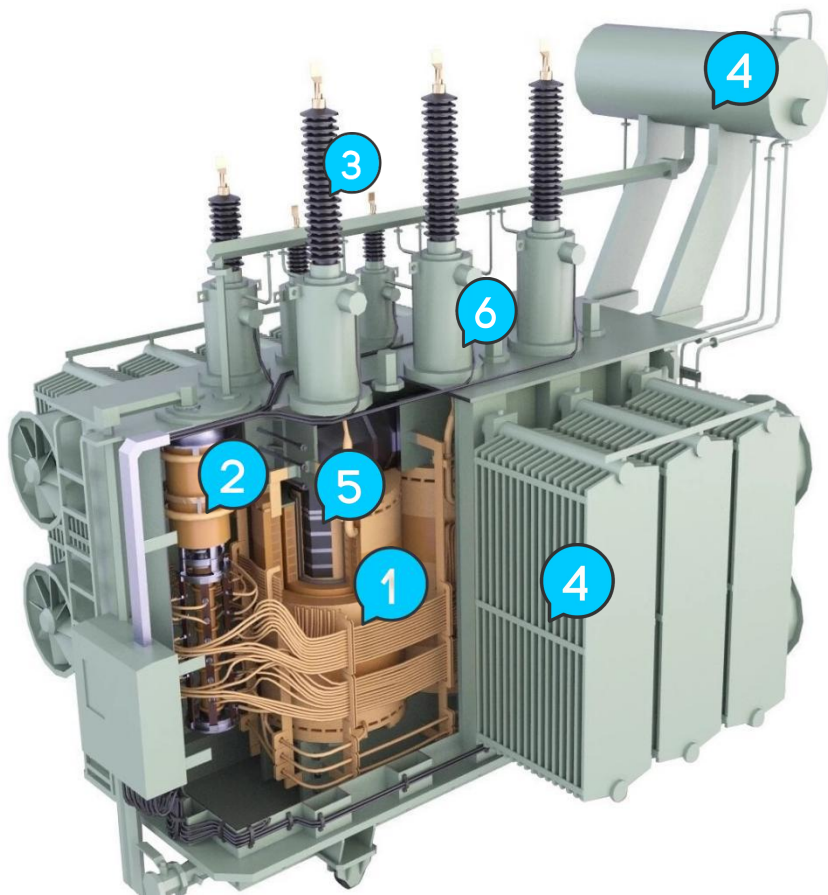




Kingrun Transformer Instrument Co.,Ltd.





Electricity plays an important role in the global economic and social development. In this process, transformers play a key role. They transmit and distribute between high and low voltages to provide a steady stream of energy for industrial, commercial and household users. However, as the demand for electricity increases, the load in the distribution network becomes more unstable, which directly affects the service life and life of the transformer, making the management of the transformer more important. Let's take a look at which parts of the transformer are facing the probability of damage or aging.

1.Winding: The transformer winding is the most critical component of a transformer, responsible for converting electrical energy from one voltage level to another through electromagnetic induction. The number of turns in the winding determines the ratio of voltage and current conversion. However, the winding is also the part most susceptible to faults, such as short circuits, open circuits, deformation, and insulation aging. Winding faults account for approximately 40% of transformer failures.

2.Tap changer: By changing the position of the transformer tap changer, voltage can be adjusted up or down without altering the main winding. This fine-tunes the voltage in the power grid and compensates for voltage fluctuations. The main faults are arcing, contact wear and mechanical failure, account for about 20% of transformer faults.

3.Bushings: The transformer uses bushings to safely conduct high voltage currents through the transformer casing to the external circuit. Bushings not only provide electrical insulation but also offer support and protection. Common faults in bushings include insulation aging, cracks, mechanical failures, electrical breakdowns, oil leaks, and partial discharges. Bushing faults account for approximately 12% of transformer failures.

4.Insulation Oil: The functions of transformer insulating oil include insulation, cooling, and arc suppression, typically highly refined mineral oil or synthetic oil. Common faults with insulating oil include insulation degradation, contamination with moisture and impurities, gas formation, and increased acid value. These issues account for approximately 8% of transformer failures.

5.Core: The main function of the transformer core is to provide a magnetic flux path, reduce magnetic losses, and make electromagnetic induction more efficient. Common faults in the core include core saturation, increased eddy current losses, increased hysteresis losses, core grounding faults, and overheating. Core faults account for approximately 3% of transformer failures.

