

Detailed Specifications for Mains Operated 5KV DIGITAL INSULATION TESTER

1.0 Scope:

This specification covers the design, manufacture, testing at manufacturer's works and safe delivery by road at site, properly packed of **Mains Operated 5KV DIGITAL INSULATION TESTER** as per detailed specifications.

2.1 Bidder Qualification criteria :

2.1.1 The bidder shall be an Original Equipment Manufacturer (OEM) OR their authorised distributors of DIGITAL INSULATION TESTERS.

2.1.2 The manufacturer should have at least minimum 5 years experience in the manufacture and supply of Digital Insulation Tester and about 100 Nos. of Digital Insulation Testers should have been manufactured and supplied by them, which are in service and offering trouble free performance. The bidder should have service setup and the declaration to this effect should be enclosed both from OEM and bidder along with proof in terms of work order.

2.1.3 List of Digital Insulation Tester kits supplied to Government/PSUs/Private Firms in India. Performance Certificate from customers shall be submitted for evaluation purpose along with the offer.

2.1.4 Manufacturer shall have completed all the type tests as per IEC standards at CPRI / ERDA / NABL accredited lab.

The Insulation Testers should have high immunity to electrical and electromagnetic interference.

2.2 Acceptance Criteria :

The Digital Insulation Testers will be accepted only if test results of Pre-despatch inspection shall be within limiting values as per tender specification.

3.0 Project Details:

The Kalpakkam site is located 80 Kms from Chennai. The site is accessible by Road from Chennai via Chengalpattu, Thirukkazhukundram and also via Mamallapuram. The manufacturer may note the severe climatic condition existing in the region with co-incident humidity, salt laden atmosphere and high temperature conducive to rust and fungus growth.

- a. Ambient Air Temperature : 45 Deg. C.
- b. Installation location : Indoor/Out door

4.0 Quantity Required :

No.	Description	Qty	Remarks
1	MAINS OPERATED 5kv DIGITAL INSULATION TESTER	4 Nos.	If the Insulation tester is having a provision with battery operation in addition to the mains operation then the instrument will also be

5.0 Delivery :

The Digital Insulation Tester shall be directly delivered to the Cental stores, IGCAR, Kalpakkam.

6.0 Applicable codes, standards and specifications:

International Regulatory Standards: IEC61010-1, Cat IV 600V Safety standards; IEC61326-1
EMC Regulations.

7.0 Time schedule

Total time allowed for the Supply of Insulation tester shall be **three months** from purchase order.

8.0 Quality Control, Pre-Despatch Inspection and Testing of material received at Site :

- 8.1 Insulation Testers to be supplied by the manufacturer shall be offered for Pre-despatch inspection to the Purchaser or his authorised representative. Insulation testers found unsatisfactory as to workmanship or materials shall be removed by the manufacturer and replaced at no extra cost with Items/Components which are satisfactory.
- 8.2 Insulation Testers to be supplied by the manufacturer shall be despatched only after obtaining the written Shipping Release from the Purchaser. Waiving off pre-despatch inspection or acceptance of the items by the quality surveyor shall not relieve the Manufacturer from the responsibility of furnishing the items and workmanship in accordance with this specification.

9.0 Pre-Despatch Inspection

The Purchaser or his authorised representative shall have at all reasonable times access to the Supplier's or sub-Supplier's works for the purpose of witnessing the tests and to ascertain that the items being manufactured conforms to the requirements of this specification. The Engineer-in-Charge shall be given at least 15 days advance notice prior to the commencement of testing so that the representative of the Engineer-in-Charge can plan to visit and witness the tests. All the tests indicated in this specification shall be carried out in the presence of the representative of the Engineer-in-Charge by the manufacturer and shall provide all the facilities & equipment for testing. Three copies of the Test Certificates in spiral bound volumes shall be furnished to the Engineer-in-Charge for approval prior to despatch of items from the works.

10.0 Packing, Delivery, Unloading and Storing

Manufacturer shall prepare all the Insulation Testers covered by this specification for transport in such a manner as to protect it from damage in transit & ingress of water/moisture and shall be responsible for and make good at his own expense any and all damage due to improper packing. The contents shall be identified on the package.

11.0 Digital Insulation Tester Requirements :

11.1 Digital Insulation Testers in general shall comply with the following requirements :

- i. The Insulation tester offered shall be of reputed make and the manufacturer shall have facilities for testing of the Digital insulation tester. The manufacturer shall provide adequate after-sales service.

