Dielectric Constant Tan Delta & Resistivity Test Set

DESCRIPTION

The Dielectric Constant, Tan Delta & Resistivity Test Set has been specially designed to determine the Tan Delta, Dielectric Constant and Resistivity of transformer oil and other electrical insulating liquids using a guarded three terminal test cell. This may also be used for measurement of the above parameters of solid insulating materials using a guarded three terminal solid test cell.

There are built-in safety features which include zero start on voltage adjustment, auto trip with LED indication if two grounds are not connected, auto trip with LED indication if safety interlock is opened and built-in protection should the test sample flash over.

The $\epsilon$ (Epsilon) - DF portion of the instrument operates as a manually balanced capacitance bridge. Since $\epsilon$ is ratio of the full cell capacitance to the empty cell Capacitance (in cm) must be dialed in or be balanced out by using the balancing procedure. The cell constant (in cm) equals $3.6 \times \pi x 1 \times C$, where $C$ is the cell Capacitance in pF. The bridge balance is accomplished with the aid of synchronous and phase sensitive null detector which allows easy and independent balancing of the $\epsilon$ and DF components. The $\epsilon$-DF tests are carried out w.r.t. line frequency.

The Resistivity meter is autoranging with the reading displayed on 3½ digit DPM. Once the cell Constant is balanced with the cm dial, the Resistivity meter reads volume Resistivity directly in ohm-centimeters. With the cm dial set to 1000, the Resistivity meter reads resistance in ohms multiplied by a factor of 1000. The autoranging feature eliminates the need for selecting the right range manually.

FEATURES

- AC and DC test voltage switched internally. Single connector for both AC and DC output. Eliminates manual changeover of connections to the sample under test.
- Direct digital display of test voltages.
- Auto ranging and direct digital reading of volume resistivity.
- Cell constant adjustment and Tan Delta Zero correction.
- Zero start on AC voltage for safety.
- Open Ground and Open Interlock with LED indication for operator safety.
- Gain Control for detector electronics.
- Built-in protection for test sample flash over.
- Equipment is 19" rack mount cum table top.
**DTR 3K SPECIFICATIONS**

**RANGES**
- Dielectric Constant : 1 to 13
- Tan Delta : $10^{-5}$ to 10
- Resistivity : Autoranged from $10^{9}$ to $10^{15}$ ohm cm

**ACCURACY**
- Dielectric constant : $\pm 0.2\%$ of reading ± 0.001
- Tan Delta : $\pm 1\%$ of reading ± 0.3% FS (direct reading, linear throughout the ranges)
- Resistivity : $\pm 3\%$ of reading ± 0.2% FS linear

**RESOLUTION**
- Dielectric Constant : 0.001 over the entire range.
- Tan Delta : 0.00001 in $10^{-5}$ range
  - 0.0001 in $10^{-4}$ range
  - 0.001 in $10^{-3}$ range
  - 0.01 in $10^{-2}$ range
- Resistivity : 0.01 of each range.

**CELL CONSTANT**
- 3 digit adjustment for Tan Delta zero and Capacitance (cm)
- Any cell or test fixture between 50-70pF can be used.

**TEST VOLTAGE**
- Internally generated
- Dielectric Constant : 0-3000V AC, in two ranges & Tan Delta (0-1000V & 0-3000V)
- Resistivity : +500 V DC-Fixed

**POWER SUPPLY**
- 230 V AC ± 10%, 50Hz, 150 VA
- 110 V AC ±10%, 60 Hz, 200VA

**Temperature Range**
- -10°C to 50°C

**& Humidity**
- Ambient to 90% RH

**DIMENSION**
- 19” standard rack mount chassis.

**WEIGHT**
- Approx. 17 kgs.

**ESSENTIAL ACCESSORIES**

**OIL TEST CELL HEATER**
- This 3 Terminal Oil Test Cell is designed for routine and laboratory Tan Delta tests on transformer oils and other electrical insulating liquids. The electrode of the cell is designed with a spherical bottom which offers more uniform stress on the oil as compared to electrode with tapered end.

**SPECFICATIONS**

- Construction : 3 terminal configuration
- Material : Stainless Steel Body (SS 316) with Teflon spacers
- Capacitance : 50-70pF
- Electrode spacing : 2mm
- Volume : 45ml
- Dimension : 90mm X 185mm
- Weight : Approx 2.5Kgs

**C-DF & RESISTIVITY CALIBRATOR**
- This calibration box is used to routinely check and inspect the Test Set. The portable calibrator offers one Capacitance, three Tan Delta and four Resistivity values. The maximum operating voltage is 500V AC / DC.

**SPECIFICATIONS**

- Power supply : 230 V AC ± 10%, 50 Hz OR
- 110 V AC ± 10%, 60 Hz, 200VA
- Temperature Range : 20 -110°C
- Accuracy of Temperature Control : ± 2°C
- Dimension : 310 x 190 x 300mm
- Weight : Approx 12 kgs

**OIL TEST CELL**

**OPTIONAL ACCESSORY**

- SOLID TEST CELL S

**OTHER PRODUCTS**

- Digital Micro Ohm Meters.
- with built in 100Amp source.
- Automatic CT/VT Test Sets & Systems
- Automatic & Semi Automatic HV Capacitance & Tan Delta Test sets,
- Relaying Current Transformer Analyser.

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(SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE)