

# **Technical Specification of Moisture Titrator Equipment used for Testing of Transformer oil**

**1. Scope:** Supply, Installation, commissioning of Moisture Titrator used for testing of Transformer oil as per IEC/IS 13567

The bidder shall provide:

- a) Operation and maintenance manual including drawings in English language.
- b) Software in a CD in English language.
- c) Training to KPTCL personnel on all aspects of operation, maintenance and calibration.
- d) Continued technical support during guarantee period(2 years) and also during extended warranty period(3 years).
- e) The bidder must have trained Engineers dedicated for trouble shooting and Technical support, permanently posted in India preferably in Bangalore.

## **2. Applicable Standards:**

Unless otherwise specified separately in this specification, the equipment shall comply with the requirements of IEC and any other standards relevant IEC, BS, ASTM, etc (ASTM D1533, BS EN 60814:1998, IEC 60814:1997). Over and above to this, all special requirements specified in the specification shall be complied.

## **3. Operating Conditions:**

- a) Voltage (Mains) : 90 to 270V AC (–10% to +10%)
- b) Frequency (Mains) : 50Hz  $\pm$  5%
- c) Environment : Laboratory use, Indoor
- d) Humidity : less than 85%
- e) Operating Temp : 5-40°C.

## **4. Essential Features:**

- a) Power Supply : 90 – 364 VAC, 47-63Hz 12 V  
DC car adapter/internal battery
- b) Electrolysis control : “ACE” control system
- c) End point detection : AC polirization
- d) Measuring Range : 1microgram to 10 milligram
- e) Moisture Range : 1 ppm – 100%
- f) Max. Sensitivity : 0.1 $\mu$ g
- g) Max. Titration speed : 2 mg per minute
- h) Max. Current : 400mA
- i) Drift compensation : Automatically controlled
- j) Precision : Precision 10-100 $\mu$ g  $\pm$  3 $\mu$ g,  
100 $\mu$ g – 1mg  $\pm$  5 $\mu$ g, above  
1mg  $\pm$ 0.5%

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### **Testing of Transformer oil**

k) Stirrer speed	Microprocessor controlled
l) Calendar/ Clock	Analysis time and date printout
m) Keypad/ User controls	Non tactile membrane
n) Display	40 character alphanumeric backlit display
o) Battery life	8 hours running time
p) Calculation modes	Weight/ weight volume/density Weight/dilution ratio Preset values Volume/volume Volume/density User programmable
q) Display format	µg, mg/kg, ppm, %mg/kg
r) Print format	µg + mg/kg, ppm, %
s) Weight	Should be less than 3.5kg
t) Statistics	Upto 99runs Preset upto 99runs User programmable
u) Start delay time	0 – 30mins selectable Preset
v) Min. Titration time	0 – 30mins selectable
w) Software	Free data capture and retrieval

#### **5. Other Accessories:**

- a) Electronic digital Balance with automatic weight input to the instrument range: 0-200g
  - a. Resolution : 0.0001g.
- b) Suitable Branded desktop having latest operating system suitable to run the instrument software. The detailed technical configuration of the desktop shall be indicated clearly in the quotation

#### **6. GUARANTEE PERIOD**

The whole equipment along with accessories shall be guaranteed for a period of minimum **36** months from date of successful demonstration **at site/Laboratory**.

#### **7. Installation and Training**

The bidder shall install the equipment at the location specified by the KPTCL and provide training to at least 2 personnel about the operation, maintenance and calibration of the equipment.

Two sets of Instruction Manual with circuit diagrams shall be provided.

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### **8. Test Certificates:**

The equipment shall be supplied along with the valid calibration certificate and test certificate.

### **9. Mandatory Spares and Consumables:**

Recommended spares and consumables to be supplied along with the equipment.

Electrode Sets : 2 Nos.

Reagent: 2 bottles

Septa: 100 Nos.

Vacuum grease: Three Packs

Titration Vessel Assembly: Consisting of Vessel, Sensing Electrode, Generator Electrode & Cathode etc.

Sample Injection Syringes: 25 Nos.