6.Instrment transformer: The main function of the instrument transformers (CT/PT) in a transformer is to convert the high current or high voltage on the primary side into a low current or low voltage on the secondary side facilitating measurement and monitoring while isolating the measuring testers and protection devices. The primary faults in instrument transformers include winding short circuits, insulation aging, increased errors, secondary circuit open circuits, and magnetic saturation instrument transformer faults account for approximately 1.6% of transformer failures.

Transformer Testers

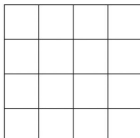
Test Object	Testing Item	Type	Picture	Feature and Specification	User Guide
Winding 	Winding Resistance “S”- Three-phase testing “C”- Single-phase testing	JYR9310/S	 	Output Current: 5mA~10A Test Range: 0~20kΩ Feature:Winding Cu/Al optional, temperature conversion, both inductive and resistive tests possible, 6 current output levels, discharge/overheat alarm	
		JYR-10S	 	Output Current: 20mA~10A Test Range: 0~100kΩ Feature: Simultaneously test three-phase Yn, Y, and D configurations. Auto/6 selectable output current levels, automatic phase switching, calculates the three-phase unbalance rate. Temperature conversion and sensing, can test both inductive	
		JYR-10/20C	 	Output Current: 20mA~20A Test Range: 0~20kΩ Feature: Suitable for DC resistance measurement of all 110kV transformers, Auto/7 selectable output current levels,color touch screen design, economical and practical, strong reliability, with misconnection protection function, can be equipped with lithium battery.	
		JYR-20C/40C /50C		Output Current: 20mA~20A/40A/50A Test Range: 0~20kΩ Feature: Auto/9-speed current output, automatic judgment of data stability, automatic calculation of 5", 15", 30" resistance value deviation percentage, Cu/Al optional, temperature conversion, degaussing function, color touch screen, RS485/232 interface, back EMF protection function, anti-arc..	
		JYR10S/20S 40S/50S	 	Output Current: 10mA~10A/20A/40A/50A Test Range: 0~20kΩ Feature: High voltage YN three-phase simultaneous measurement, O phase compensation testing, YND11 automatic magnetization, YN or D/Y automatic phase selection measurement, automatic calculation of resistance balance rate, Auto/10 current output, automatic judgment of data stability, automatic calculation of 5", 15", 30" resistance value deviation percentage, Cu/Al optional, temperature conversion, degaussing function, color touch screen, RS485/232 interface, back EMF protection function, anti-arc.	
		JYR80100		Feature: Suitable for temperature rise test and DC resistance measurement of large transformers above 240MVA, output current 25A/50A/100A, stable and accurate value within 2 minutes, test range0~0.8Ω.	
	Winding Resistance Temperature Rising	JYR-20W	 	Output Current: 0.01A~20A Test Range: 0~2kΩ Feature:The design features a dual constant current power supply, enabling series temperature rise tests for high and low voltage windings. It uses CPU-controlled charge and discharge sequencing, allows for remote measurements via software, and generates stable temperature rise curves with automatic temperature rise reports. It is equipped with an RS485 interface and has a comprehensive protection circuit, ensuring strong reliability.	

