HV measuring; mostly apply in power system, electronic equipment factory to test frequency AC high voltage and DC high voltage.

This product is composed by HV divider and LV display meter. The two parts are connected by the supporting cable.

II. Features

1. High precision

Uses high precision HV thin-film capacitor and HV glass glaze resistor, input impedance is high, lower the measured current, small power consumption, improves the accuracy and stability of the device.

For signal processing, adopts high performance OP to amplify the signal, uses the newest dual integrating A/D sampling technique, four and half LCD display, the maximum resolution up to 0.001kV, it is the replacement products for HV electrostatic voltmeter.

2. Good anti-jamming performance.

Adopts special shield technique. equipotential ball uses aluminum, effectively improves the electric field distribution around the equipotential ball, prevents the point discharge, improves the anti-jamming ability of the test results. LV display meter is full metal enclosed instruction to shield, Coaxial cable connect the HV divider and LV display meter, reduce the effects to indicating value by high voltage, then realize high stability, high linearity.

3. Safe and reliable.

This device is composed by HV divider and LV display meter, the HV divider uses America Dupont packing material, special technique to embed, with smaller structure, lighter weight, lower the internal partial discharge to the least, more reliable, do not leak oil. Coaxial cable connect the HV divider and LV display meter when working, the HV and LV parts are far away from each

other, safe and reliable.

4. Easy to operate.

Uses toggle switch to shift HV/LV, AC/DC, convenient and swift. Four and half LCD directly display the test results, easy and clear. Bring great convenience for field tests.

5. Convenient to carry.

Portable structure, the whole machine use aluminum alloy package as case, can easily to disassemble. Small in volume, light in weight, convenient to carry and use.

III. Technique parameters

Divider resistance	1200 MΩ
Voltage class of Voltage divider	AC：100kV DC：100kV
LV display meter range	Low：0-20kV High：0-100kV
AC measurement	True RMS measurement
Accuracy	AC：1.0% DC：0.5%
Dielectric	U.S. DuPont Dry media material
Divider ratio	1000：1
Connection coaxial cable	5m
Temperature	0~40℃
Relative humidity	≤85%RH

IV. Measuring principle

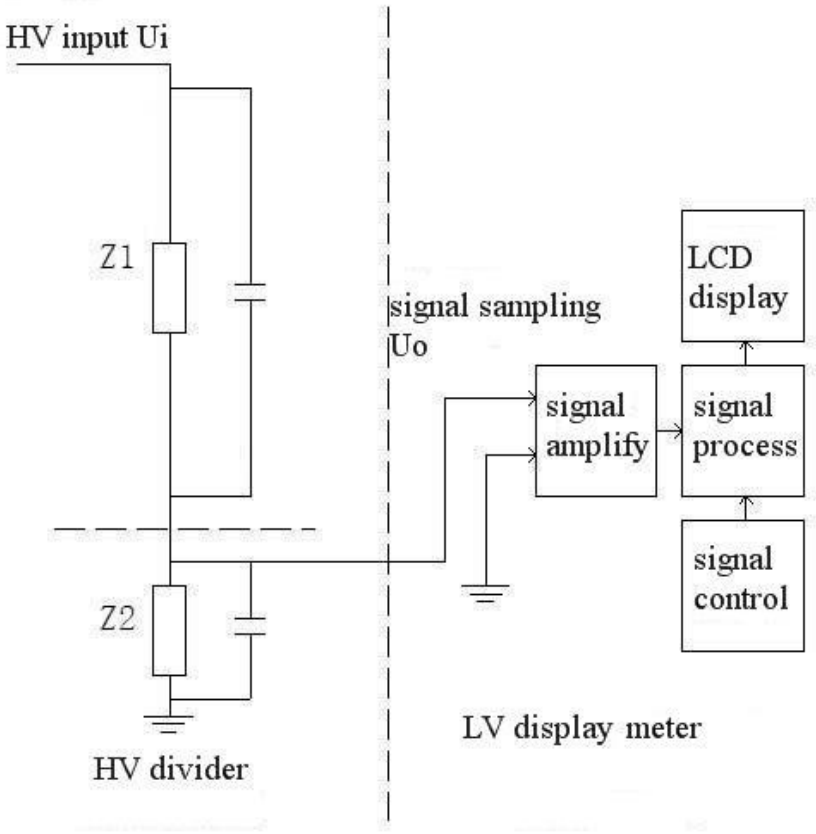

Figure 1 Measuring principle

This device uses resistance-capacitance voltage division method to test HV AC & DC, which as shown in figure 1. The left side is high voltage part, uses resistance-capacitance division circuit, which composed by impedance Z1 and Z2. High voltage Ui input from the upper equipotential ball, low voltage sampling signal output from Z2; the right side is the LV display meter, which used for processing the Uo. Uo is processed by rectifying filter amplifier and displayed by LV display instrument. The relationship between Ui and Uo as shown in formula (1)

$$Uo = \frac{Ui}{Z_1 + Z_2} Z_2 \qquad (1)$$

V. Panel layout

This product is composed by high voltage divider and low voltage display meter.

