Features

- ✓ **Automatic Measurement of Capacitance & Tan** δ as per the test plan by auto-balancing
- ✓ **Automatic voltage setting** through software.
- ✓ Indication of Leakage current.
- ✓ 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.
- ✓ As per IEC, temperature correction for Tanδ at 20°C
- ✓ Executes all the test modes/voltage automatically once fed.
- ✓ On-site printout.
- ✓ More than **10000 Results Data-storage.**
- ✓ Built in Temperature and Humidity sensor.

MTAND

Automatic Capacitance and Tan Delta Measurement Kit

The kit tests Capacitance and Tan delta values of high-voltage equipment, including transformers, CVTs, motors, generators, and cables. Operating at up to 12 kV, it replaces traditional test bridges, offering reliable, repeatable results in both field and lab settings. Using the Ratio Arm Bridge principle, it ensures accurate data for assessing insulation quality and system performance.

Temperature correction for the Tan delta of object is automatically done as per IEC.

Colored Screen analysis & graphical plotting of Tan δ Vs Voltage, Tan delta Vs Time Complied IEC 61010, ASTM D999, EMI/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.

Calibrator Box

- Calibrator Box with one C value & three Tanδ 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, Caring Bag is supplied with the Kit. Available suitable latest specifications will be supplied with the kit.
- Or the equivalent or superior model whichever is available at the time of supply

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.

Note : Available in Both Options - Single Unit & Bridge Model.

Technical Details

MTAND

Measurements

PARAMETER	RANGE	RESOLUTION	ACCURACY
Capacitance	10pF to 1.1μF	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 Applied	100V – 12kV & Tapping at 2.5kV	1 V	±1% of reading ± 1digit
Current Applied	0 – 100 mA Continuous, 200mA for 10min and 300mA for 3 min @12kV, optional max 4A with resonating inductor	1mA	±1% of the reading ± 1digit
Power Factor	0 – 1	0.01% (0.0001)	±0.5% of the reading ± 0.0002%
Power Loss	0 to 2 kW, actual power, 0 to 100 kW when corrected to 10 kV equivalents. The measurement can be corrected to either 2.5 kV or 10 kV equivalent	0.1 mW maximum resolution	±0.8% reading ± 1 mW
Power Input	230 V ± 10%, 50/60 Hz ± 5%, Single phase.		
Power Output	0-12kV , 100mA Continuous, 200mA Short term & 0-2.5kV Tap Optional 1000mA		
Test Frequency	Line Frequency, Optional Generated Frequency from 45Hz to 70Hz available for testing at 12kV		
Temp. Correction	IEC Temperature Correction for Tan Delta Values.		
Data Storage	More than 10000 results storage memory.		
Control & Monitoring	Through Laptop		
Interface	USB Port, Printer Connectivity		
Software	Windows based analysis software for Tan δ Vs Time, Tan δ Vs Volts.		
Additional Measurable Parameters	Apparent Power, True Power, Reactive Power.		
In Built STD Capacitor SF6	Capacitance- 100pF ± 0.5%, Tan $\delta < 1 \times 10^{-5}$		
Resonating Inductor	Optional useful to increase the current rating suitable to measure 1.0μF@ 10kV by expanding current capcity upto 4Amp.		
Protections	Zero start, interlocks, open ground, over current, over voltage, over temperature, foot switch for HV on.		
Calibrator Box	With one Capacitance & 3 Tan Delta values; Test Voltage 2kV.		
Operating Temp.	0°C to 55°C		
Storage Temp.	-10°C to 50°C		
Relative Humidity	< 95% Rh (Non-Condensing)		
Dimensions	Single Unit MTAND: 679mm x 522mm x 1003mm (LxWxH)		
	Bridge Unit MTAND: 540mm x 465mm x 240mm (LxWxH)		
	Power Supply unit: 540mm x 465mm x 300mm (LxWxH)		
Weight	Single Unit MTAND: 95 kg		
	Bridge Model: 60 kg (Bridge Unit MTAND: 25 kg; Power Supply Unit: 35 kg)		

Technical Details

MTAND

Technical Specifications For High Voltage Power Supply

Test Voltage : 0 to 12 kV

Rated Current : 100mA Continuous, 200 mA for 10min and 300mA for 3min

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 stray capacitances and separating them from basic measurement in GST mode.

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

Measurement Category : CAT II (1000V)/CAT III (600V) Reinforced insulation

Safety Specifications : **IEC 61010** complied.

Vibration Suitability : **ASTM D999** 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 ImmunityIEC61000-4-8 complied,
Voltage dips / Interuption IEC61000-4-11 complied.

Technical Details | **MTAND**

Accessories

Standard

MAINS CORD STRAIGHT, LENGTH=3.0MTR	1 NO.
USB 2.0 A/B CABLE 1.5 MTR LONG	1 NO.
FUSE 5A 250V, QUICK BLOW, UNLEADED, GLASS, DIMENSION- 20X5MM	5 NOS
FUSE 100MA SLOW BLOW	5 NOS
CARRYING BAG FOR CABLES	1 NO.
INSTRUCTION MANUAL (SOFT COPY)	1 NO.
STANDARD CAPACITOR FOR MTAND	1 NO.
CARRYING BAG FOR STANDARD CAPACITOR BOX	1 NO.
INSTRUMENT CARRYING CASE FOR POWER SUPPLY UNIT	1 NO.
INSTRUMENT CARRYING CASE FOR BRIDGE UNIT	1 NO.
HV LEADS 20 MTR WITH CROCODILE CLIP	1 NO.
LV LEAD 20 MTR WITH CROCODILE CLIP	02 NOS.
GROUNDING LEADS 20MTR LENGTH WITH CLIPS	1 NO.
GROUNDING LEADS 10MTR LENGTH WITH CLIPS	1 NO.
TEMPERATURE & HUMIDITY SENSOR	1 NO.
FOOT SWITCH WITH 5 MTR CABLE LENGTH	1 NO.
INTERLOCK CONNECTOR FOR SINGLE UNIT	1 NO.
SHORT LINK INCLUDED WITH SINGLE UNIT	1 NO.
INTERCONNECTING CABLES (POWER SUPPLY UNIT TO BRIDGE UNIT)	1 SET
LAPTOP WITH USB PORT	1 NO.
LAPTOP BAG	1 NO.

Optional

TROLLEY FOR MTAND DUAL UNIT	1 NO.
PRINTER	1 NO.
MAINS CORD STRAIGHT, LENGTH=5.0MTR	1 NO.
RESONATING INDUCTOR	1 NO.

ORDERING INFORMATION

Product	Order Code
Bridge Model MTAND	**109623010**
Single Unit MTAND with Standard Accessories	**109699T10**