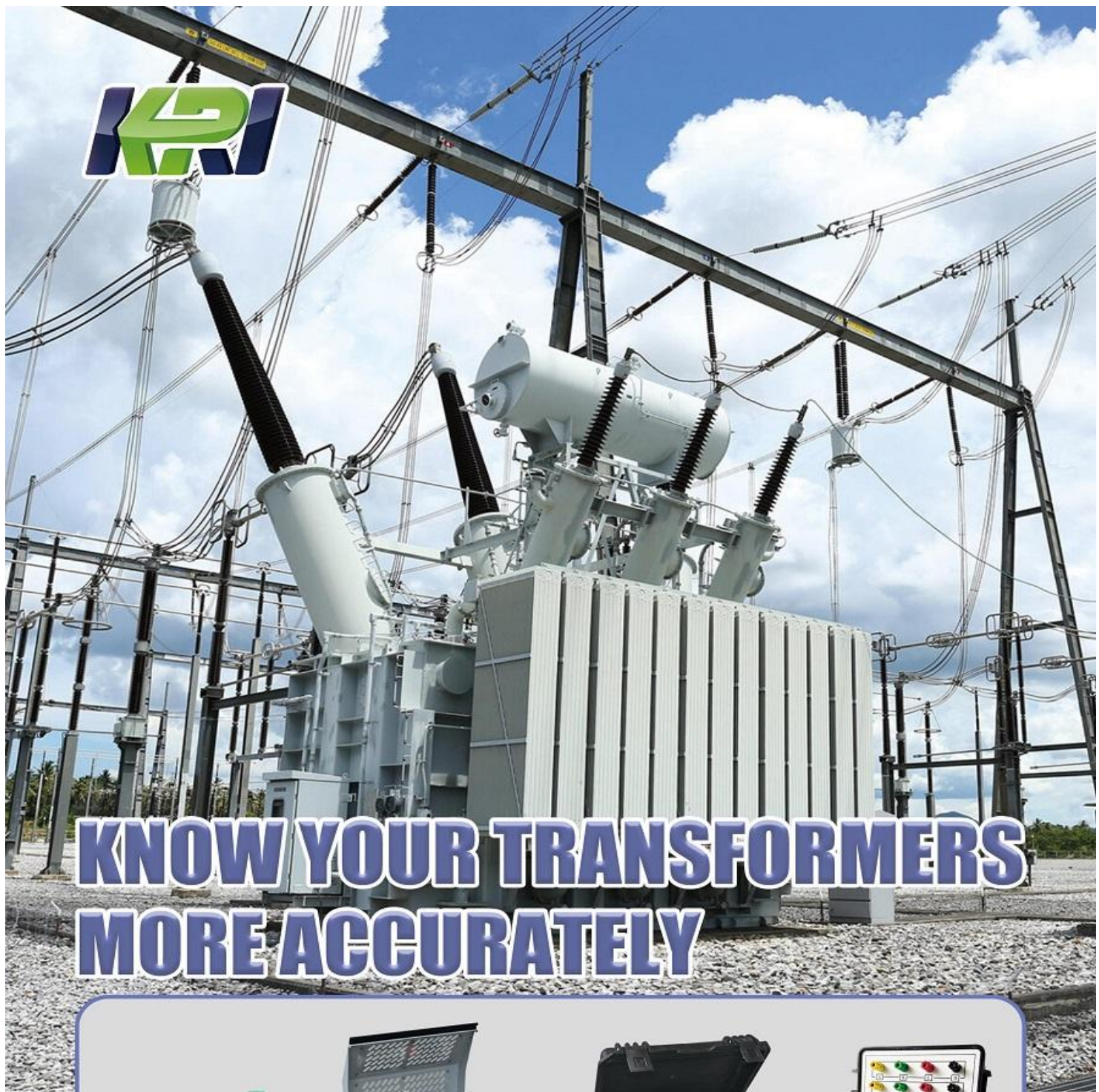
	Winding Resistance Temperature Rising	JYR-50E		Output Current: 0.02A~50A Test Range: 0~50kΩ Feature: It can test large-capacity transformers with five-column core configurations and supports self-magnetizing functions for various configurations such as YNd, YNyn, and Dyn based on the magnetic circuit. It addresses the issue of long low-voltage stabilization times, meeting the time requirements for transformer temperature rise tests. It supports dual-channel measurement, phase selection measurement, and customizable temperature rise timing. It features temperature conversion, automatic calculation of three-phase unbalance rate, and strong anti-interference capability, ensuring reliable and stable performance.	
	Turns Ratio Testing	JYT-A		Feature: It can accurately measure the ratio of transformers with neutral points (not converted), helping technicians to accurately judge faults. It is suitable for distribution transformers up to 1000kV. It can also measure the ratio, group, connection mode and polarity of CT, PT, CVT and Z-connected transformers. It has multiple short-circuit measurement methods built in to facilitate fault judgment.	
		JYT-B		Feature: It can test Z-connected transformers, rectifier transformers, Scott transformers, and reverse Scott transformers, including parameters such as phase shift angle and turns ratio error. JYT-B can automatically adjust the test power voltage according to the load, offering good adaptability and strong anti-interference capabilities.	
		JYT		Feature: Three-phase ratio test, no need to input parameters for measurement, suitable for distribution transformers to 1000kV transformers, CT, PT, Z-type connection transformer ratio and group measurement, built-in multiple short-circuit measurement methods for winding fault judgment, automatic output voltage adjustment, equipped with RS485 and U disk interface, weighs only 1.6kg, one charge can measure hundreds of transformers	
	Short Circuit Impedance	JYW6300		Feature: It is suitable for factory acceptance testing (FAT), major overhauls, pre-tests, and handover tests of power transformers rated 35kV and above. It measures low-voltage load impedance, short-circuit impedance, short-circuit reactance, and three-phase impedance voltage. The tester includes a built-in 400V adjustable power supply, which automatically applies current to the AB, BC, and CA high-voltage windings of the main transformer, synchronously collects data, and calculates the percentage of reactance and resistance.	
	No-loads & On-loads	JYW6100		Feature: It is widely applicable to power transformers, including amorphous alloy transformers and motors. It allows for high-precision measurements at low power factors and can test parameters such as no-load loss, load loss, no-load current, load current, impedance voltage, zero-sequence impedance, line voltage, phase voltage, RMS and average voltage, average three-phase voltage, current values, power, power factor, frequency, and 30th harmonic analysis. Measurement methods include two-wattmeter and three-wattmeter methods, with advanced automatic data tracking and locking features.	
	Winding Deformation	JYP		Feature: It uses the sweep frequency method to measure transformer windings, accurately identifying faults such as winding twisting, bulging, and displacement through frequency amplitude response characteristics. The sweep frequency range is 100Hz~2MHz (10MHz), with a frequency accuracy of up to 0.005%. Up to 9 curves can be loaded simultaneously, and the analysis software automatically diagnoses winding deformation, generating JPG image reports automatically.	
	Winding Tan Delta	JYC		Feature: The JYC is a powerful tester used for measuring the dielectric loss of windings, insulation oil, and bushings. It features various measurement modes including positive/negative wiring, internal/external standard capacitors, and internal/external high voltage. It supports reverse wiring measurements and allows for measurements of C11 without disconnection in CVT bus grounding conditions. The tester includes both series and parallel dielectric loss measurement models, dynamically displays test voltage and current, and uses the CVT self-excitation method. It can simultaneously measure C1/C2 with a single connection and automatically compensates for the effects of lead and standard capacitor voltage divider.	

