



SIVA INSTRUMENTS

Automatic C & Tan δ Bridge

Model : MLS-11DA & HLS12A



Automatic C & Tan δ Test Set

This set includes Bridge Model:MLS11DA & HV Supply model :HLS12A , Laptop based & necessary cables & very flexible, user friendly Visual C++ windows based Software. The use of Laptop & Windows based software makes the system more flexible easy to handle & accurate Data can be stored, Retrieved and analyzed at site.

Temp correction for the tan delta of object is automatically done as per IEC.

Colored Screen analysis & graphical plotting of Tan δ Vs Voltage, Tan δ Vs Time

Complied IEC 61010, ASTM D999, EM/EMC-EN-61326, IEC61000-4-3, IEC 61000-4-4, IEC61000-4-5, IEC61000-4-6, IEC61000-4-8, IEC61000-4-11.

Suitable for measuring C & Tan δ for generators, transformers, bushings, circuit breakers, cables, motors at various test voltages upto 12KV.

Features

- 1) **Automatic Measurement of Capacitance & Tan δ** as per the test plan by auto-balancing .No need of manual balancing. **Automatic voltage setting** through software.
- 2) Indication of Leakage current.
- 3) Data logging with graph of voltage vs Tan δ to know the tan δ gradient & data analysis for comparison with old results / manufacturer's data.
- 4) As per IEC Temperature correction for Tan δ @ 20Deg.
- 5)Executes all the test modes/voltage automatically once fed .
- 6)ON site printout.
- 7)**Automatic interference suppression** suitable for extraneous conditions in 400KV switchyard under heavy induction.
- 8) More than **10000 Results Data-storage**.
- 9) Built in Temperature and Humidity

Measurements :

The system will provide following Information.

PARAMETER	RANGE	RESOLUTION	ACCURACY
CAPACITANCE	10pF to 80nF @ 12kV	0.01pF	±0.5% of the reading ±1 pF in UST Mode
TAN DELTA	0 % – 100%	0.01%(0.0001)	±0.5% of the reading ± 0.0002
VOLTAGE Measurement	100V –12 KV	1.0 V	±1% of reading ±1digit
CURRENT Measurement	0 – 450 mA 200mA Continuous 300mA for 2Minutes 450mA for 1 minute	1mA	±1 %, ±1digit
POWER FACTOR	0– 1	0.01%(0.0001)	±0.5% of the reading ±0.0002
POWER INPUT	230 Volts±10%,50Hz . Single phase.		
POWER OUTPUT	0-12KV , 200mA Continuous, 300mA for 2Min, 450mA for 1Min		
TEST FREQ.	Independent of Line frequency from 45Hz to 70Hz settable		
Temp. Correction	IEC Temperature Correction for Tan Delta Values.		
DATA STORAGE	More than 10000 results storage memory.		
INDICATION	Large Coloured graphical LCD / LED on Laptop.		
INTERFACE	USB PORT,PRINTER CONNECTIVITY		
KEY BOARD	Multikey, alphanumeric Keypad on Laptop.		
SOFTWARE	Windows based analysis software for Tan δ Vs Time, Tan δ Vs Volts.		
OTHER PARAMETERS	Apparent Power, True Power, Reactive Power.		
IN BUILT STD CAPACITOR SF6	Capacitance- 100pF ± 0.5%, Tan δ < 1 x10 ⁻⁴		
RESONATING INDUCTOR	Optional useful to increase the current rating suitable to measure 1.1 μ F @ 10KV by expanding current capacity upto 4Amp.		
PROTECTIONS	Zero Start, Interlocks, Open Ground, Over Current, Over Voltage, Over Temperature, Foot switch for HV ON.		
CABLES	HV Cable – 20 M length,12KV ,Double screened with hooks & clamps. One number spare additional HV cable. LV Cable – 20 M length, screened cable, with hooks & clamps.-2Nos. Grounding Cable – 20M & 10M length with clips –2Nos. Footswitch – Footswitch with 5 Meter length cable. Interconnecting Cables, Mains chord, PC& Printer Cable.		
CALIBRATOR BOX	With one Capacitance & 3 Tan Delta values.Test Voltage 2KV.		
CARRING CASES	Suitable foam padded carrying cases for Bridge & Power Supply. Carrying Bag for Cables , Carrying Bag for Laptop.		
TEMP & HUMIDITY	10°C – 50°C with HUMIDITY : 30% Rh -90% Rh.		
SAFETY SPECS	Complying IEC 61010.		
EMI/EMC SPECS	Complying EN 61326.		
VIBRATION TEST	Complying ASTM D999.		

