HZJD-2Z Series

Insulating Oil Dielectric Loss & Resistivity Tester

HZJD-2Z Series

Automatic tanδ, permittivity & DC resistivity for insulating liquids

- **Three-electrode test cell** Compliant with International Standard, 2 mm electrode gap — eliminates stray-capacitance and leakage effects on the tanδ result.
- **Integrated oil-drain solenoid** Empty and rinse the cell in place with the sample — no need to remove it between tests.
- **Medium-frequency induction heating** Non-contact PID temperature control: even, fast and tightly held within the preset error band (0–125 °C).
- **SF_6 standard capacitor** Gas-filled three-electrode reference; loss and capacitance independent of ambient temperature and humidity for lasting accuracy.
- **AC-DC-AC test supply** Immune to mains voltage and frequency fluctuation — the instrument even operates correctly from a generator.
- **Full protection & interlocks** Over-voltage, over-current and HV short-circuit cut-off with alarms; sensor-fault warnings; 120 °C thermal limiting relay.
- **800×480 full-touch colour LCD** Guided menu — any operator runs a complete automatic test without specialised training.
- **Automatic storage & printing** Built-in real-time clock; up to 100 stored records with on-board DataScan recall and thermal print-out.
- **Dry-cell (empty-cup) calibration** Auto-saved calibration data for accurate relative permittivity and DC resistivity calculation.
- **All-in-one architecture** Test cell, temperature control, loss bridge, AC source, standard capacitor, high-resistance meter and DC HV source in one unit.

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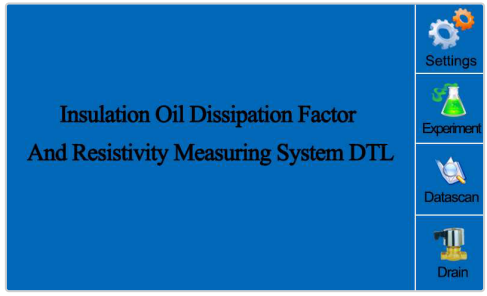
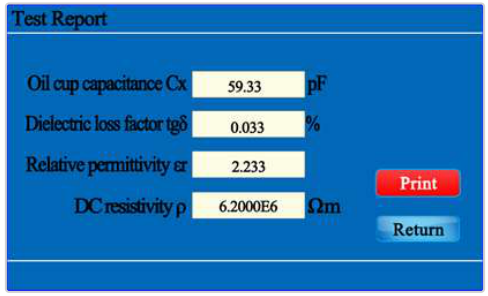
DESCRIPTION

The **HZJD-2Z Insulating Oil Dielectric Loss and Resistivity Tester** measures the dielectric dissipation factor (tanδ), relative permittivity and DC resistivity of insulating oil, transformer oil and other insulating liquids quickly and accurately. Built to the leading international standards for liquid insulating materials, it integrates the test cell, temperature controller and sensor, dielectric-loss bridge, AC test source, SF_6 standard capacitor, high-resistance meter and DC high-voltage source into a single instrument. Full digital, fully automatic measurement is driven from an 800×480 full-touch colour display with a guided menu, so any operator — without specialised training — can obtain repeatable, storable and printable results. It is the right choice for power transformers and critical assets, substations, transmission & generation facilities, oil laboratories and acceptance / maintenance testing.

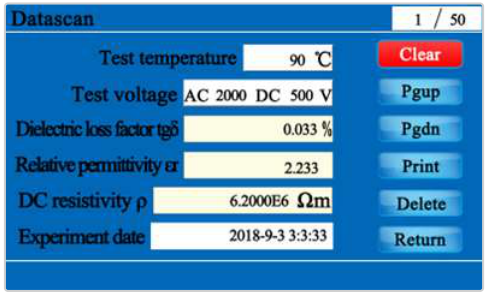
INTELLIGENT TOUCH INTERFACE



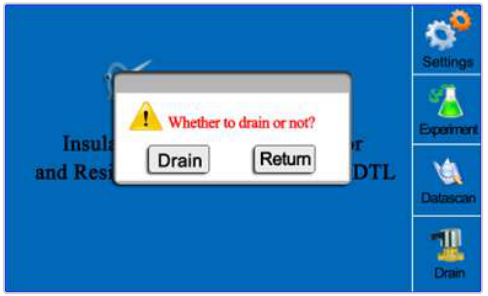
Main menu



Automatic test report



DataScan — stored records



Oil-drain control

MEASUREMENT WORKFLOW

1 Load & connect
Place the cleaned test cell in the groove and connect the test cable and temperature probe.

2 Set conditions
Define temperature (0–125°C), AC voltage (500–2000 V) and DC voltage (0–500 V).

3 Dry-cell calibration
Run the empty-cup calibration; data is auto-saved for accurate εr and ρ.

4 Fill sample
Pour ~40 mL of oil, refit the inner electrode and let bubbles settle >15 min.

5 Automatic test
Select tanδ/εr and/or DC resistivity — the instrument completes the test automatically.

6 Store & print
Results are stored, recalled via DataScan and printed; drain the cell for the next test.

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TECHNICAL DATA

Power & supply	
Voltage supply	AC 220 V ±10%
Power frequency	50 Hz / 60 Hz ±1%
Power consumption	100 W

