



Features

- ✓ Selectable Test Voltage from 250V, 500V, 1000V, 2500V, 5000V DC.
- ✓ Insulation Resistance Measurement up to $1T \Omega$
- ✓ PI & DAR Measurement Facility
- ✓ Short Circuit Current $\leq 2mA + 0.5mA$
- ✓ Self-replaceable battery
- ✓ Auto Power off.
- ✓ AC/DC Voltage Measurement up to 600V.
- ✓ Three Programmable Timer from 0 sec to 99 minutes
- ✓ Liquid Crystal Display with pleasant white backlit.
- ✓ Safety - IP 65, CAT IV 600V and CE conformity.
- ✓ Robust ABS body with self-carrying handle for easy portability.
- ✓ Automatic discharge for capacitive circuits.
- ✓ Guard Terminal to minimize the surface leakage
- ✓ Pass - Fail Limit

IT 51

Digital Insulation Tester



The Motwane IT 51 is a microprocessor based Digital Insulation Tester designed for testing all types of electrical apparatuses like transformers, switchgears, motors, generators, cable and substation products. IT-51 has a digital display and an analog arc display. The instrument automatically performs IR Test, PI & DAR Test by selecting the mode. IT 51 has a large LCD white backlit display, it shows leakage current in scrolling form along with IR, PI & DAR value. It has a self-replaceable battery, thus helping reducing the instrument's downtime.

Insulation Resistance Test : This is an important test for future comparative purposes, acceptance test and also for determining the suitability of the electrical apparatus for energizing or application of the high-potential (hi-pot) test. The IR test must be successfully completed for factory warranty to be valid. The IR test must be conducted immediately prior to energizing the electrical apparatus or beginning the high potential test

Polarization Index Test : This is an extension of the IR test. In this test, two IR measurements are taken, the first reading at 1 min and the second reading at 10 min. Then the ratio of the 10 min reading to 1 min reading is calculated to give the PI value. A PI of winding-to-winding and winding-to-ground should be determined. A PI value below 2 indicates insulation deterioration and the cause for further investigation.

Dielectric Absorption Ratio Test : This test recognizes the fact that "good" insulation will show a gradually increasing insulation resistance after the test voltage is applied. The test voltage is applied; insulation resistance is read at three different times (T_1 , T_2 , T_3) after the connections are made. When the insulator is subjected to an insulation resistance test and the resistance values are measured after time ' T_1 ' (default 30 seconds), again after time T_2 (Default 60 seconds) and again after time T_3 (Default 30 min). Always $T_2 > T_1$ and $T_3 > T_2$.

Applications

The Insulation Resistance Test is an essential test that help to verify the condition of electrical insulation. Insulation resistance quality of an electrical system degrades with time, environment condition i.e. temperature, humidity, moisture and dust particles. The instrument is designed for routine and diagnostic testing like IR, PI, DAR of high voltage electric apparatus such as:

- All electrical rotating machineries
- Transformers
- HV & LV Switchgears
- Cables
- Insulators etc.



Technical Details

IT 51

Terminal Voltage

Test Voltage	250V, 500V, 1000V, 2500V, 5000V
Test Voltage Accuracy	±5 % of rdg
Short Circuit Current	≤ 2mA +0.5mA
Programmable Timers	T1, T2 & T3

Insulation Resistance

Analog Display	1 KΩ to 1 TΩ
Digital Display	1 KΩ to 1 TΩ (3 Digit Display)

Insulation Accuracy

Up to 1GΩ	All Ranges ±(5 % + 2 digits)
Over 1GΩ	5000V ±(5% + 0.04% per GΩ)
	2500V ±(5% + 0.08% per GΩ)
	1000V ±(5% + 0.2% per GΩ)
	500V ±(5% + 0.4% per GΩ)
	250V ±(5% + 0.8% per GΩ)

AC/DC Voltage Measurement

Range	Up to 600V DC, Up to 600V AC RMS
Accuracy	±5% of reading ± 5 digits

Polarization index (PI)

Display Range	0 – 99.9
Accuracy	± (5 % of reading + 5 digits)
Resolution	0.01

Dielectric Absorption Ratio (DAR)

Display Range	0 – 99.9
Accuracy	± (5 % of reading + 5 digits)
Resolution	0.01

Display

Display	Custom built, white backlit LCD
----------------	---------------------------------

General

Dimensions	365 mm(L) X 285 mm(W) X 190 mm(H)
Weight	4.0 Kg (Approx) (without Accessories)

Connecting System

Three Safety Banana Sockets	+VE, -VE and Guard
Guard Resistance	300kΩ ± 10%
Discharging	Always after measurement completion with beep sound indication.

Power Supply Specifications

Mains Power Supply	Mains I/P Voltage 100-230V,50/60Hz
Battery Type	4 x Replaceable Battery Li-ion 3.7v 3200mAh, INR18650MH1
Battery Life	Approx. 5 hours of continuous testing at 5kV on 250 MΩ load
Battery Charging Time	3 hours approx. (95% Charged)
Auto Power-Off	10 minutes (approx.)

Environmental Specifications

Operating Temperature	-10°C to 55°C
Storage Temp	-20°C to 70°C
Humidity	less than 95% RH, non-condensing max at 40°C
Altitude	2000 meter

Safety and Standards

Safety in accordance with : EN61010-1 : 2001
 EMC in accordance with EN 61326-1 : 2006
 Type Test in accordance with IS 11994
 Ingress Protection IP 65, CE & CAT IV 600V
 Safety of test lead in accordance with
 EN61010-031 : 2002 +A1 : 2008

Accessories

Standard

■ Test leads 3 meter	: 1 Set
■ User Manual	: 1 No
■ Calibration Sheet	: 1 No
■ Carrying bag	: 1 No
■ Mains Protected Fuse (2A, 250V, Fast Blow)	: 2 No

Optional

■ Test leads 10 meter	: 1 Set
■ Test leads 15 meter	: 1 Set

ORDERING INFORMATION

Product	Order Code
IT 51 with Standard Accessories	109381610