

MATERIAL SPECIFICATIONS CELL

TECHNICAL SPECIFICATION

OF

INSULATING OIL TESTING SET (OIL BDV TESTER)

FOR

MSEDCL NABL LAB

INDEX

Contents

1.0	SCOPE	3
2.0	CLIMATIC CONDITIONS	3
3.0	GENERAL FEATURES	3
4.0	APPLICABLE STANDARDS	3
5.0	CALIBRATION CERTIFICATE	4
6.0	PRE DESPATCH INSPECTION	4
7.0	NAME PLATE & MARKING	4
8.0	GUARANTEE.....	4
9.0	PACKING	5
10.0	TRAINING OF ENGINEERS:	5

1.0 SCOPE

The equipment should be microprocessor based fully automatic with preprogrammed international standards to measure oil breakdown voltage on insulating oils used in electrical equipments like Transformer, CT, Circuit Breaker, Capacitors & other electrical equipments. The test voltage should be electronically controlled up to 80 KV.

2.0 CLIMATIC CONDITIONS

The High Voltage Test Kit should be suitable for satisfactory operation under the following environmental conditions.

- Operating Temperature: 0°C to 55°C.
- Storage Temperature: -10°C to 55°C
- Relative Humidity: < 90% RH, Non Condensing

3.0 APPLICABLE STANDARDS

- a) EN 61010-1:2001, 61010-031 CAT III 600V for Safety requirement for electrical equipment for measurement, control & laboratory use
- b) EN 61326-1:2006 for EMC& EMI requirement for electrical equipment for measurement, control & laboratory use.
- c) IEC 60529 for Ingress Protection (IP 54 Required).
- d) CISPR 16-1 and 16-2 for Radiated emission for enclosure
- e) IEC 61000-4-2 for Electrostatic Discharge (ESD)
- f) IEC 61000-4-3 RF Electromagnetic Field
- g) IEC 60068-2-2/IS 9000 Part 3/Sec3 for Dry Heat Test
- h) IEC 60068-2-78/IS 9000 Part 4 for for Steady State Damp Test
- i) IEC 60068-2-14/IS 9000 Part 14/Sec 1 for Change of temperature
- j) IEC 60068-2-6/IS 9000 Part 8 for Vibration test
- k) IEC 60068-2-29/IS 9000 Part 7/Sec 2 for Bump Test
- l) IEC 60068-2-27/IS 9000 Part 7/Sec 1 for Mechanical Shock test

4.0 GENERAL REQUIREMENTS

- 4.01 The equipment should be microprocessor controlled fully automatic.
- 4.02 The equipment offered shall be suitable for determination of electric strength (breakdown voltage) of insulating oil conforming to IS - 335 up to 80 kV when measured in accordance with IS: 6792.
- 4.03 The test cell shall be as per IS: 6792 suitable for BDV up to 80 kV without external flash over.
- 4.04 The unit shall be of composite type having control unit and high voltage transformer in a common cabinet with necessary partition. HV chamber interlocking and zero start interlocking shall be provided.
- 4.05 The unit shall have motorized drive to increase voltage linearly as per the rate

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specified as per various testing standards namely IEC156. Provision should also be available for user settable tests. The unit shall be automatic and complete with test cell, stirrer and "GO" and "NO GO" gauge for adjusting the gap.

- 4.06 Test voltage: 0-80KV with 0.1KV resolution, accuracy: $\pm 1\% \pm 2$ digits.
- 4.07 The equipment shall be suitable for operation at $240 \pm 10\%$, volts 50 Hz., Single phase A.C. supply.
- 4.08 The test set should give all the test results with standard deviation and a pass/fail message wherever necessary on screen and a built in printer.
- 4.09 Instrument shall be light weight portable type with proper casing.
- 4.10 Trip Time: < 1 ms
- 4.11 Duty Cycle: Continuous for Highest Rated Voltage
- 4.12 Internal Memory: 100 Test Results
- 4.13 PC Interface: USB
- 4.14 Software: Dedicated software for data transfer & Report Generation
- 4.15 Printer: Inbuilt Thermal Printer
- 4.16 Display: LCD screen
- 4.17 After sales support: The after – sales service support / warranty services has to be provided.
- 4.18 Technical evaluation: Technical evaluation of offer of the equipment shall be carried out
- 4.19 Documentation: Sufficient no. of Operating/Service Manuals shall be provided along with supplied material

5.0 PROTECTION

The kit should have thermal & Overload protection, improper grounding which can prevent damages to internal circuit of the kit. Over Current and Over Voltage protection.