- ii. The insulation tester shall be 5KV Digital High Resistance Meter with 1TΩ insulation resistance range with 1.4mA short circuit current.
- iii. **The Insulation tester shall have five test voltages as -250V,500V,1000V,2500V and 5000V.**
- iv. The Insulation tester shall have Insulation, Polarisation Index (PI) and variable time test modes.
- v. The tester shall have user settable insulation test timer.
- vi. The tester shall have Selectable DC or AC (incl. frequency) voltmeter functions upto 600V.
- vii. The tester shall have Guard terminals to shunt the leakage currents.
- viii. The tester having good quality standard display.

11.2 Technical Specifications:

Sl. No.	Parameters	Specifications
1)	Insulation Range	100 kΩ to 1 TΩ
2)	Short circuit current	1.4 mA ± 0.5 mA
3)	Maximum load capacitance	5 μF
4)	Frequency measurement	45 Hz to 65 Hz
5)	Voltage range	25V to 600 V a.c. or d.c.with accuracy of 3%
6)	Power supply	220- 240 V, 50 Hz mains power
7)	Guard	2% error guarding 5 MΩ leakage on 100 MΩ load. This should be proved
8)	Operating temperature range	Upto +55 °C
9)	Insulation protection	IP40
10)	Safety Protection	Insulation Cat III 600 V
12)	Voltage accuracy (at terminals)	Should be less than or equal to 5% Accuracy for ≥1000 V
13)	Insulation accuracy	Up to 1 GΩ: All ranges ±5% ±2 digits Over 1 GΩ: 5000 V ±5% ±0.04% per GΩ 2500 V ±5% ±0.08% per GΩ 1000 V ±5% ±0.2% per GΩ 500 V ±5% ±0.4% per GΩ 250 V ±5% ±0.8% per GΩ

12.3 Accessories to be supplied :

12.3.1. Test lead set - 1 set

3 nos., 3 mtr test leads (coloured preferably Blue, Black, Red) should be supplied with the following specifications should be supplied:

Lead length: 3 m
Jaw opening: 34 mm diameter max
Number in set: 3
Basic insulation rating: 6 kV d.c.
CAT rating: 1000 V a.c. CAT IV

These clips should be designed for clamping on larger diameter test pieces but where space is at a maximum. The insulation should be designed just to protect the user from the output of insulation resistance testers.

12.3.2. Power cord - 1 No

Suitable to AC 220- 240 V, 50 Hz mains.

12.3.3. Carry Case.

The case to carry insulation tester safely from different locations and it should be in good quality.

12.3.4. User Guide.

The suppliers are requested to attach User Guide/leaflets which provide the complete technical details/operational procedure of the instrument.

12.0 INSPECTION AND TESTING:

13.1 General:

- i. The tests at works shall include electrical, mechanical tests in accordance with the appropriate clauses of Statutory Regulation, relevant codes and standards and in addition any test called for by the PURCHASER or his representative to ensure that the equipment being supplied fulfils the requirement of the specification.
- ii. The manufacturer shall carry out all the shop tests and inspections specified in this specification in addition to those normally carried out by him.

13.2 Pre-Dispatch Inspection:

- i. The Tenderer shall be given at least 15 days advance notice prior to the commencement of testing, so that Purchaser's representative can plan to witness the tests.
- ii. All the tests indicated in the test clause of this specification shall be carried out in the presence of Purchaser's representative by the manufacturer and shall provide all the facilities and equipment for testing.
- iii. Six copies of the Test Certificates shall be furnished to the Purchaser for approval prior to despatch of cables from factory.
- iv. Visual check to conform the details given in this specification is to be done. In addition to the above, the general workmanship of the relays shall be checked.

13.0 Guarantee :

Supplied relays shall be guaranteed against any type of defects and for trouble free operation conforming to this specification for a period of at least **5** years from the date of supply.

14.0 Literature & Software :

- a. Detailed literature indicating construction details, complete technical guide, manual, site testing procedure and trouble shooting guide shall accompany the offer.
- b. **Supplier shall supply the software for programming & fault analysis of the testers at free of cost.**
- c. The facilities available in works for manufacturing and testing shall be indicated in the offer.
- d. Detailed internal Quality Assurance Program in the factory shall also be enclosed with the offer.
- e. The Supplier shall give his recommendations for handling, storage, testing and operational procedures in the form of Instruction manual.
- f. Three copies of the Original complete Insulation tester manual shall be supplied by the manufacturer along with the Test Certificate.