MEASURING RANGE

Capacitance	5 pF – 200 pF
Relative permittivity	1.000 – 30.000
Dielectric loss factor (tanδ)	0.00001 – 100
DC resistivity	2.5 MΩ·m – 20 TΩ·m

MEASURING ACCURACY

Capacitance	±(1% of reading + 0.5 pF)
Relative permittivity	±1% of reading
Dielectric dissipation factor	±(1% of reading + 0.0001)
DC resistivity	±10% of reading

RESOLUTION

Capacitance	0.01 pF
Relative permittivity	0.001
Dielectric dissipation factor	0.00001

TEST PARAMETERS

Test voltage AC (RMS)	500 – 2000 V, continuously adjustable, 50 Hz
Test voltage DC	0 – 500 V, continuously adjustable
Measured temperature range	0 – 125 °C
Temperature measurement error	±0.5 °C
Thermal limiting relay	Stops heating above 120 °C

PHYSICAL & ENVIRONMENT

External dimensions (W×D×H)	500 × 360 × 420 mm
Total weight	22 kg
Ambient temperature	0 – 40 °C
Relative humidity	< 75% RH

STANDARDS & COMPLIANCE

CE | IEC 60247 | ASTM D924 | ASTM D1169 | GB/T 5654-2007 | GB/T 507-2002 | DL 429.9-91 | DL/T 846.7-2004

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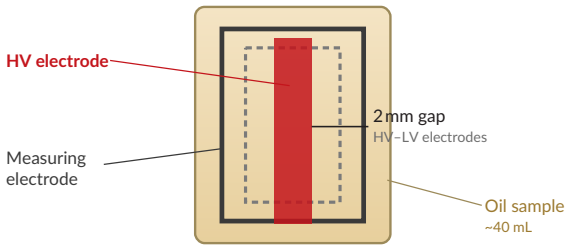
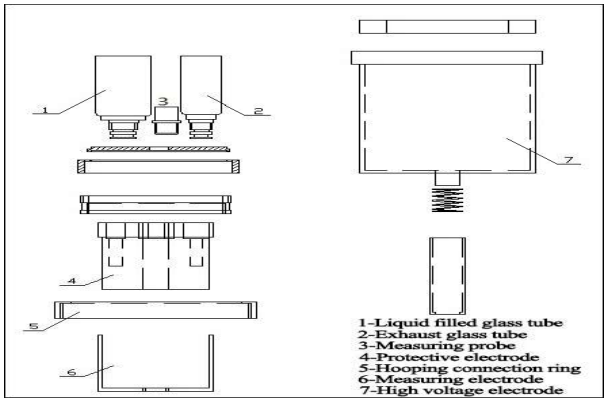
TEST CELL & MEASURING PRINCIPLE

Three-electrode principle



Oil-cup schematic

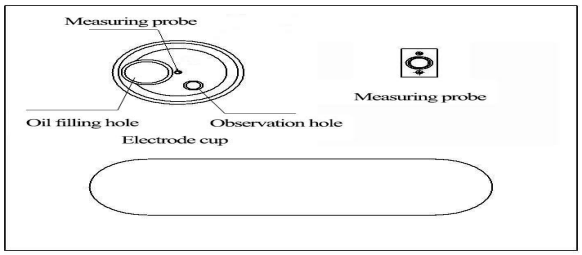


Oil-cup technical data

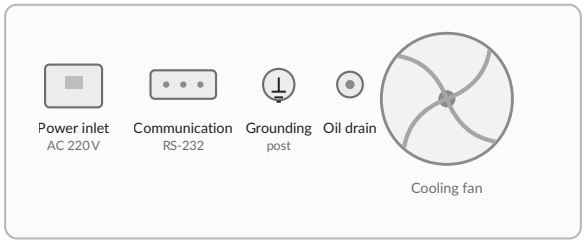
- HV–LV electrode distance: **2 mm**
- Dry-cell capacitance: **60±5 pF**
- Max test voltage (power freq.): **2000 V**
- Dry-cell loss: **tanδ < 1×10^{-4}**
- Liquid capacity: **~40 mL**
- Electrode material: **stainless steel**
- Cell volume: **70 mm (D) × 120 mm (H)**

CONNECTIONS & PANELS

Top panel



Rear panel connections



Packing list

1	Main engine	1	7	Power line	1
2	Oil cup	1	8	Fuse pipe	2
3	Oil tube	1	9	Thermal print paper	2
4	Dedicated test cable	1	10	Allen wrench (5×30)	1
5	Temperature probe cable	1	11	Allen wrench (1.5×15)	1
6	50 ml measuring cylinder	1	12	User manual	1

Safety: the instrument must be reliably grounded before use. The protective cover interlocks the heating and high-voltage circuits. During a test high voltage and high temperature are present — do not touch the test cell, cable or sockets while energised.

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