6.0 CALIBRATION CERTIFICATE

The calibration of equipment shall be carried out at approved laboratory by National Board of Accrediation of Laboratories (NABL).

The manufacturers calibration certificates for all other equipment under supply with report from NABL approved laboratory shall be submitted for approval of C.E. (Testing & QC) before commencement of supply. Validity of calibration certificate shall be one year.

The equipment shall be type tested for IP 54 degree of protection as per IS: 12063/ IEC 60529 against ingress of dust, moisture & vermin. The type test certificate shall be submitted along with the offer

7.0 DOCUMENTS:

Following documents/certificates shall be furnished by the bidder along with offer

- Guaranteed Technical Particulars (GTP).

- The calibration certificate from NABL Government Lab should be provided by the supplier with the equipment.

8.0 NAME PLATE & MARKING

Equipment shall have name plate clearly visible, effectively secured against removal and indelibly and distinctly marked with all essential particulars as per relevant standards. Following details shall be marked on the Name Plate

Manufacturer's name & address:

Serial no.

Purchase Order No.

Month and Year of manufacture

Name of purchaser: MSEDCL

Guarantee: Five Years

ISI mark if applicable

9.0 GUARANTEE

The instrument shall be guaranteed for the period of **Five** years from the date of Dispatch.

10.0 PACKING AND FORWARDING:

The equipment along with accessories shall be properly packed to withstand the handling during transportation and outdoor storage during transit. The easily damageable materials shall be carefully packed. Each consignment shall be accompanied by a detailed packing list:

- i) Name of consignee.
- ii) Details of consignment
- iii) Destination
- iv) Total Weight of consignment.
- v) Sign showing upper / lower side of the crate.
- vi) Sign showing fragility of the material.
- vii) Handling and unpacking instructions

11.0 TRAINING OF ENGINEERS:

The bidder shall train MSEDCL's engineers free of charge, at your works for familiarization of design, application, operation and maintenance of the equipment. However, the lodging, boarding, to & fro transportation expenses of MSEDCL's engineers shall be borne by the MSEDCL.

TECHNICAL SPECIFICATION OF INSULATING OIL TESTING SET (OIL BDV TESTER)

GUARANTEED TECHNICAL PARAMETERS FOR 0- 80KV AUTOMATIC OIL TESTING KIT FOR TESTING OF TRANSFORMER OIL (B.D.V. TEST SET)

Sr No.	Technical Parameters	Offered
1	Manufacturer's name & country of manufacturer.	
2	Type/Model, details of equipment.	
3.	Applicable standards for the instrument.	
4.	The equipment offered shall be suitable for determination of electric strength (breakdown voltage) of insulating oil conforming to IS-335 upto 80kV when measured in accordance with IS: 6792/IEC 156. (Yes/No)	
5	Power Supply: 240 VAC±10%, 50 Hz (single phase) (Yes/No)	
6.	Type; Fully Automatic microprocessor controlled, (Yes/No)	
7.	Output Range: 0-80KV (Yes/No)	
8.	Accuracy: ± 1% ± 2 digits (Yes/No)	
9.	Resolution: 0.1KV (Yes/No)	
10.	Output current: 10mA. (Yes/No)	
11.	Transformer: 40-0-40KV with center earth epoxy molded air cooled. (Yes/No)	
12.	The kit should have AUTO as well as MANUAL operation facility. (Yes/No)	
14.	The Kit should be suitable to build 80KV Voltage between the test terminals in air without inserting oil cell. (Yes/No)	
15.	Open Ground protection shall be provided.(Yes/No)	
16.	Safety Features zero start, double ground, cover interlock shall be provided on HV test chamber.(Yes/No)	
17.	Type tests reports and Calibration certificate shall be provided along with the kit from NABL approved Laboratory. (Yes/No)	
18.	The test cell shall be as per IS: 6792 suitable for BDV up to 80KV without external flash over. (Yes/No)	
19.	HV chamber interlocking and zero start interlocking shall be provided. (Yes/No)	
20.	The unit shall have motorized drive to increase voltage linearly as per the rate specified as per various testing standards. Provision should also be available for user settable tests. (Yes/No)	
21.	The test set should give all the test results on screen and a built in printer. (Yes/No)	
22.	The test set should be provided with standard USB port to download DATA to PC. Windows based DATA Analysis software should be provided along with the set. (Yes/No)	