

5K-PI

5KV Automatic Diagnostic Insulation Tester



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The MOTWANE's Insutester Model 5KPI is a 5KV Automatic Diagnostic Insulation Tester designed to conduct automatic diagnostic tests on high voltage equipments like Transformers, Cables, Bushings, Switchgears and Rotating Machines, suitable for energized environment. The 5K PI is a microprocessor based instrument deploying latest technology based on data sampling to give correct, repetitive and durable performance under harsh conditions. It is mains as well as battery operated weighing less than 5 kgs making it truly light weight & compact insulation resistance tester for outdoor applications. This is specially designed to suit operator's ease and test requirement. The instrument and its accessories are certified as per relevant IS/IEC standards. Information displayed on large backlit LCD includes Insulation resistance, Test voltage, Leakage current, Capacitance, PI, DD, DAR, AC/DC V, Battery status and timer. Three programmable timers are provided to conduct various tests like Polarization Index (PI), Dielectric Absorption Ratio (DAR), Dielectric Discharge (DD), Step Voltage (SV) test and Breakdown Voltage (BDV) test. At the end of any test, capacitive loads are automatically discharged ensuring Safety to operator.

Applications

The 5K PI is designed for testing the insulation of high voltage electrical equipments. The wide range of test voltage starting from 250V to 5000V, allows testing of low voltage electrical equipments also. The Diagnostic Test modes provide valuable information on the condition of insulation.

The 5K PI is suitable for testing insulation resistance of

- Power & Distribution Transformers
- Bushings
- Motors & Generators
- Current Transformers
- HT Cables
- Instrument Transformer
- Circuit Breakers and other switchgears

The 5K PI also performs Diagnostic test which are suitable for following applications:

- Routine and type test of electrical equipments at manufacturer's end
- Quality assurance testing of the manufacturing process
- Acceptance testing of electrical equipments
- Testing and Maintenance of electrical equipments at User's end
- For diagnosing insulation and isolating the faulty components at repairer's end

Features

- Programmable test voltage 250 ~ 5000V in 50V steps
- Insulation Resistance upto 10TΩ
- Three programmable timers
- Modes for conducting IR, Leakage current, Capacitance, PI, DAR, DD, SV and BDV test with direct read out of values
- Mains & Battery Operation*
*(In case of Full Battery Discharged/ Dead/ Damaged conditions; Instrument can also work on AC mains supply independently)
- CE, CAT-IV 600V, IP65
- Complies with latest IEC/IS Standards
- 1000 test result storage downloadable on PC via Windows software
- Optically Isolated RS 232 port & USB port
- AC / DC Voltage measurement
- Fully Auto Ranging
- PC Windows software
- Automatic calibration at start up

Benefits

Automatic IR (or Leakage Current) Test:

The test voltage (250~5000V) and test duration (upto 99:59 mm:ss) are selectable. The 5K PI will show the IR (or Leakage Current) value during the selected test duration. At the end of the test scrolled display of IR, leakage current and capacitance is available on the LCD.

Auto Discharge Facility:

After each test, the 5K PI automatically discharges the test voltage available on the test object. An audible buzzer warns the operator for safety against shock hazards during discharging.

Fully Auto Ranging:

The instrument is fully auto ranging and automatically adjusts to the best suited range.

Step Voltage Test (SV):

Step voltage test is recommended for large AC rotating machines. The test voltage is applied in steps for a constant duration of time. The SV test helps in assessing the level of micro cracks and holes present in the insulation.

Break Down Voltage Test (BDV):

BDV test helps us in knowing the withstand capability of the insulation. This test voltage is applied to the insulation which it has to be kept without break down.

Self Calibration Check:

The 5K PI undergoes a self calibration check at every start up. This self calibration check

ensures reliable reading with high repeatability for each measurement.

Heavy duty operation:

The 5K PI has robust ABS casing which is suitable for heavy duty operation in harsh environmental condition. Its compact design, reinforced double insulation, self carrying handle and rugged carrying bag make it suitable for field operation.

Voltage Measurement:

The 5K PI can also be used as a voltmeter to measure voltages. It can measure both AC & DC voltages upto 600V.

Battery Operation:

The 5K PI has internal rechargeable battery. With a fully charged battery one can get a back up of approx. 6hours

5K PI Technical Specification

Test Parameter Specifications

- Test Regimes (Automatic) : IR, Leakage Current, PI, DAR, DD, SV & BDV
- Test Voltage : 250V to 5KV in 50V steps
- Test Voltage Accuracy : $\pm 5\%$
- Short Circuit Current : 3 mA
- Three Programmable timers: T1, T2 & T3 (max. 99 min 59 sec.)

