

MEGOHMMETER

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# INSULATION RESISTANCE TESTER



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# MEGOHMMETER

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## Description

Electrical insulation is designed to withstand certain voltages and conditions throughout its lifespan. However, over time, insulation tends to degrade, and abnormal voltages and inadequate conditions can accelerate this process, reducing its durability. Therefore, it is essential to conduct regular tests to assess and identify signs of accelerated aging, degradation, and determine their causes in order to define corrective measures proactively.

The HVEX insulation resistance meter, also known as a megohmmeter, is an essential equipment in these electrical tests, used both in laboratories and in the field.

### Diagnostic:

Insulation diagnostic tests in preventive maintenance are essential to predict and avoid failures in electrical equipment. The use of the HVEX megohmmeter is not limited to equipment aging, as it can be used to accurately identify the position of the test object at any point along its life curve.

This analysis measures the resistance of insulating materials to the passage of electric current, influenced by factors such as overvoltage, undervoltage, humidity, dirt, changes in capacitance, total resistance, surface losses, thermal stresses, etc.

## Operation

The operation is simplified, just connect a high-voltage line and a signal line to the test sample for the measurement to be performed automatically, and the results displayed on the equipment screen. Results can also be stored via USB for future analysis.

The measurement process involves applying a test voltage to the insulation under test and measuring the resulting current. Through these measurements and using Ohm's law ( $R=E/I$ ), the insulation resistance  $R$  is automatically calculated internally by the meter.

### Advantages:

- Uncomplicated operation;
- Portability;
- Precision and safety;
- Wide measurement range.



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## Characteristics

The HVEX Megohmmeter is composed of high-precision integrated circuits, including a micro-current measurement system and a digital amplification system.

With high resolution and convenient operation, the meter is portable, accurate, reliable, and exhibits excellent performance. It features a rugged structure that is shockproof, dustproof, and moisture-resistant. It is widely used in various applications, including measuring the insulation resistance of various materials and electrical equipment such as transformers, motors, and cables, etc.

### Measurement range:

The test voltage range varies from 250 to 5000 V, while the insulation resistance measurement range covers from 0.01 M $\Omega$  to 5.00 T $\Omega$ . Additionally, the meter allows for the measurement of DC voltages from 0 to 1000 V and AC voltages from 0 to 750 V.

### Measurement Results:

Equipped with a large backlit LCD screen, data storage and review capabilities, and automatic shutdown for energy saving.

### Polarization and Absorption Index:

The meter automatically calculates the absorption ratio and the polarization index, storing data at predetermined time intervals.

The Polarization Index (PI) and the Dielectric Absorption Ratio (DAR) are tests that evaluate the increase in leakage current in an insulator over time. During the test, it is crucial to verify if the leakage current remains stable. The megohmmeter automatically calculates the values of PI and DAR, which are indicators of insulation performance. Both indices show the variation in insulation resistance over time after the test voltage is applied.

The polarization index is used to evaluate the levels of moisture, dust, and contamination present in the component. The absorption index, on the other hand, is used to determine the degree of contamination that has already occurred in the insulating material of the component.



## Technical Specifications

Power Supply	Rechargeable lithium battery 14.8 VDC, 2200 mAh, fully charged approx. 16.8 V		
Charging time	Approximately 4 hours		
Insulation resistance measurement range	250 VDC (15%)	0.01 M $\Omega$ ~ 2.50 G $\Omega$ $\pm$ 3%	
		2.50 G $\Omega$ ~ 250 G $\Omega$ $\pm$ 15%	
	500 VDC (10%)	0.01 M $\Omega$ ~ 5.00 G $\Omega$ $\pm$ 3%	
		5.00 G $\Omega$ ~ 500 G $\Omega$ $\pm$ 15%	
	1000 VDC (10%)	0.01 M $\Omega$ ~ 10.00 G $\Omega$ $\pm$ 3%	
		10.00 G $\Omega$ ~ 1.00 T $\Omega$ $\pm$ 15%	
	2500 VDC (10%)	0.01 M $\Omega$ ~ 25.0 G $\Omega$ $\pm$ 3%	
		25.0 G $\Omega$ ~ 2.50 T $\Omega$ $\pm$ 15%	
	5000 VDC (10%)	0.01 M $\Omega$ ~ 50.0 G $\Omega$ $\pm$ 3%	
		50.0 G $\Omega$ ~ 5.00 T $\Omega$ $\pm$ 15%	
	AC and DC voltage measurement range	0,01 ~ 750 VAC (Accuracy: $\pm$ 2%)	
		0,01 ~ 1000 VDC (Accuracy: $\pm$ 2%)	
Short-circuit current	$\geq$ 5 mA		
Test voltage range	250, 500, 1000, 2500 and 5000 V		
Resolution	Insulation resistance	0.01 M $\Omega$	
	Voltage AC	0.01 V	
	Voltage DC	0.01 V	

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## Technical Specifications

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	IEC61326(EMC)
	IEC61010-1 (CAT III 300V, CAT IV 150V, pollution degree 2)
Standards	IEC61010-031
	IEC61557-1
	IEC61557-5
LED indications	The Red LED lights up during battery charging, and the green LED indicates when the battery is fully charged
Communication Interface	USB interface, allowing stored data to a computer, saved or printed
	Standby: Max 25 mA (Backlight off)
Operating current	Backlight: Max 25 mA (Backlight power consumption only)
	Measurement: Max 450 mA (Backlight off)
Pressure capacity	3700 VAC/rms (Between circuit and enclosure)
Insulation capacity	20 MΩ or more (500 V between circuit and instrument)
Operating temperature	-10 ~ 40 °C
Storage temperature	- 20 ~ 60 °C
Operating humidity	Below 80%
Storage humidity	Below 70%

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## Technical Specifications

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Backlight	Controllable screen backlight, suitable for use in dark environments
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Weight	2.66 kg (including the battery)
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## Connections terminals

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L Terminal	High voltage output terminal, also referred to as line terminals
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G Terminal	Shield terminal, used for measuring the resistance of insulating rods or cables using the three-electrode method
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E Terminal	Ground terminal, connected to the ground and to the grounding terminal of object under test
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V Terminal	AC and DC voltage measurement terminal
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We provide solutions to improve efficiency and quality in the energy generation, transmission, and distribution sectors. With a highly specialized team experienced in research, development, and innovation, HVEX has developed tailored solutions for the Brazilian market. We offer a wide range of products focusing on measurement signal transduction and protection.



Boosting the Innovation



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