

Dear Client,

Thank you for purchasing our GTB Series Dry Type AC Hipot Tester. 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!

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.

Transformer must be grounded before connecting power.

The two handles of transformer must be horizontally placed before connecting power.

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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I. Overview

This instrument is also known as the booster, it is the essential device for power generation and supply equipment test, various electrical products test and electric strength test of insulation materials.

AC Dry-type Test Transformer series produced by our company completely overcome the old-fashioned' shortcoming that it is bulky, heavy. Equipped with high-voltage silicon stack produced by our company, the instrument can provide DC high voltage test power supply. Together with the control cabinet (desk), automatic protection microammeter, sphere gap and so on, the instrument especially suits for on-site test and it makes the heavy work become convenient, fast, easy, flexible, and more efficient. Therefore, it is highly praised and appreciated by the customers coming from power systems and large-scale factory and mining enterprises.

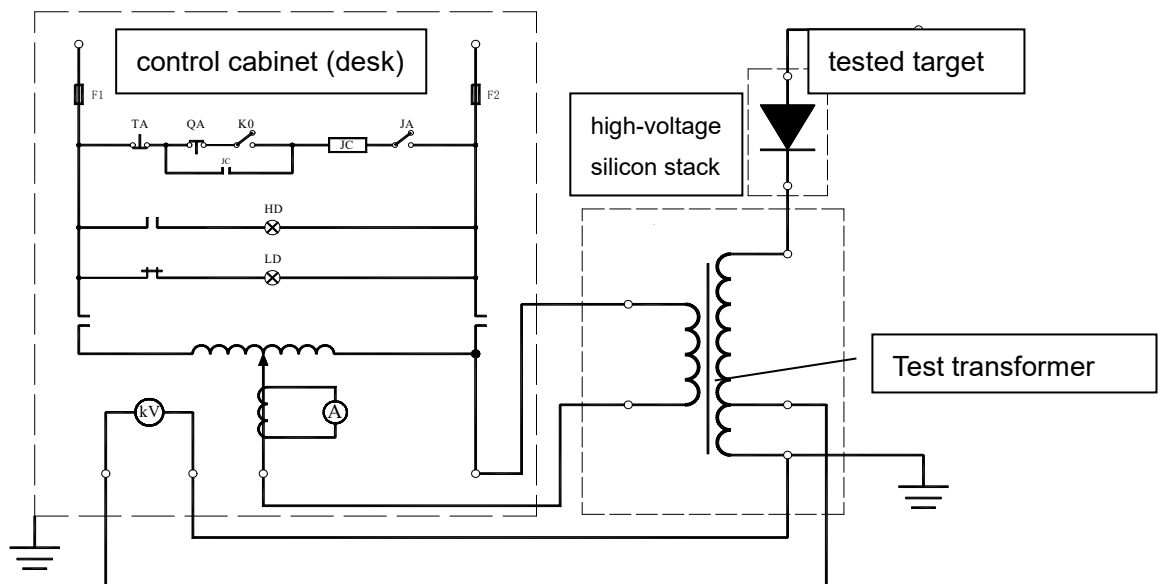
II. Structure

This series of products, due to the design concept, material selection and process flow are new, without compromising performance, their volume and weight have been minimized.

The application of advanced production equipment, coil winding epoxy vacuum casting and high-quality cold-rolled silicon steel winding CD-type iron core on this series of products make them effectively weaken leakage. For DC voltage endurance test, does not need an external silicon stack, only on high-voltage terminal install the DC high-voltage silicon stack provided by our company, you can get DC.

III. Working principle

The input voltage of this product is 200V or 400V. Using automatic coupling voltage regulator of control cabinet (desk) adjusts input voltage to test transformer primary winding (low voltage terminal). According to the principle of electromagnetic induction, in the secondary winding (high voltage terminal) can obtain high voltage output that equal to the multiple of its primary winding turns ratio, and you can continuously adjust voltage from zero volt to the rated maximum value. For DC voltage endurance test and the leakage current test, on high voltage output terminal install the high-voltage silicon stack, you can get DC high voltage, and its amplitude is 1.414 times of power frequency high voltage value.



