Dear Client,

Thank you for Purchasing our HTFZ-III Arrester Discharge Counter Calibrator. Please read the manual in detail prior to first use, which will help you operate the equipment skillfully.



Our aim is to continually improve and perfect the company's products, 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 in/pull out test line or power outlet, they will cause electric spark. PLEASE CAUTION RISK OF ELECTRIC SHOCK! To avoid

risk of electric shock, be sure to follow the operating instructions!

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♦ 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. In order 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

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.

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Overview:

Surge arrester is an important electrical equipment in the power grid to protect power equipment from overvoltage hazards. The quality of its own operation will directly affect the safety of the power system. Usually, the action and leakage current of the arrester are monitored by the arrester monitor. Due to poor sealing, the monitor may enter moisture or moisture during operation, causing the internal components to corrode, or other reasons that cause the monitor counter to fail to operate normally, and the current indication inaccurate. Therefore, leakage is the "Regulations" stipulates that the arrester monitor should be checked once a year.

The reliability of the counter action is very important to the power system, and it is an important parameter to record the statistics of the lightning arrester in normal operation. It can provide the staff of the power system with an important basis for the targeted inspection of the arrester.

I Principle

Figure 1 shows the principle wiring diagram of the FZ-type action counter. Figure 1(a) is the basic structure of the product, the so-called double valve plate structure.



Figure 1 Schematic wiring diagram

R1、R2-Non-Linear Resistors; C-Energy storage capacitor L-Counter coil; D1~4 — Silicon Diode

When the arrester operates, the discharge current flows through the valve plate R1, and the voltage drop on R1 charges the capacitor C through the valve plate R2, and then C discharges the inductance coil L of the electromagnetic register to make it rotate by 1 grid, and record 1 time. By changing the resistance values of R1 and R2, the counter can have different sensitivities. Generally, the minimum operating current is an inrush current of 100A (8/20 μ s). Because there is a certain voltage drop on R1, the residual voltage of the arrester will increase, so it is mainly used for high-voltage arresters above 40kV.

Figure 1(b) shows the structure of the FZ-8 type action counter, which is a rectifier structure. When the arrester operates, the voltage drop on the high temperature valve plate R1 is charged by the capacitor C through full-wave rectification, and then C discharges the L of the electromagnetic counter to make it count.

The resistance value of the valve R1 of the counter is small (the voltage drop at 10kA is 1.1kV), the current capacity is large (1200A square wave), and the minimum operating current is also the impulse current of 100A (8/20s). . JS-8 type counter can be used for arrester of $6.0 \sim 330$ kV system, JS-8A type counter can be used for lightning arrester of 500kV system.

II、 Technical parameter

- 1、Output voltage: DC1600V \pm 5%
- 2. Intervals: \geq 30s
- 3、Power supply: DC12V / AC220V \pm 10% 50Hz \pm 2%
- 4. Impulse current: \geq 100A (8/20 µ s)
- 5、Size: 380×250×180mm
- 6、Weight: 3kg

III、 Inspection method and principle

Due to poor sealing, the action counter may enter moisture or moisture during operation, causing the internal components to corrode and cause the counter to fail to operate normally. Therefore, the "Regulations" stipulate that it should be checked once a year. There are DC method, AC method and standard rush current method for on-site inspection of counter action. Studies have shown that the standard inrush current method is the most reliable, and its principle wiring is shown in Figure 2.



Figure 2 Principle Wiring of Standard Impulse Current Detection Method

(In the dashed box is the impulse current generator)

C-Charge capacitor ; R-Charging resistance ; L-Damping inductance D-Flow Silicon Diode; r-Diverter; B-Test transformer V-Electrostatic Voltmeter; CRO-High voltage oscilloscope

Apply the impulse current wave of $8/20 \ \mu$ s and 100A generated by the impulse current generator to the action counter. If the counter operates normally, the instrument is in good condition. Otherwise, it should be dismantled and repaired. For example, an electric power bureau used this method to test 27 counters, and 3 of them did not work. It was disassembled and found that the internal components were damp and damaged.

The "Regulations" stipulate that the test should be performed 3 to 5 times in a row, and each time should be performed normally, and the time interval between each time should not be less than 30s. The recorder should be set to 0 after the test.

IV Operation Method



Figure 3 Schematic diagram of the detector panel

1. Connect the output end of the instrument to the two ends of the arrester counter (the connecting line should be as short as possible), the red end is connected to the upper end, and the black end is grounded.

2. After the power cord is connected, check whether the instrument and wiring are correct. After confirming that there is no error, the test can be started.

3. Turn on the power switch, the voltage rises, and the general counter can start to check when it is around 600V.

4. Press the test switch, there is a voltage output, and the action of the counter can be observed at this time.

5. If multiple tests are needed, when the output voltage reaches the required value, press the check key again and observe the action of the counter.

6. After the inspection, turn off the power immediately, and remove the wiring only when the output voltage returns to zero completely.

7. If the output voltage does not drop by pressing the test switch, turn off the power supply. After the voltage indicator returns to zero, check whether the circuit has a breakpoint, or the discharge counter is not suitable for the model specified in the technical specifications.

V, **Precautions**

1. When removing the wiring, if the output voltage does not return to zero, the operator cannot touch the non-insulated part of the test wire to avoid personal accidents.

2. The tested product is not allowed to be charged.

3. After the instrument uses the DC power test, the battery in the machine should be charged and maintained in time.

4. During the DC test, if it is found that the power-on voltage indication cannot reach 1600V, stop using the DC power supply and switch to the AC power supply test.

5. When the instrument is not used for a long time, the battery pack in the instrument should be charged and maintained regularly (two months), generally for about 10 hours until the indicator light turns green.

VI, Packing list

1、	Host	1unit
2、	Test line	1set
3、	Charger	1pcs
4、	Insplection test report	1pcs
5、	User manual	1pcs
6、	Certificate	1pcs