

# 5478

## TΩ Meter (5kV Insulation Tester)

■ **TΩMeter 5478** is a digital multipurpose tester intended for testing, analyzing, inspecting and periodic maintaining of any high voltage insulations.

The main reasons why insulations fail are due to excessive heat, moisture, dirt, vibrations and aging. To detect such deteriorations in order to initiate preventive maintenance procedures it is necessary to perform regular resistance tests.

The total current in the body of an insulation system consists of leakage currents, charging currents and absorption currents. These currents are time dependent. At the start of the measurement the current is mostly dominated by the capacitance charging current. About one minute later the capacitance is charged and the total current is mainly based by absorption current, which is caused by molecules that polarize. The absorption current typically collapses after a few minutes and if no surface leakage is present the current consist only of leakage current, which should be stable.

The TΩMeter 5478 offers a complete set of functions to measure and detect effectively all parts of current in an insulation system. The instrument can supply an output power of 5 W and a test voltage of up to 5000 V and therefore measure insulation resistances up to 5 TΩ.

Additionally the TΩMeter performs step-up voltage measurement, withstand voltage measurement, AC/DC voltage and frequency measurements up to 600V as well as diagnostic measurement functions.

The instrument is fully automatic and requires no measuring range adjustment. A large dot matrix LCD displays measuring values and test progress at a glance. Built-in memory allows the storage of up to 1000 measurement results. Test reports can be sent over a RS-232 interface to an external computer.



### Features

- ☑ **Insulation Resistance measurement**
  - Measuring range up to 5 TΩ.
  - Programmable timer 1s... 30 min.
  - Capacitance measurement up to 50 μF.
  - Programmable test voltages 250V... 5kV.
- ☑ **Step-up Voltage measurement**
  - 5 test voltage steps automatically set within selected test voltage range.
  - Programmable timer 1s... 30 min / step.
- ☑ **Withstand voltage measurement**
  - Programmable ramp test voltage 250V... 5kV.
  - High resolution ramp (approx. 20V / step).
  - Leakage current measurement.
  - Programmable threshold current 1uA... 1.4mA.
- ☑ **Voltage and frequency measurements**
  - Up to 600 V AC/DC, 45...65 Hz.
- ☑ **Diagnostic measurements**
  - Measured on DUT are discharge current, voltage and capacitance.
  - Calculated polarization index.
  - Calculated dielectric discharge ratio.

### Benefits

- Guard terminal** eliminates surface leakage from the measurement.
- Battery or mains** operation, built-in battery charger.
- Data exchange** to external PC over built-in RS232 interface and supplied application software.
- Lightweight**, rugged and reliable design.
- Automatic discharge** of capacitive loads.
- User-friendly operation** allows simple, fast and safe measurements without much precognition.
- Five different measuring modes** in one instrument ensure cost-effective investment.

### Applications

- ➔ Power Transformers
- ➔ Distribution Transformers
- ➔ Instrument Transformers
- ➔ Rotating Machines
- ➔ Bushings
- ➔ Cables
- ➔ Surge Arresters
- ➔ Insulation systems

## Technical Specifications

Resistance range	0.01 MΩ...5 TΩ	± 5 % rdg ± 3 dig.
Capacitance range	0... 50 μF	± 5 % rdg ± 2 dig.
Leakage current	0... 1.4 mA	± 3 % rdg ± 3 dig.
Withstand test range	0... 5500 V	± 3 % rdg ± 40 V
AC/DC voltage range	0... 600 V	± 3 % rdg ± 3 V
Frequency range	45... 65 Hz	± 0.2 Hz
Polarization index	0... 99.9	± 5 % rdg ± 2 dig.
Dielectric discharge	0... 99.9	± 5 % rdg ± 2 dig.

Test voltage	250 V... 5000 V	± 3 % rdg ± 3 V
Stepping	50 V steps	
Input resistance	3 MΩ	

Interface	RS 232, optical isolated
Built-in memory	1000 measurement results
Display	Dot matrix LCD, 160x116, backlight
Warnings	Visual and Sound

Overvoltage category	EN 61010 cat. III 600 V
Protection	IP 54
Pollution degree	2
Operating temperature	-10... +50°C
Storage temperature	-20... +70°C
Humidity	5... 95% r.h., non-condensing

Mains power supply (type 5478-A)	115 V AC +6/-10%, 45... 65 Hz, 10 VA
Mains power supply (type 5478-B)	230 V AC +6/-10%, 45... 65 Hz, 10 VA
Rechargeable battery	6 x 1.2... 1.5 V, NiCd or NiMH, IEC LR14

Weight (incl. batteries)	2.3 kg (5.1 lbs)
W x H x D	265 x 110 x 185 mm (10.4" x 4.3" x 7.3")

## Scope of Supply

1	TΩMeter 5478 (type A or B)
1	Application Software APSW 5478
1	Carrying bag
1	Mains cable
3	Test leads, 2m
1	RS 232 interface cable
2	Test tips
2	Alligator clips
2	HV connection sets
1	User manual & Certificate



Order Information: **TΩMeter 5478-A** with 115V Mains power supply  
**TΩMeter 5478-B** with 230V Mains power supply

## Related Tettex Products

Transformer Turns Ratio Meter 2795



High Current Resistance Meter 2291 and 2292



Mobile Insulation Diagnosis & Analyzing System MIDAS 2880



European Contact  
**Haefely Test AG**  
 Lehenmattstrasse 353  
 CH-4052 Basel  
 Switzerland  
 ☎ + 41 61 373 4111  
 📠 + 41 61 373 4912  
 ✉ [sales@haefely.com](mailto:sales@haefely.com)

Locate your local sales representative at  
[www.high-voltage-hubbell.com](http://www.high-voltage-hubbell.com)



USA Contact  
**Hipotronics Inc.**  
 1650 Route 22  
 PO Box 414  
 Brewster, NY 10509 USA  
 ☎ + 1 845 279 8091  
 📠 + 1 845 279 2467  
 ✉ [sales@hipotronics.com](mailto:sales@hipotronics.com)