IV. Performance Specification

1. Impedance voltage: $\leq 12\%$
2. Output voltage waveform: sine wave
3. surface temperature rise: $<55\text{ }^{\circ}\text{C}$
4. No-load current: $<4\%$

5. Allowable continuous running time: 1 hour (can't test the large capacity object like cable, and the test object's capacitance must $< 0.006\mu\text{F}$, or the AC Hipot Tester will be broke and we can't repair even in warranty)

Formula: $I=2\pi FCU$, (1) $C=I/(2\pi FCU)$, (2) $P=UI$

Take GTB-5kVA -50kV as an example:

$$C=(5/50)/(2*3.14*50*50*10^{-3})=0.1/15.7=0.006\mu\text{F}$$

V. The Main Parameters of a Single Instrument

Model	Capacity	Input voltage	Output voltage	Output current	Output DC high voltage	Weight
	(kVA)	(V)	(kV)	(mA)	(kV)	(kg)
1.5/50	1.5	200 or 400	50	30	70	15
3/50	3			60		20
5/50	5			100		30
10/50	10			200		40
15/50	15			300		50
20/50	20			400		55
25/50	25			500		60
30/50	30			600		65
5/100	5	200 or 400	100	50	/	72
10/100	10			100		75
15/100	15			150		80
20/100	20			200		85
25/100	25			250		90
15/120	15		120	125		95
20/120	20			160		100
25/120	25			200		105

30/120	30			250		110
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Notes: non-standard parameter or parameters not in the table please refer to data plate.

VI. Operation Methods

1. Single use

1.1 Pre-test the end terminal "⊥" of test transformer should be grounded, otherwise it will endanger the safety of personnel and instrument.

1.2 The operator must be familiar with the electric principle and use method of test transformer and the electrical control cabinets before operating.

1.3 Connection as wiring diagram.

1.4 Preparation and safety inspection have been completed; please do a dry practice on the instrument.

1.5 Connect to tested object.

1.6 Turn power on, the indicator light of control cabinet will glow.

1.7 Press the switch on button, its indicator lights.

1.8 Clockwise equally increase voltage to rated test voltage value, observe tested object and voltage amplitude at different stages.

1.9 Always set the time of withstand voltage test and observe the meter and tested object.

1.10 Withstand voltage test is completed, watch kV meter and quickly adjust voltage regulator return to zero.

1.11 Discharging electricity with discharging rod via the resistor, and then directly discharging electricity via the ground.

1.12 High-voltage terminal may discharge electricity to the tested object, change or remove high-voltage down-lead after completed the test.

2. Multi-instrument series excitation

2.1 Overview

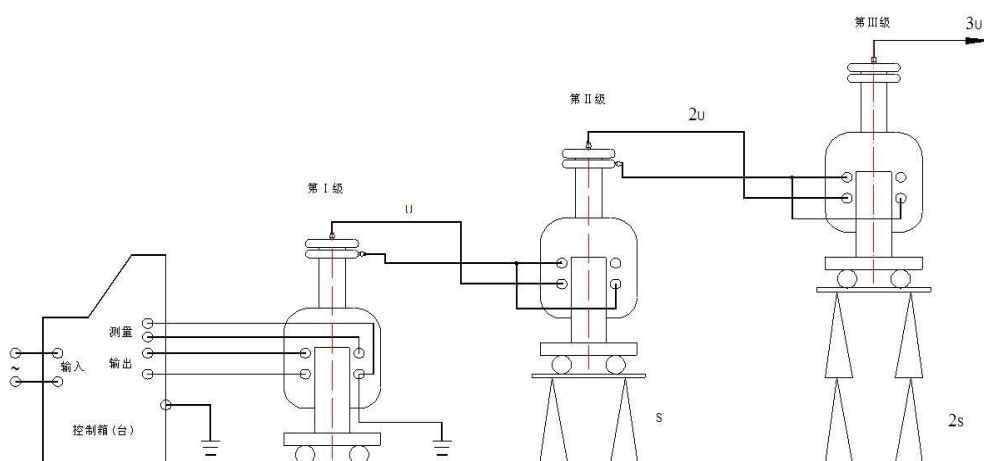
The instrument designed and manufactured by our company is consisted of multi-dry-type test transformer series excitation. Due to the instrument can be easily used as a single or a combined entity; it meets the various needs of on-site test. A single component is light, so it is easy to transport and carry. The use of combined transformer enables the departments having higher voltage level requirement to get higher test power supply smoothly.

