



## GD-710 Composite Insulator Hydrophobicity Test Set



### General Information

Good hydrophobicity of insulators can prevent pollution flash-over and reduce accidents. The so-called hydrophobicity refers to the fact that the surface of the insulator is not easy to be affected by moisture, and the absorbed water exists in the form of discrete isolated droplets, which does not form a continuous water film, thus limiting the leakage current on the insulator surface and increasing the flash-over voltage. Practice has proved that the hydrophobicity of insulators in operation will decrease or even lose due to pollution, moisture, discharge, low temperature and other factors, which will directly affect the anti-pollution flash-over performance of power transmission and transformation equipment, even threaten the safe operation of the

system. Therefore, it is necessary to detect the hydrophobicity of the insulator in operation.

GD-710 Composite Insulator Hydrophobicity Test Set can quickly and accurately evaluate the hydrophobicity of insulators, simple structure, easy to operate.

## **Configuration**

GD-710 Composite Insulator Hydrophobicity Test Set is composed of electric sprayer, imaging device, PC, image acquisition software (USB disk), hydrophobicity analysis software.

### **1. Electric sprayer**

One of the key technologies to detect the hydrophobicity of insulators by HC grading method is to spray water on the insulator surface. The device sprays water accurately and quantitatively on the measured insulator in accordance with the electric power industry standard to ensure the accuracy of the measurement.

The device adopts modular structure, which consists of three parts as below:

#### **(1) Wireless remote control.**

the wireless remote control works in the frequency band of 433M, which has the advantages of remote control distance, strong penetrating force and strong anti-interference ability. The power supply is 2pcs 3V button batteries. Replace the battery according to the instructions when distance control is less sensitive.

#### **(2) Insulation operation lever.**

It is made of epoxy resin, which is characterized by high strength and lightweight.

#### **(3) Control part:**

Control part of electric sprayer is composed of main unit, insulation rod, water storage device, micro water pump and movable nozzle. The nozzle can move 360 degree to ensure that surface of the tested insulator receives water vertically. The power supply is 12V 2000mAh rechargeable lithium battery. A single charge can guarantee the device to spray water continuously for 2 hours, which can complete more than 100 measurements and meet the requirements of long-term on-site measurement.

Each part can be assembled quickly. Compact structure, suitable for field use.

## 2. Camera

This device uses digital image analysis technology to judge the hydrophobicity of the insulator surface, so it is necessary to obtain the hydrophobicity image of the insulator. The hydrophobicity detection device adds a front-facing megapixel camera. When taking photos, the distance between the camera and the insulator shed is about 30cm, and photos are taken by camera and acquired by PC via WiFi hot-spot. The effective pixel is 720\*1280, and the image quality is good enough to support image analysis by hydrophobicity analysis software.

## 3. Hydrophobicity analysis software.

The core function of this software is the judgment of hydrophobicity grade, which consists of objective judgment and subjective judgment.

### (1) Objective judgment

The judgment method is based on "improved shape factor method", that is, the hydrophobicity level is determined by analyzing the area ratio  $K$  and shape factor  $fc$  of the hydrophobicity image in the computer.

### (2) Subjective judgment

In subjective judgment, the analysis software adopts image contrast method that is also used in HC classification, namely standard images embedded in the software by HC classification method. On-site images are sent to the software and compared with other images to obtain hydrophobicity level.

In general, subjective judgment is only used as an auxiliary judgment method to verify the results of objective judgment. In addition, due to the ever-changing field measurement conditions, the shooting conditions are difficult to be precisely controlled, and sometimes the obtained image is not easy to be analyzed by

objective judgment method. Therefore, the increase of subjective judgment function is also necessary to a certain extent.

### **Packing list**

Sprayer	1 set
Wireless camera	1pc
Insulating rod	1pc
12V/1A power adapter	1pc
WiFi antenna	1pc
PC	1 set
User's guide	1 copy
Factory test report	1 copy
Warranty card	1 copy