

Technical specification for Ferroelectric Polarization-Electric field loop tracer

Sl. No.	Description
1	<p><u>P-E loop tracer basic system</u></p> <p>a) Frequency Range: 0.03 Hz – 5 kHz at 100 V (<u>5 kHz @ +/-100V</u>)</p> <p>b) Drive Voltage Range (with built-in amplifiers): ±100 V(No External Amplifier allowed up to 100V)</p> <p>c) Required Number of Data Points for Highest Accuracy: 32000 data points</p> <p>d) Voltage Range (with High Voltage Interface (HVI) and external amplifier): +/- 10 kV</p> <p>e) DC Poling facility up to 10 kV.</p> <p>f) AC Poling/ AC waveform stressing up to 10 kV</p> <p>g) Number of ADC Bits: 18</p> <p>h) Minimum Charge Resolution: 10 fC or lower</p> <p>i) System should positively have an internal Electrometer to measure charge at all test frequencies. Maximum charge resolution: 250µC or higher (built-in) and 25 mC or higher (with High voltage interface)</p> <p>j) Pulse Width range : 50µs to 1s</p> <p>k) Minimum Leakage Current: 1pA or lower.</p> <p>l) User defined waveforms should have: Triangular, Inverse cosine, Double bipolar sine, Sine, Mono, Double, Standard Bipolar, Pulse and Customized.</p> <p>m) Able to perform : Hysteresis, Leakage, Charge, Retain, Resist, Fatigue, IV, CV, PUND, Imprint, Leakage Current, etc (with basic system with no hardware configuration change).</p> <p>n) The software operating the tester must be programmable and capable of executing all measurement types in an arbitrary order <i>without configuration change</i> (ie with no connection changes made to the sample).</p> <p>o) Captured data must be automatically stored and easily transferred to other testers using network protocols.</p> <p>p) The tester software must be adaptable to future changes in the host computer operating system.</p> <p>q) The tester/setup must be capable of capturing external sensor data synchronously with polarization measurements.</p> <p>r) Computer and Ferroelectric Test System should be separate and connected through USB Cable.</p> <p>s) Any kind of sample should be connected to the system with appropriate wirings and measured. It can be connected to any available cryogenic chamber or any available furnace.</p>
2	<p>HVI-High voltage interface (interfacing with basic system): For safety of the user from High Voltage the following specifications should be met positively:</p>

	a) Maximum International Rating – 10 kV (AC) Voltage
	b) High speed Protection current Rating- 10 Amps or better.
	c) High speed Protection Trigger Voltage- 2.0 V or better
	d) Low Speed Protection Delay Time- 14 ms or better
	e) Isolation Relay Switchable Voltage- 12 kV or better.
3	High Voltage Amplifier (interfaced with basic system): Output voltage and current range:
	a. 0±10 kV DC or peak to peak
	b. 0±2mA DC or peak to peak
	c. with 0.1% accuracy of full scale
	d. slew rate and settling time : >30 V/μs and < 700 μs for 10 to HV steps
	e. Overload and over current protection
4	Other Requirements :
	a. Installation and Commissioning: After receipt of the item to IIT Madras, the complete system shall be integrated installed and commissioned at the designated place by vendor's representative. The vendor's representative should also provide complete hands-on training to the purchaser after installation and commissioning.
	b. Warranty: The Warranty on the complete system should be for 3 years.
	c. Company should have minimum 5 nos. of supply reference of the similar system installed in India in last 3 year. The detail Indian User reference list should be provided with contact details etc. The Company should provide 5 satisfactory certificates from the users in India.
	d. The company must have a Local Trained Service engineer to provide after-sales support.