 Tap Changer	On-load Tap Changer	JYK-I		Feature: The tap changer can be tested without disassembling the transformer, including measurements of transition waveform, transition time, transition resistance, and three-phase synchronism. It features 6 independent signal processing channels, automatic tap changer position identification, high-speed A/D conversion, and 100KHz high-speed sampling. The software automatically analyzes the test results.	
	Dynamic	JYK-I (C)		Feature: JYK-I(C) can convert a single-phase power supply into a three-phase AC 800V standard test power supply and has both AC and DC measurement capabilities. It can capture transient points generated during switch operation and perform comparative analysis. It can test the operational characteristics of on-load tap changers in various connection groups of three-phase and single-phase transformers ranging from 10kV to 500kV. The analysis software includes a built-in database and can generate data reports on-site.	
	Contact Resistance	JYL		Feature: The JYL is used for testing contact resistance of circuit breakers, busbar connections, and other micro-ohm level resistances. It can output currents up to 100A and sustain this for over 60 seconds. It provides accurate measurements even under strong interference, weighs only 1.9 kg, and can perform over 500 measurements on a single charge.	
 Bushings	Winding Tan Delta	JYC		Feature: The JYC is a powerful tester used for measuring the dielectric loss of windings, insulation oil, and bushings. It features various measurement modes including positive/negative wiring, internal/external standard capacitors, and internal/external high voltage. It supports reverse wiring measurements and allows for measurements of C11 without disconnection in CVT bus grounding conditions. The tester includes both series and parallel dielectric loss measurement models, dynamically displays test voltage and current, and uses the CVT self-excitation method. It can simultaneously measure C1/C2 with a single connection and automatically compensates for the effects of lead and standard capacitor voltage divider.	
	Breakdown Voltage (BDV)	JY6611		Feature: The JY6611 utilizes a new breakdown control technology that minimizes breakdown discharge energy, preventing contamination of oil samples during testing and resulting in more accurate test results. The tester features a comprehensive electromagnetic compatibility design, with a voltage regulation power supply using an electronic inverter-based sine wave generator for rapid, stable, and accurate voltage increase. The waveform quality is high and unaffected by grid voltage fluctuations. It also includes multiple protection circuits to ensure the safety of both the operator and the tester.	
	Insulation Resistance	JYM		Feature: The JYM can output a powerful short-circuit current greater than 30mA. At a 5000V voltage level, the high-voltage power supply outputs no less than 6mA of current, and at a 1000V voltage level, it outputs no less than 3mA. It features an independent discharge circuit for automatic and rapid discharging and includes automatic high-voltage protection.	
 Oil	Breakdown Voltage (BDV)	JY6611		Feature: The JY6611 utilizes a new breakdown control technology that minimizes breakdown discharge energy, preventing contamination of oil samples during testing and resulting in more accurate test results. The tester features a comprehensive electromagnetic compatibility design, with a voltage regulation power supply using an electronic inverter-based sine wave generator for rapid, stable, and accurate voltage increase. The waveform quality is high and unaffected by grid voltage fluctuations. It also includes multiple protection circuits to ensure the safety of both the operator and the tester.	
	Oil Tan Delta	GTD-61A		Feature: The tester features high automation, capable of measuring temperature rise, dielectric loss, and resistance in a single test. The testing suite uses medium-frequency induction heating and a PID temperature control algorithm. This heating method offers non-contact heating between the oil cup and heating element, uniform heating, fast speed, and convenient control. The internal standard capacitor is an SF6-filled three-point capacitor, which ensures that the dielectric loss of the capacitor is unaffected by environmental temperature and humidity, maintaining accuracy even after long-term use.	