1. High voltage divider

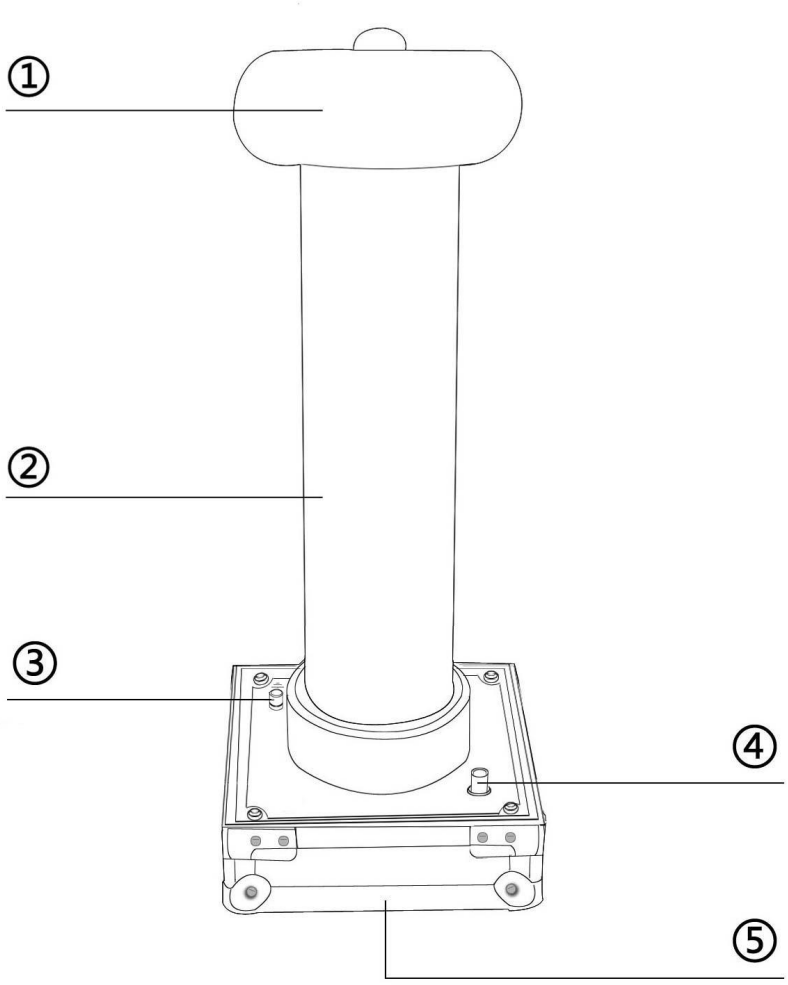

Figure 2 High voltage divider

① equipotential ball	②insulating cylinder of divider	③ ground pole
④ signal sampling output	⑤ base of divider	

2. Low voltage display meter

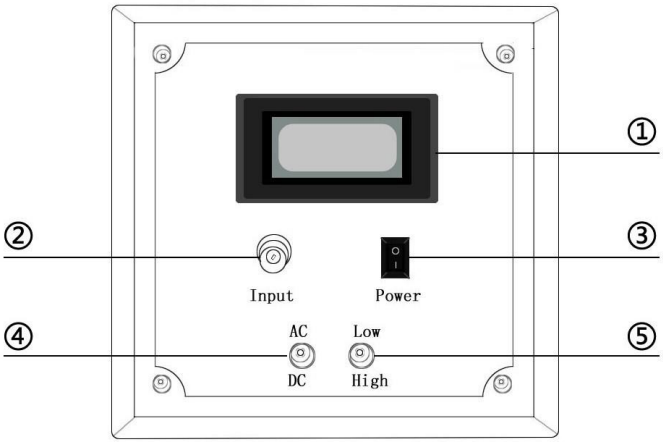

Figure 3 Low voltage display meter

①LCD	②signal sampling input	③Power switch
④DC/AC selection	⑤High/low gear switching	

VI. Measurement preparation

1. This device is HV equipment, please make test in open field.

2. Service conditions:

Temperature :0~40℃, humidity≤85%RH.

3. Open the low pressure display table "Power" switch, observe the liquid crystal display meter display is clear, if not shown, or show "BAT", said the display table inside the battery voltage, need to replace the new battery.

VII. Operation instruction

1. Correct connection

Correctly connect as Figure 4 shown. High-voltage input connect to the terminal at the top of equipotential ball, using earth lead connect ground terminal to earth, HV divider and LV display meter should be connected with the supporting coaxial cable. Completed connection, please check the connections and confirm all is correct, then select the appropriate gear and range, you can start measuring.

Note: This instrument has auxiliary earth wire, and there are special earth terminal at the base of high voltage divider, so before each use, earth terminal must be firmly grounded. High-voltage test line must be use high voltage lead and the test line must be elevated, cannot too close to ground. Keep HV divider and LV display meter at least more than two meters distance. During test, testers should keep more than two meters safe distance near high-voltage divider.

