Test Voltage 250V to 5kV

Insulation Resistance Measurement Up to 5TΩ

- Measure insulation of high-voltage equipment (such as transformers, cables, and motors)
- Automatically calculate and display PI (Polarization Index) and DAR (Dielectric Absorption Ratio)
- Step voltage testing, temperature compensation, temperature measurement, and leakage current display
- Data storage and USB interface
**Features**

**Generate Test Voltages Across a Wide Spectrum**

The 3455 can generate test voltages ranging from 250 V to 5 kV. Settings can be made in steps as fine as 25 V. Very high insulation resistance measurement up to 5 teraohms is possible.

**Ideal for All Insulation Diagnostic Applications**

Functions such as automatic calculation and display of PI (Polarization Index) and DAR (Dielectric Absorption Ratio), as well as step voltage test, temperature compensation, temperature measurement, and leakage current display make the 3455 suitable for a variety of diagnostic applications.

**Data Memory Function**

The 3455 provides a manual storage function for 100 data and a logging function for 10 data (360 times). The date and time of measurement are also recorded.

**USB Interface**

Easily transfer data to a PC via the USB interface using our free PC application software. The software also features a convenient report creation function.

**Safety Foremost**

The 3455 complies with safety regulations for category IV measurements (600 V). A shutter mechanism prevents simultaneous use of measurement terminals and other terminals. Other safety features include a voltage measurement function, high-voltage warning indicator, and auto discharge function.

**Large, Easy to Read Display**

The display is backlit and features a logarithmic bar graph as an analog type indicator in addition to the digital readout.

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**Primary Measurement Functions**

**Insulation resistance measurement**

Measurement voltage is selectable from 250 V, 500 V, 1.00 kV, 2.50 kV, and 5.00 kV. More finely graded settings are also possible. When measurement is completed, the unit shows the insulation resistance value, test voltage (setting and actual output), leakage current, DAR, PI, and elapsed time.

**Step voltage test**

In this type of test, the voltage is gradually raised and the insulation resistance and leakage current change is measured. Two different step settings are available: 500 V → 1 kV → 1.5 kV → 2 kV → 2.5 kV and 1 kV → 2 kV → 3 kV → 4 kV → 5 kV. The test time for each step can also be selected.
Make Complete Diagnostic Tests of Transformers, Cables, Motors and Other Equipment

### PI and DAR display

**PI: Polarization Index**  **DAR: Dielectric Absorption Ratio**

The PI and DAR values which are used as an evaluation standard for insulation are automatically calculated. With the insulation resistance measurement start point as reference, the calculation is performed as follows, using two resistance values obtained at a prescribed time interval.

Formulas:

- **PI**:
  \[ PI = \frac{RI_{30s}}{RI_{1min}} \]
- **DAR**:
  \[ DAR = \frac{RI_{30s}}{RI_{1min}} \]

### Specifications

#### Measurement Items:
Insulation resistance, leakage current, voltage, temperature

#### Insulation Resistance

- **Test voltage**: 250V to 5.00kV DC
- **Setting**:
  - Preset test voltages: 250 V, 500 V, 1 kV, 2.5 kV, 5 kV
  - Fine adjustment: possible in 25 V steps between 250 V and 1 kV and in 100 V steps between 1 and 5 kV
- **Response time**:
  - Left: second measurement value
  - Right: first measurement value
- **Test voltage (setting value)**
  - 250V: 0.00MΩ to 250GΩ
  - 500V: 0.00MΩ to 500GΩ
  - 1kV: 0.00MΩ to 1.00TΩ
  - 2.5 kV: 0.00MΩ to 2.50TΩ
  - 5 kV: 0.00MΩ to 5.00TΩ

#### Leakage Current

- **Current range** and accuracy:
  - 10nA: 1.00nA to 9.99nA ±5% rdg. ±2.5% dgt.
  - 100nA: 9.00nA to 99.9nA ±15% rdg.
  - 1µA: 0.90µA to 9.99µA ±2.5% rdg.
  - 10µA: 9.00µA to 99.9µA ±2.5% rdg.
  - 100µA: 9.00µA to 999µA ±5% rdg.
  - 1mA: 90µA to 999µA ±2.5% rdg.

- **Response time**:
  - 15 s max. (from measurement start to until guaranteed accuracy display, no averaging)

#### Voltage

- **Measurement range**
  - DC ±50V to ±1.00kV, AC 50V to 750V
- **Accuracy**:
  - ±5% rdg. ±2.5% dgt.