Calibrator Box

Calibrator Box with one C value & three Tan δ values is supplied with the kit.



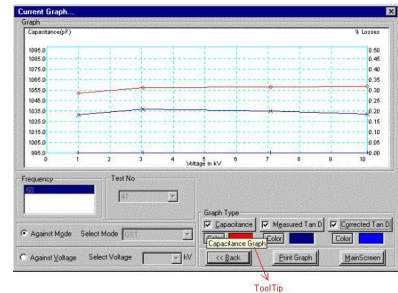
Laptop PC

Suitable Laptop PC with 1.4GHz or higher, 256MBDDR RAM, 160GBHDD, USB port, CD/DVD combo drive, 14" TFT Screen, Suitable Printer, Carrying Bag is supplied with the Kit. Available suitable latest specifications will be supplied with the kit.



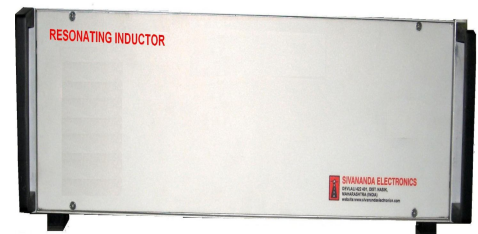
Windows Based Software

This Windows Based Data Management & analysis software supplied with the kit for Voltage Vs Tan delta , Time Vs Tan delta trend analysis.



Resonating Inductor

The resonating inductor useful to increase the current rating suitable to measure 1.1 μ F at 10KV.



TECHNICAL SPECIFICATIONS FOR HIGH VOLTAGE POWER SUPPLY

Test Voltage 0 to 12 kV

Rated Current 100mA Continuous, 300mA for 2minutes & 450mA for 1minute.

Output Frequency 45 to 70 Hz (independent of Lines Frequency) .

Automatic balancing through windows based software .

Automatic & software controlled voltage setting to avoid abrupt voltage rise.

Automatic selection of seven different modes of operation for measurement of 3 terminal object from windows based software .

1) UST - Ungrounded Specimen test - 3 combinations

This mode is used when the object under test is not grounded. This test provides most accurate results.

2) GST - Grounded Specimen test

This mode is used when the object under test is permanently grounded. This test is used more often in outdoor installations, power systems etc.

3) GSTg - Grounded specimen test with guard. 3 combinations.

This mode is used for measuring them stray capacitances and separating them from basic measurement in GST mode.

Standard capacitor : 100pF, 12KV built-in.

Input Frequency : From 50 Hz (lines frequency) , $\pm 5\%$.

Power Required : 230 VAC $\pm 10\%$, 1 phase AC , 50Hz.

Safety Features :

- Zero start control
- Open ground indicating lamp with double grounded connection
- External interlock.
- HT cut off on overload
- HT ON & Supply ON indication.
- All operating controls at earth potential
- Necessary terminals & Sockets for connection to Bridge

Safety Specifications : IEC 61010 complied.

Vibration Suitability : ASTM D 999 complied.

EMI/EMC Specifications: Conducted & Radiated Emission **EN 61326** complied,
Radiated Susceptibility**IEC61000-4-3** complied,
Electrical Fast Transients **IEC61000-4-4** complied,
Surge Test **IEC61000-4-5** complied,
Conducted Susceptibility **IEC61000-4-6** complied,
Power Freq. Magnetic Field Immunity**IEC61000-4-8** complied,
Voltage dips / Interruption**IEC61000-4-11** complied.

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