

**BHARAT HEAVY ELECTRICALS LIMITED
JHANSI**

SPECIFICATION No. : 10185

ITEM NO : LE-1/7/6295

1. **EQUIPMENT:** - Automatic dielectric constant tan delta & resistivity test set.
----- (1 set)
2. **DESCRIPTION:** - Fully automatic dielectric constant tan delta & resistivity test set with automatic heater control & temperature display, check measurement facility, with suitable interface.
3. **SPECIFICATION:-**

POWER: 230V \pm 10%, 50Hz-60Hz

Test Voltage: 200-2400 V AC in 1 Volt steps at line frequency.

Accuracy: \pm 1% of output.

Capacitance: 0-1600 PF

Accuracy: \pm 0.1% of reading \pm 0.1 PF

Best resolution: 0.1 PF

Dielectric Constant: 1-20 when using a typical oil test cell (C = \sim 70PF)

Accuracy: \pm 0.1%

Resolution: 0.001

Dissipation Factor (DF): 01.000

Accuracy: \pm 1% of reading \pm 0.0001

Best resolution: 0.00001

Dielectric Loss: 0-10.00 Watts

Accuracy: 1% of reading \pm (10 exp-5)

Best resolution: 0.001 milli watts (10 exp-6Watts)

Cell Constant: oil test cell with 50-70 PF are ideal for optimum performances.

Resistance-Resistivity: 100-1000 V DC in 1 Volt steps

Accuracy: \pm 1% of setting

Contd. On page 2

Resistance Range & Resolution: 10 exp. 6 ohm to 10 exp13 ohm.
(1 Mega ohm to 10 Tera ohms)

Resolution: 3 digits

Resistance range: 1 Mega ohm -10 Tera ohm
2% from 1Mega ohm -10 Giga ohm (10exp6 – 10exp10 ohm)
5% from 10 Giga ohm (10exp10 – 10exp12 ohm)
10% above 1 Tera ohm

Resistivity Range & Resolution Range: 1000 Mega ohm cm- 10 Peta ohm cm
10exp9 – 10exp18 ohm cm

Accuracy: 2% (1G ohm cm- 10 T ohm cm)

4.0 REQUIRED ACCESSORIES:

(a) **OIL TEST CELL:** Three terminal oil test cell with
Electrode of the cell should be designed with a spherical bottom. -- (2 set)

Specifications for oil test cell are as follows;

1. 3- Terminal configuration
2. Material of test cell should be stainless steel 316 with Teflon spacers.
3. Cell capacitance: 50-70 PF
Cell electrode spacing: 2mm
Volume: 45 ml.

b) **OIL TEST CELL HEATER:** This set should use a high frequency induction heater which can raise temperature to 90 in 15 minutes with sensing probe.

----- (1 No.)

Specifications are as below:

Power Supply: 230 V AC±10%, 50-60 Hz.
Temperature Range: 20-110 degree C.
Accuracy of Temperature Controller: ± 2 degree C.

c) **C-DF and resistivity calibrator.** ---- (1 No.)

C ontd. On page 3

d) Transport case for cell and heater. ---- (1 No.)

e) Windows interface software for above test set. ----- (1 set)

5) GENERAL REQUIREMENT:

- a) The equipment should be confirmed to relevant IS/BS.
- b) The equipment shall be guaranteed in respect of material construction and operation against any manufacturing and design defect for a period of 24 months after supply.
- c) Offer shall be sent with complete literature and necessary details.
- d) The offer should be in duplicate with complete technical details.
- e) The operating and maintenance manual with detailed circuit diagram should be sent along with the equipments.
- f) Notwithstanding the details in this specification if any thing else is required for its functioning the same should brought in the notice and included in the offer.

6. QUALIFYING CONDITION

- a) Only those venders who are in the line of tan delta & resistivity set meter manufacturing or authorized agents of tan delta & resistivity set meter manufacturer shall quote. The following information's are to be submitted with the offer. This is required from venders for qualifications of their offers.
- b) Name of the tan delta & resistivity set meter manufacturer and company profile.

7. BHEL reserves the right to verify information submitted by vender. In case the information is found to be false/incorrect, the offer shall be rejected.

8. Operator training and demonstration at our works should be given by supplier representatives.

- a) Calibration certificate for tan delta and resistivity test set and oil test cell are required along with supply with national/international traceability.
- b) Calibration certificates for C-DF resistivity calibrator are required along with national/international traceability.

Prepared By


(PREM RAM)
Dy. Manager (CQX)

Checked By


(N.K.SINGHAI)
Manager (CQX)

Approved By


(D.C.GUPTA)
Sr. Manager(CQX)