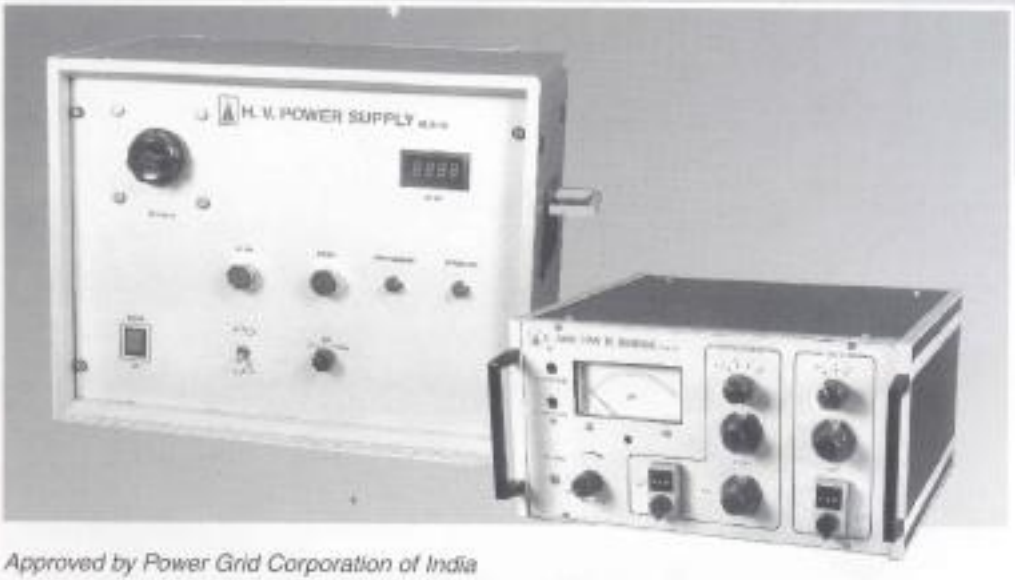
SIVA INSTRUMENTS

An ISO 9001 Company

CAPACITANCE & TAN δ MEASUREMENT SYSTEM



Approved by Power Grid Corporation of India

Applications :

✦ Power Systems ✦ Testing of H.T. Transformers, Motors, Generators, Bushings ✦ Power Cables ✦ H.T. & L.T. Power Capacitors ✦ High Voltage Laboratories.

INTRODUCTION

Electrical properties of insulating systems change due to age and continuous electrical stress. By measuring electrical properties such as Capacitance and Tan δ regularly it is possible to ensure the operational reliability of H.V. insulating systems and to avoid costly breakdowns. This is particularly important for high voltage bushings, power transformers, generators, power capacitors, H.T. cables etc.

SIVA Capacitance and Tan δ test set comprises of C and Tan δ Bridge model MLS-11D, high voltage power supply model HLS-12 with built in standard capacitor, and set of cables.

The compact design of the bridge uses the principle of three winding differential transformer on a high permeability μ metal core. The bridge is contained in a sturdy metallic housing with μ metal lining which shields it from external electro-magnetic & electrostatic influences, built in battery powered null indicator makes the Bridge suitable for operation in workshop, factories, high voltage sub-stations, switch yards etc.

The high voltage power supply model HLS-12 is provided with built in SF_6 gas filled standard capacitor. It is suitable for both grounded as well as ungrounded objects.

Capacitance & Tan δ are measured directly, no further calculations are required.

C & TAN δ BRIDGE

MODEL MLS-11D

Technical Specifications :

Capacitance :

Range : 1 PF to 1.1μF in four ranges with Cs=100pF

Resolution : Cx multiplying Factor	Resolution
0.01	0.1 PF
0.1	1 PF
1	10 PF
10	100 PF

Accuracy : 0.1% of reading
The Capacitance range can be extended further using external current transformer.

Tan δ

Range : 0.0001 to 11.1 in three ranges.

Tan Factor	Tan δ Range	Resolution
0.1	1×10^{-4} to 0.11	2×10^{-4}
1	1×10^{-3} to 1.11	2×10^{-3}
10	1×10^{-2} to 11.1	2×10^{-2}

Accuracy : ± 1to 2% of reading ± 1 to 2 x 10^{-4} for MLS 11D.
± 1 to 2% of reading ± 1 to 2 x 10^{-4} for MLS 12D

Null Detector

Built in battery operated electronic Null Detector. This type of Null Detector is most suitable for balancing of the bridge. It gives high sensitivity and accuracy for most of the applications and it is very user friendly.

Phase sensitivity Null Detector can be given in place of electronic Null Detector on request.

For higher sensitivity and accuracy, oscillographic null detector model mk-1 for critical operation is also available.

Interface Suspension

The C & Tan δ Bridge has been specially shielded with μ metal sheets to avoid the effect to external interferences. This makes the measurement accurate in both indoor and out door applications particularly in switch yards.

Phase reversal switch provided in the H.V. power supply effectively cancels interference/pick up by the object under test in energised environment.

For situation where the pick up by the bridge is excessive and cannot be controlled by built-in μ metal shielding (rare cases), a separate three level interference suppression unit can also be given with separate C & Tan δ adjustments.

Protection :

The bridge is provided with built in high voltage protection devices which protect the bridge and operator against failure of test object or standard capacitor.

Power Supply : Dry Batteries, 1.5V x 8 Nos.
Size : 510 x 220 x 310 mm
Weight : 20 Kg.

Note : C and Tan δ Bridge Model MLS-12D with higher accuracy for capacitance & Tan δ is also available.