	Oil Tan Delta	JYC		Feature: The JYC is a powerful tester used for measuring the dielectric loss of windings, insulation oil, and bushings. It features various measurement modes including positive/negative wiring, internal/external standard capacitors, and internal/external high voltage. It supports reverse wiring measurements and allows for measurements of C11 without disconnection in CVT bus grounding conditions. The tester includes both series and parallel dielectric loss measurement models, dynamically displays test voltage and current, and uses the CVT self-excitation method. It can simultaneously measure C1/C2 with a single connection and automatically compensates for the effects of lead and standard capacitor voltage divider.	
	Oil dissipation factor	GTD-81		Feature: The three-electrode structure that meets international standards can eliminate the influence of stray capacitance and leakage on dielectric loss test results. The instrument adopts medium-frequency induction heating and PID temperature control algorithm. The internal standard capacitor is a three-electrode capacitor filled with SF6 gas. Its capacitance dielectric loss and capacitance are not affected by ambient temperature, humidity, etc. The AC test power supply adopts AC-DC-AC conversion, which effectively avoids the influence of mains voltage and frequency fluctuations on the accuracy of dielectric loss measurement.	
	Current Transformer (CT)Testing	JYH-B		Output Current: 0A~800A Output Current/Voltage: 1A/2500V,2A/500V,5A/600V,10A/220V,20A/30V, Feature: Using the traditional power frequency voltage rise method, it can perform on-site testing of CTs and PTs, including turns ratio, DC resistance, polarity, 10% & 5% error curves, phase angle error, ratio error, and volt-ampere characteristics. During testing, you only need to set the maximum voltage and current. The device will automatically increase the voltage and can automatically plot the excitation and volt-ampere characteristic curves, as well as automatically calculate the knee point.	
	Potential Transformer (PT)Testing	JYH-C		Feature: Using the variable frequency voltage rise method, the device outputs a maximum of only 180V AC voltage and 12Arms AC current. It can handle CT tests with knee points up to 30kV. It can perform on-site testing of CTs and PTs, including turns ratio, DC resistance, polarity, CT secondary winding DC resistance, and secondary circuit AC load. It can also measure the 10% & 5% error curves, phase angle error, ratio error, volt-ampere characteristics, ALF (Accuracy Limit Factor), FS (Security Factor), Ts (Secondary Time Constant), Kr (Composite Error Factor), and both saturated and unsaturated inductance.	
	Oil Tan Delta	JYC		Feature: The JYC is a powerful tester used for measuring the dielectric loss of windings, insulation oil, and bushings. It features various measurement modes including positive/negative wiring, internal/external standard capacitors, and internal/external high voltage. It supports reverse wiring measurements and allows for measurements of C11 without disconnection in CVT bus grounding conditions. The tester includes both series and parallel dielectric loss measurement models, dynamically displays test voltage and current, and uses the CVT self-excitation method. It can simultaneously measure C1/C2 with a single connection and automatically compensates for the effects of lead and standard capacitor voltage divider.	
	Insulation Resistance	JYM		Feature: The JYM can output a powerful short-circuit current greater than 30mA. At a 5000V voltage level, the high-voltage power supply outputs no less than 6mA of current, and at a 1000V voltage level, it outputs no less than 3mA. It features an independent discharge circuit for automatic and rapid discharging and includes automatic high-voltage protection.	
	No-loads & On-loads	JYW6100		Feature: It is widely applicable to power transformers, including amorphous alloy transformers and motors. It allows for high-precision measurements at low power factors and can test parameters such as no-load loss, load loss, no-load current, load current, impedance voltage, zero-sequence impedance, line voltage, phase voltage, RMS and average voltage, average three-phase voltage, current values, power, power factor, frequency, and 30th harmonic analysis. Measurement methods include two-wattmeter and three-wattmeter methods, with advanced automatic data tracking and locking features.	