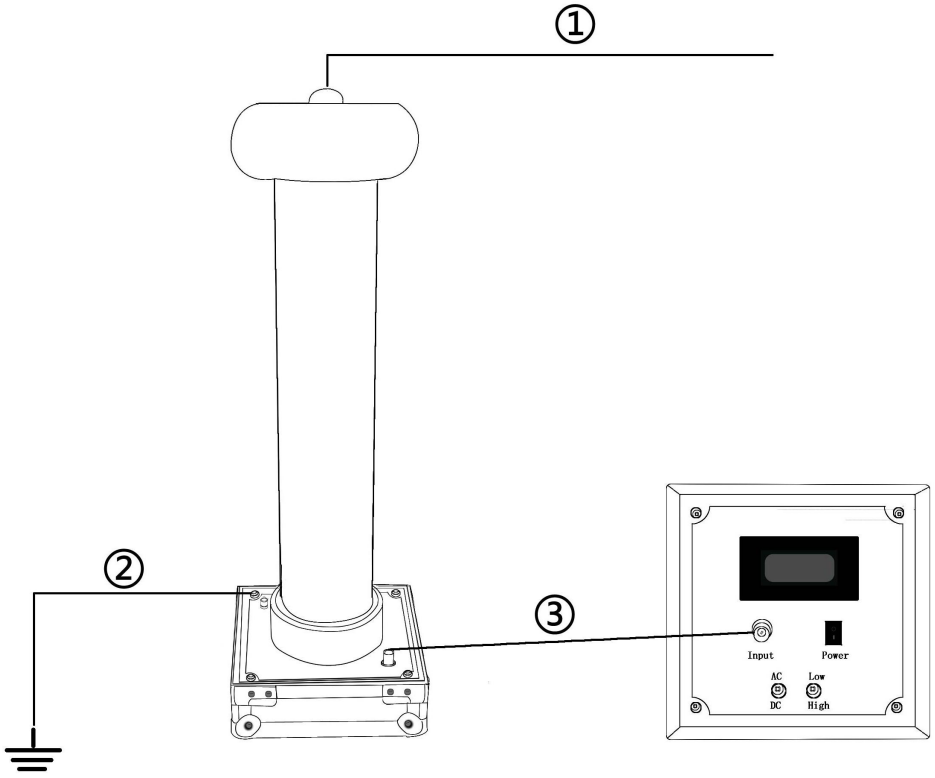

Figure 4 Wiring diagram

①High-voltage input ②earth lead

③signal line（original supporting cable）

2. Power frequency HV measurement

After correct connection, press "power switch” of LV display meter, switch the function switch to AC gear, select “high” gear, power frequency HV can be measured, LCD display value is the measured power frequency HV value. If measuring voltage is lower than 20kV, you can switch function switch to “low” gear in order to obtain higher accuracy. After test, cut off high voltage, LV display meter returns to zero, then you can enter the site. (Under AC test, the meter will slowly return to zero, but the high-voltage power supply may have no

electricity.)

3. DC high voltage measurement

After correct connection, press "power switch” of LV display meter, switch the function switch to DC gear, select “high” gear, DC high voltage can be measured, LCD display value is the measured DC high voltage value. If measuring voltage is lower than 20kV, you can switch function switch to “low” gear in order to obtain higher accuracy. After test, cut off high voltage, LV display meter returns to zero, then you can enter the site. Note: When measuring DC, because there are filter capacitor, you must firstly discharge after completed measurement, then you can near the HV divider.

4. Use High-voltage divider singly

High-voltage divider can be used alone with the common multimeter instead of LV display meter. The divider ratio of High-voltage divider is 1000:1; the display value of multimeter multiplied by 1000 is equivalent to the measured high voltage value. Changing the unit of the display value in multimeter to kV is ok.

VIII. Change battery

Open the low voltage display table, if the liquid crystal display table does not show, or display "BAT", indicating that the instrument internal battery voltage is low, need to be replaced. Specific steps are as follows:

1. Press “power switch” to turn off power supply of LV display meter.

2. Unscrewing four screws on the LV display panel, and remove the panel.

3. Unscrewing the screw on the battery box and open the battery cover, then replace the 9V battery. (Note the positive and negative polarity of battery)

IX. Notes

1. When using this device, please make sure on sundries draw round it, so as not to affect measurement accuracy.

2. Please keep a safe operation distance to ensure operational safety.

3. Check whether all parts are firmly connected, especially ground connection must be solid.

4. After completing the measurement, until the meter returns to zero, it is allowable to enter the site.

5. Completed DC high voltage measurement, the instrument must discharge.

6. Overvoltage use is strictly forbidden. Please keep the surface clean.

7. Handle with care, do not crash and extrude.

8. Do not use the equipment; it should be cased and placed in a cool dry place.

9. Calibration: At least once a year at a superior metrology calibration department, or return to factory calibration.

X. Problems and Solutions

Problem	Solution
After starting up, no respond and LCD no display.	Replace the battery
Test results are too much deviation.	Check whether the coaxial cable is well connected.
There is more obvious discharge sound when measuring.	Check whether the ground is good.
	HV divider may be damp, PLEASE wipe the shell with a dry cloth and then blow it for five minutes with blower.