

# Electrical Test & Measurement Instruments





## 10K PI

### Diagnostic Insulation Tester

|        |    |    |     |
|--------|----|----|-----|
| CAT IV | IP | CE | USB |
| 600V   | 65 |    |     |

10K PI is an Diagnostic Insulation Tester having test voltage range up to 10KV, designed & developed indigenously at the state of the art R&D laboratory to conduct automatic insulation tests on high voltage equipment's like Transformers, Cables, Bushings, Switchgears & Rotating Machines. 10KPI comes in two ranges of short circuit current of 3mA and 6mA. 10K PI is a microprocessor based instrument deploying the latest technology & very high speed data sampling to give correct, repetitive readings & quality performance under harsh electrical conditions. It has a wide insulation resistance range up to 50TΩ.

Model 10K PI is mains and battery operated portable & compact insulation tester for outdoor applications. The battery backup of 8 Hours makes it suitable for field operations. IP65 rating keeps 10K PI safe from water & dust ingress. It complies with CAT IV 600V for safe operation. The instruments & its accessories are certified as per relevant IS/IEC standard.

The Information displayed on the large backlit LCD includes insulation resistance, leakage current, capacitance, battery status & timer. Three programmable timers are provided to conduct various tests like Polarization Index (PI), Dielectric Absorption Ratio (DAR), Dielectric Discharge (DD), Step Voltage (SV), & Breakdown Voltage (BDV) Test. 10K PI can store up to 1000 test results\*. PC interface via USB & RS-232 for data transfer. The PC software for report generation & data trending analysis helps to keep records of capital equipment. Instrument has automatic discharge facility for capacitive loads discharging. The instrument has the automatic discharge facility for capacitive load discharge at the end of the test.

## Features

- ✓ 10K PI available in two variants : 3mA, 6mA
- ✓ IR Testing with Diagnostic Modes PI, DAR, DD, SV, BDV, Burn.
- ✓ Programmable Test Voltage: 250V, 500V, 1000V, 2500V, 5000V, 7500V, 10000V
- ✓ Insulation Resistance Range from 10kΩ to 50TΩ
- ✓ Three Programmable Timers: T1, T2, T3 respectively
- ✓ Programmable Break Down Current Settings
- ✓ Mains & Battery operation
- ✓ Internal Data Storage up to 1000 tests\*
- ✓ Galvanic Isolated RS 232 & USB Port
- ✓ Application Software for Data Trending Analysis
- ✓ AC/DC voltage measurement up to 600V
- ✓ Auto Calibration at every start up
- ✓ Burn Mode for uninterrupted Insulation Resistance Testing
- ✓ Alarm Mode with Min-Max Settings & Pass Fail Indication
- ✓ Operation from an AC source when the battery is flat
- ✓ Digital filter is designed with three different levels F-1, F-2, F-3 useful while testing insulation in heavy noisy environment.
- ✓ Interference rejection of 1mA RMS per 250V test voltage, up to a max. of 8mA

## Applications

The Insulation Resistance Test is an essential test that helps 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 insulation resistance testing and diagnostic testing like PI, DD, DAR & SV of high voltage electric apparatus like transformers, generators, motors, cables, bushings, LAs, switchgear, etc. and is temperature independent. It can be operated in 220 kV, 400 kV and 765 kV\* switchyards. Trending of data can reveal vital information about insulation quality and enables the user to take informed decision.

\* Applicable for 10K PI 6mA only

| SPECIFICATIONS                   |                                                                                                    | 10K PI                                                         |  |
|----------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--|
|                                  | 10K PI 3mA                                                                                         | 10K PI 6mA                                                     |  |
| Test Specifications              |                                                                                                    |                                                                |  |
| Diagnostic Modes                 | IR, PI, DAR, DD, SV, BDV, Burn                                                                     |                                                                |  |
| Test Voltage                     |                                                                                                    |                                                                |  |
| Programmable Test Voltage        | 250V, 500V, 1000V, 2500V, 5000V, 7500V, 10000V                                                     |                                                                |  |
| Lock Test Voltage                | 250 - 1000V adjustable in steps of 10V, 1000 - 10000V adjustable in steps of 25V                   |                                                                |  |
| Voltage Accuracy                 | ± (5% of reading + 5 digits)                                                                       |                                                                |  |
| Resistance Range                 |                                                                                                    |                                                                |  |
| Analog Display                   | 10KΩ - 10TΩ                                                                                        | 10KΩ - 10TΩ                                                    |  |
| Digital Display                  | 10kΩ - 30TΩ                                                                                        | 10kΩ - 50TΩ                                                    |  |
| Accuracy                         | 1MΩ to 1TΩ: ±(2% of FS + 15 digits)/±(5% of rdg + 5 digits)                                        | 1MΩ to 1TΩ: ±(2% of FS + 15 digits)/±(5% of rdg + 5 digits)    |  |
|                                  | 1TΩ to 10TΩ: ±(10% of FS + 5 digits)/±(10% of rdg + 5 digits)                                      | 1TΩ to 10TΩ: ±(10% of FS + 5 digits)/±(10% of rdg + 5 digits)  |  |
|                                  | 10TΩ to 30TΩ: ±(20% of FS + 7 digits)/±(20% of rdg + 7 digits)                                     | 10TΩ to 50TΩ: ±(20% of FS + 7 digits)/±(20% of rdg + 7 digits) |  |
| Guard Resistance                 | 2% error guarding <300KΩ                                                                           |                                                                |  |
| Short Circuit Current            |                                                                                                    |                                                                |  |
| Current Range                    | up to 3mA                                                                                          | up to 6mA                                                      |  |
| AC/DC Voltage                    |                                                                                                    |                                                                |  |
| Voltmeter Range                  | 0 - 600 AC/DC                                                                                      |                                                                |  |
| Voltmeter Accuracy               | ±(8% of reading + 5 digits), input resistance: 250MΩ Approx                                        |                                                                |  |
| Capacitance Measurement          |                                                                                                    |                                                                |  |
| Capacitor Discharge Time         | ≤ 5 sec per µF                                                                                     |                                                                |  |
| Capacitance Range                | 1nF to 50µF                                                                                        |                                                                |  |
| Capacitance Measurement Accuracy | ± (5% of readings + 5nF)                                                                           |                                                                |  |
| Interference Rejection           | 1mA RMS per 250V test voltage up to a max. of 5mA                                                  | 1mA RMS per 250V test voltage up to a max. of 8mA              |  |
| Timer                            |                                                                                                    |                                                                |  |
|                                  | Programmable timer from 0 sec to 99 minutes                                                        |                                                                |  |
| Memory                           |                                                                                                    |                                                                |  |
|                                  | Internal data storage of 1000 readings                                                             |                                                                |  |
| Interface                        |                                                                                                    |                                                                |  |
|                                  | Galvanically isolated RS232 and USB ports; remote operation via PC using either RS232 or USB cable |                                                                |  |