- **Frequency**:
  - DC/50Hz/60Hz

#### Temperature

- **Measurement range and Accuracy**:
  - −10.0°C to −0.1°C ±1.5°C
  - 0.0°C to 40.0°C ±1.0°C
  - 40.1°C to 70.0°C ±1.5°C

When using the temperature sensor 9631-05, accuracy is guaranteed only for 0.0 - 40.0°C range

- **Response time**:
  - Approx. 100 s, including response of temperature sensor models 9631-01 to 9631-05

(Reference value, time until a 90% value of a temperature change is shown)
Specifications

Insulation Diagnosis
Temperature compensation: Result converted to insulation resistance at reference temperature. 10 different temperature compensation tables can be selected, according to insulation material of measurement object. Reference temperature: 20°C or 40°C by default, setting can be changed.

PI/DAR display: PI: Polarization Index DAR: Dielectric Absorption Ratio After insulation resistance measurement has started, calculation is performed using two resistance values obtained at prescribed time intervals.

Step voltage test: Measurement of insulation resistance while raising voltage at specific intervals. Two voltage step patterns can be selected.

Supplementary Functions
Data memory: Manual recording: store up to 100 data , Data type: standard measurement data/ temperature compensation data/step voltage test data. Data logging: store measurement value at preset intervals, available for insulation resistance measurement only. Number of data: 10, Number of logging instances: 360 times per data, Recording interval: 15/30 s /1/2/5m, Data content: date, time, measurement interval, temperature, set voltage, actual output voltage x times, resistance x times. Additional functions: write mode, read mode, all clear, selective clear, overwrite

Communication: Interface: USB ver 2.0 (full speed) PC application software: transfer of memory data from 3455 to computer, data display, create graph, 3455 items that can be set/changed from computer: date, time, PI step time, step voltage test pattern, report function

Options: TEMPERATURE SENSOR 9631-01 (Thermistor, Molded type, Approx. 1 m) TEMPERATURE SENSOR 9631-05 (Thermistor, Molded type, Approx. 6 cm) TEST LEAD 9750-11 (Red, Approx. 10 m) TEST LEAD 9750-12 (Black, Approx. 10 m) TEST LEAD 9750-13 (Blue, Approx. 10 m, GUARD) BATTERY PACK 9459 AC ADAPTER 9753

Temperature measurement: 1 time/second Voltage measurement: 4 times/second Output voltage monitor: 2 times/second (0.25 times/second when using averaging) Insulation resistance/leakage current: 1 time/second Voltage measurement: 4 times/second Temperature measurement: 1 time/second

Power supply: LR6 (AA) alkaline battery × 6 Battery pack 9459: 7.2 V DC (rechargeable, Ni-MH) AC adapter 9753: rated input voltage 100 to 240 V AC, rated output15VA

Max. power consumption: 15 VA (using AC adapter), 6 VA (using batteries or battery pack) (5 kV generated, +/- terminals open, backlight off) Continuous operation time: approx. 5 hours (with alkaline batteries) approx. 9 hours (with battery pack 9459 )

Max. input voltage: AC750Vrms, DC1000V Max. voltage to ground: 600Vrms(CATIV), 1000Vrms (CATIII) Withstand voltage: 6880 V AC , 15 sec.

Dimensions & Mass:

General Specifications
Operating temp ., humidity: 0 to 40°C, max. 90%rh (no condensation) Storage temp ., humidity: 10 to 40°C, max. 80%rh for battery pack charging Guaranteed accuracy period: 1 year Operating environment: Indoors, up to 2000 m ASL.

Measurement method: DC voltage application method (insulation resistance), average value rectification method (voltage)

A/D conversion: Double integral method

Display: LCD, with backlight

Indication: Numeric: up to 999, Bar graph: insulation resistance only, range 0 to 1 TΩ

Display update rate: Insulation resistance/leakage current: 1 time/second (0.25 times/second when using averaging) Output voltage monitor: 2 times/second Voltage measurement: 4 times/second Temperature measurement: 1 time/second

Temperature/humidity value input, timer, elapsed time display, clock, averaging, data hold, auto discharge, active voltage warning indication, hot conductor warning indication, LCD backlight, auto power-off, buzzer

Accessories: TEST LEAD (RED) 9750-01 × 1, TEST LEAD (BLACK) 9750-02 × 1, TEST LEAD (BLUE, GUARD) 9750-03 × 1, ALLIGATOR CLIP (RED) 9751-01 × 1, ALLIGATOR CLIP (BLACK) 9751-02 × 1, ALLIGATOR CLIP (BLUE, GUARD) 9751-03 × 1, LR6 (size AA) battery × 6, USB CABLE × 1, CD-R (Data Analysis Software for 3455) × 1

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