Measurement Ranges

Insulation Resistance

- Analog Display : 1K Ω to 5 T Ω
- Digital Range(3Digit display): 1K Ω to 10T Ω
- Accuracy (25°C) : $\pm 5\%$ (up to 999 G Ω) $\pm 20\%$ (1T Ω to 10T Ω)

Guard

- Guard Resistance : 300K $\Omega \pm 10\%$

Leakage Current

- Range : 0.1nA to 3mA
- Accuracy : $\pm 5\%$

Capacitance

- Range : 10nF to 50 μ F
- Accuracy : $\pm (10\% + 5\text{nf})$ of rdg

Voltage Measurement

- Range : 0 to 600V DC/AC rms
- Accuracy : $\pm (5\% \text{ of rdg} + 5\text{dgt})$

Power Supply*

AC mains

- Voltage : 230V $\pm 10\%$,
- Frequency : 50Hz $\pm 10\%$

Battery

Internal Rechargeable Battery

- Backup : Approx. 6 hours of continuous testing at 5KV on a load of 10 G Ω
- Charging time : 4 hours (approx.)

*(In case of Full Battery Discharge/ Dead/ Damaged conditions; Instrument can also work on AC mains supply independently)

Interference Rejection

- 1mA rms per KV test voltage

Standards & Approvals

- Safety In accordance with EN 61010-1
- EMC In accordance with EN 61326-1
- Type Test In accordance with IS 11994
- Ingress Protection IP 65
- CE & CAT IV 600V
- Safety of Accessories with IEC61010-31

Physical Specifications

- Dimensions : 195mm x 290mm x 360mm (H x W x L)
- Net weight : 5 Kg. Approx. (Instrument)
- Gross Weight : 9.3 Kg. Approx. (with Accessories)

Environmental Specifications

- Operating Temperature : 0°C to 55°C
- Storage Temperature : -20°C to 70°C
- Relative Humidity : <95%RH, Non condensing

Indications & Annunciations

- Audio visual indication for HV presence
- LED indication for HV presence
- Battery status indication, Battery charging indication
- Audible discharge annunciation
- Mains / Battery Indication

Display details

- Real-time display of Insulation Resistance
- After end of test scrolling display of test results including resistance, leakage current, time & capacitance

Data Handling & Analysis

Memory Storage

5K PI has internal memory storage of 1000 test results.

Communication Port

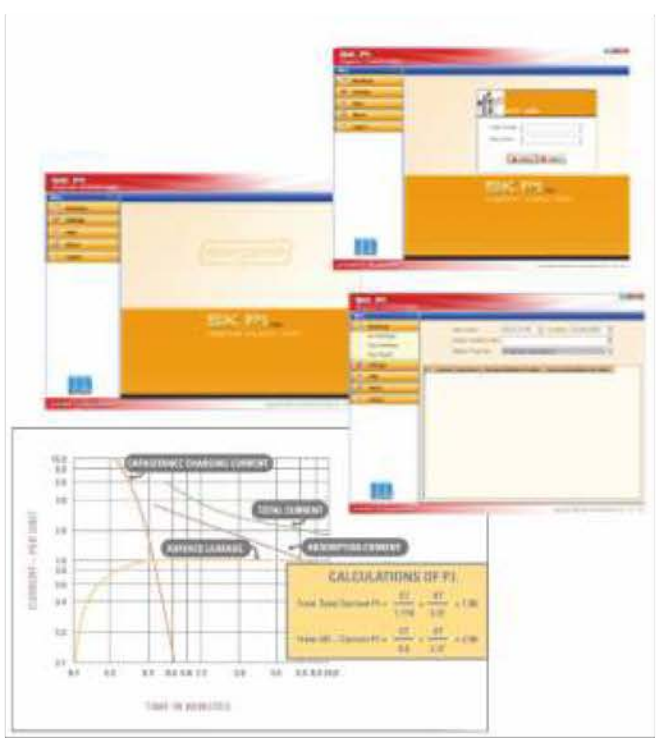
Optically isolated RS232 communication port as well as USB port is provided for computer interface.

Application Software

5K PI comes with advanced DOT NET based software operating under Windows Vista/XP/2000.¹

Two way communication is possible which helps for remote operation.

Data Trending reports can be generated through software.



Accessories

Standard Accessories

- 3 x 3m test leads for Earth, Guard and Line connection with large insulated clamps
- 1.5m Main power cord
- Mains protected fuse
- Instruction Manual
- Carrying Bag

Optional Accessories

- 3 X 10m test leads with large insulated clamps
- RS 232 communication Cable
- USB Cable
- RS 232 to USB converter
- Software CD



Notes

1.The Instrument is accompanied with Test & calibration sheet. 2.Test Facilities can be provided at the factory with the available test set-ups only. 3. The Company's policy is continuous improvement of its products. We therefore reserve the Right of any deviation from illustration or specifications without notice. 4.Stated accuracies are valid from 10% of the range to 95% of the range. 5. Accuracy Specified for temperature range of 250C ± 50C & 55% RH ±10%.