## SPECIFICATIONS

## 10K PI

|                                              | 10K PI 3mA                                                                            | 10K PI 6mA |
|----------------------------------------------|---------------------------------------------------------------------------------------|------------|
| <b>Data Handling &amp; Analysis Software</b> | Operated on XP/Windows7/Windows8/Windows10/Windows11                                  |            |
|                                              | Two way communication for remote operation                                            |            |
|                                              | Report generation along with the graphical representation for Data Trending Analysis. |            |

## Power Supply

|                            |                                                                           |
|----------------------------|---------------------------------------------------------------------------|
| <b>Mains Input Voltage</b> | 115V/230V RMS $\pm$ 10%, Frequency 50/60 Hz                               |
| <b>Battery Type</b>        | Battery Pack, Rechargeable 14.8V, 5200mAh, Li-Ion, Type 18650             |
| <b>Battery Life</b>        | 8 hours continuous testing at 10kV with a 250 M $\Omega$ load (approx)    |
| <b>Battery Charge Time</b> | 8 hours approx. (95% Charged)                                             |
| <b>Auto Power Off</b>      | Instrument turns off after 10 minutes of non-use to conserve battery life |

## Environmental Condition

|                                    |                         |
|------------------------------------|-------------------------|
| <b>Operating Temperature Range</b> | -10°C to 55°C           |
| <b>Storage Temperature Range</b>   | -20°C to + 70°C.        |
| <b>Humidity</b>                    | < 95% RH Non-Condensing |

## Safety

|                                           |
|-------------------------------------------|
| Safety in accordance with EN61010-1       |
| EMC in accordance with EN61326-1          |
| Test lead in accordance with IEC 61010-31 |
| CE & CAT III 1000V & IV 600V, IP65        |

## Physical Specifications

|                   |                                                |
|-------------------|------------------------------------------------|
| <b>Dimensions</b> | 190 mm X 285 mm X 365 mm (Approx.) (H x W x L) |
| <b>Weight</b>     | 5 Kg (approx) (without accessories)            |
|                   | 9.5 Kg (approx) (with accessories)             |

## Accessories

### Standard

|                                  |         |
|----------------------------------|---------|
| ■ 3m Test lead Set (3mA)         | : 1 Set |
| ■ 10m Test lead Set (6mA)        | : 1 Set |
| ■ Guard Cable (3m)               | : 1 No. |
| ■ Mains Power Cord               | : 1 Set |
| ■ Mains Protected Fuse           | : 2 No. |
| ■ RS232 Communication cable      | : 1 No. |
| ■ Instruction Manual             | : 1 No. |
| ■ Calibration Certificate        | : 1 No. |
| ■ Carry Case                     | : 1 No. |
| ■ Pen Drive                      | : 1 No. |
| ■ USB 2.0 A/B Cable 1.5 mtr long | : 1 No. |

### Optional

|                     |         |
|---------------------|---------|
| ■ 15m Test lead Set | : 1 Set |
|---------------------|---------|

## ORDERING INFORMATION

| Product                          | Order Code       |
|----------------------------------|------------------|
| <b>10K PI 3mA</b>                | <b>109385010</b> |
| <b>10K PI 6mA</b>                | <b>1096AD010</b> |
| <b>with Standard Accessories</b> |                  |

**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 includes continuous improvement of its product. 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 25°C  $\pm$  5°C & 55% RH  $\pm$  10%. | **6)** Image & weight are subjected to change.

## Contact Details

### THE MOTWANE MANUFACTURING CO. PVT. LTD.

**Regd. Office & Factory :**

Gyan Baug Nashik Road, Nashik, 422101 Maharashtra, India

**Pune Unit :**

Unit No. 07 & 08, Electronic Sadan No. 2, MIDC, Bhosari, Pune - 411 026



[www.motwane.com](http://www.motwane.com)



**Nashik Head Office :** 91-0253 -2463752 / 53

**Pune Office :** 91-20-27122936, 27123176



<https://www.linkedin.com/company/motwanemanufacturing>

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