2.2 Working principle

Series excitation high-voltage test device, in addition to Class I test transformer of the highest voltage, are series wound excitation winding in high-voltage winding, this winding and the primary winding of Class II test transformer have the same parameters.

Control cabinets (desk) provide power supply for primary winding of Class I test transformer. The end of Class I high voltage winding and shell must be grounded, the head end connects to Grade II test transformer high-voltage end and shell. Class I series tap provides excitation power supply for Class II low voltage winding, then high-voltage of Class II test transformer is the superimposed output voltage of Class I and II. In a similar way, you can superimpose Class III voltage.

2.3 Wiring and installation



2.4 Cascade combinations

2.4.1 When two test transformers is in cascade connection state, capacity ratio of test transformer I and II is 2:1, the total capacity is equal to the capacity

of transformer I; the total voltage is the sum of the maximum output voltage of two transformers, the current is equal to ratio of capacity and total voltage. For example: 5kVA/50kV and 3kVA/50kV, the total capacity of two transformers in cascade connection state is 5 kVA, the total output voltage is 100 kV, output current is 50mA.

2.4.2 When three test transformers are in cascade connection state, the capacity ratio of three transformers is 3:2:1 and the total capacity is equal to the capacity of transformer I, the total voltage is the output voltage sum of three transformers.

Note: Whether two series or three series, it is strictly prohibited that the final output current exceed the rated current of the last Class.

Additional remarks:

Our company can provide auxiliary rectifier device so as to get DC high voltage power supply conveniently for on-site test.

If transformer high-voltage test end and measurement coil end join together, during testing Class I high voltage end and shell should be grounded, Class II and Class III together with their shell must fix potential, the shell potential of Class II and Class III is U and 2U, so they must be placed on the insulator bracket and must keep a safe distance with people.

In cascade high-voltage test, please pay special attention to check whether the wiring of Class II and III are correct, because wiring error may cause the output voltage is zero. You also directly use voltage divider to monitor high-voltage output. For insulator bracket, please check whether the electrical strength meets the voltage requirements.

VII. Safety Precautions

Arrangement of test instrument, please keep an enough safe distance. Do not arrange equipment and high voltage test down-leads in the gateway.

Test site should install fences and hang "Stop! High Voltage" labels.

Test high voltage down-lead should be equipped with support or traction insulation. At the other end and intervals of cable arrange people to guard for keeping people away.

DC high voltage test micro-ammeter, you'd better set it at the highest potential, in addition the screening box and automatic over-current protection devices can prevent sudden short-circuit breakdown or discharge burns meter.

Power frequency withstand voltage test, please check the capacity of instrument to avoid resonance.

Working earth wire (earth wire of high voltage end and stabilized voltage capacitor end) and protective earth wire (the shell of control cabinet) should be firmly grounded respectively.

In test if the power irregularly swings, it must affect the stability of high voltage output. At this time please stop the impact of electric welding or look for other reasons.

Climate (temperature, humidity) in test should comply with the requirements of test procedures. If necessary, shielding measures may be taken.

During test if you found the pointer of voltmeter swings rapidly, the pointer of current meter sharp increases or there is smoke, flash, burnt smell, abnormal noise, etc. please immediately stop test and cut off the power supply, then check the reason.

High voltage test must strictly enforce the safety regulations issued by the Ministry of Electric Power.