 Core	Insulation Resistance	JYM		Feature: The JYM can output a powerful short-circuit current greater than 30mA. At a 5000V voltage level, the high-voltage power supply outputs no less than 6mA of current, and at a 1000V voltage level, it outputs no less than 3mA. It features an independent discharge circuit for automatic and rapid discharging and includes automatic high-voltage protection.	
Substation Equipment Tester					
Test Object	Testing Item	Type	Picture	Feature and Specification	User Guide
 Switch gear Circuit Breaker	Disconnect Resistance	JYL		Feature: The JYL is used for testing contact resistance of circuit breakers, bus-bar connections, and other micro-ohm level resistances. It can output currents up to 100A (optional 200A) and sustain this for over 60 seconds. It provides accurate measurements even under strong interference, weighs only 1.9 kg, and can perform over 500 measurements on a single charge.	
		JYL100/200B		Feature: Output Current: 50A/100A/200A Test Range: 0~100mΩ It is suitable for measuring the contact resistance of high-voltage switches and circuit breakers, as well as the primary side resistance of current transformers and grouped measurements of grounding lines.	
		JYK-II		Feature: Suitable for mechanical characteristic testing of all models of metal-contact SF6 switches, GIS switchgear, vacuum switches, oil switches, pole-mounted switches, and contactors. It can also perform low-voltage testing and reclose testing of switches. The instrument outputs a current of 30A with a sampling frequency of 100K. It uses acceleration sensors, rotational speed sensors, linear displacement sensors, and contact sensors to measure parameters such as three-phase speed, displacement, opening distance, and over-travel. It features robust data analysis capabilities and generates graphical reports.	
 Surge Arrestor	Zinc Oxide Characteristics	JY6800		Leakage Current: 0A~20mA (Scalable) Voltage:30~250V (Scalable) Feature: Used for live or offline testing of metal oxide surge arresters (MOA) across various voltage levels, this equipment helps promptly identify dangerous defects such as internal insulation moisture and valve block aging.	
	1mA DC Reference Voltage	JYDHV		Feature: The system utilizes large voltage feedback, ensuring high output voltage stability. It provides smooth voltage regulation across the full range with fine voltage adjustment precision. The voltage increase starts from zero using the step-up potentiometer, featuring a 0.75 UDC1mA function button for convenient testing of metal oxide surge arresters.	
 Capacitor	Capacitor Inductance	JY6700		Feature: This instrument is designed to measure the capacitance value of individual capacitors in a capacitor bank within a substation. It can accurately measure the capacitance of a single capacitor in single-phase or three-phase capacitor banks without the need for disconnection. The measurement range covers 0.1μF to 6800μF, and it also features the ability to measure inductance, current, and resistance.	

	Grounding Down Lead Earth	JYD		Output Current: 10A/5A/1A Test range: 0.8~20Ω Feature: It is used for measuring the continuity resistance between grounding down conductors of various power equipment within a substation. It has a measurement radius of no less than 50 meters and features wireless control capabilities, allowing remote control of the instrument and reception of test data. It offers both a single quick mode and a continuous testing mode.	
 Cable	Cable AC Hi-pot	JYCX		Feature: The complete set of equipment includes protection functions for over-voltage, over-current, zero-start, and system detuning (flashover). The over-voltage and over-current protection values can be set according to user requirements. In case of flashover during testing, the flashover protection is activated to protect the test object. The system offers three operating modes: automatic mode, manual mode, and auto-tuning with manual voltage ramp-up mode. During automatic frequency sweep, the system allows the starting point of the frequency to be set within a specified range. The large LCD screen displays the scan curve, making it easy for users to visually identify whether the resonance point has been found.	
	Cable Insulation Resistance	JYM		Feature: The JYM can output a powerful short-circuit current greater than 30mA. At a 5000V voltage level, the high-voltage power supply outputs no less than 6mA of current, and at a 1000V voltage level, it outputs no less than 3mA. It features an independent discharge circuit for automatic and rapid discharging and includes automatic high-voltage protection.	



**KNOW YOUR TRANSFORMERS
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