

1865 Megohmmeter/IR Tester

High Resistance Meter

USES:

- Production Testing of Insulation on Switches, Connectors, Cables, Printed Circuit Boards, Transformers, Motors and other Devices
- Insulation Properties of Natural and Synthetic Materials such as Oils, Plastics, Rubber or Porcelains
- Screening and Sorting of High Resistance Components
- Incoming Inspection and Quality Assurance Testing
- Product Design and Evaluation of Insulation Properties

FEATURES:

- Measurement Range to 100T Ω
- Programmable Test Voltage from 1 to 1000 V DC
- 0.5% Measurement Accuracy
- Automatic Ranging
- Programmable Test Times
- High Resolution LCD Display
- Storage of Test Setup and Results
- Automatic Zeroing of Test Leads
- Limit Entry for Pass/Fail Testing
- Direct Reading of Measured Current
- Keypad Lockout with Password Protection
- RS-232 and I/O Interfaces
- Optional IEEE-488 Interface

Introduction

The 1865 Megohmmeter/IR tester, with digital display, is used for high accuracy measurements of insulation resistance on a wide variety of components, materials and electronic devices. Resistance values greater than 100 teraohms can be measured with a basic accuracy of 0.5% at DC voltages up to 1000V. A programmable limit makes the unit ideal for pass/fail testing in a production environment and is also adaptable for use in automated system applications with its optional IEEE-488 interface.

Description

Precision Measurements: The 1865 provides resistance measurement capability over a range of 1k Ω to 100T Ω (test voltage dependent), with a basic accuracy of 0.5%. To meet the test requirements for a wide range of devices, the test voltage is fully programmable up to 1000V DC. Sensing the proper resistance measurement range is done automatically, thus eliminating setup errors; and in order to eliminate lead or fixture errors, the operator can easily initiate an automatic zeroing routine of test leads.

Easy To Use: The 1865's menu programming system, simple controls and indicators combine for efficiency of test and productivity. It's multi-function keypad provides the operator with an easy way to program and make measurements.

Pass/Fail: Measured results are automatically compared to an operator programmed limit for pass/fail testing. Pass/Fail indicator lights or a pass/fail output from the instruments I/O interface give a clear indication of the measurement results.

Program Data Storage: Test setup conditions and measured results can be stored in instrument memory or on 3 1/2" disk when using the extended program storage option.

Automated Testing: For automated system applications, the 1865 includes an I/O interface connection with remote start and pass/fail outputs. An optional IEEE-488 interface is also available (or added later) which enables the 1865 to be used under computer control.

Current Display Mode: Besides a readout of insulation resistance in ohms, the operator can select a display mode for reading the measured current directly.

Safety Features: The 1865 provides safety features such as current limiting, a warning indicator when high voltage is active, and safety interlock, all for protection of the operator.

Component Test Fixture: An accessory fixture is available for use with the 1865 which accommodates a variety of component types, including radial, axial, and chip components. Its shielded case reduces electrical noise and interference and includes a cover interlock switch and remote start for maximum operator safety.



IET LABS, INC. in the **GenRad** Tradition
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1865 Megohmmeter

Resistance Range: 7 ranges (automatic or manual)
 $1 \times 10^{-3}\Omega$ to $>1 \times 10^{14}\Omega$ (voltage dependent)
 $1 \times 10^0\Omega$ to $>1 \times 10^{14}\Omega$ at 1000V DC
 $1 \times 10^2\Omega$ to $1 \times 10^{13}\Omega$ at 100V DC
 $1 \times 10^4\Omega$ to $1 \times 10^{12}\Omega$ at 10V DC
 $1 \times 10^3\Omega$ to $1 \times 10^{11}\Omega$ at 1V DC

Resistance

Accuracy: $\pm [0.45\% + (R_x/V_x)(0.0005 FS + 2pA) + 30 \Omega / R_x(100\%)]$

R_x : Measured resistance in ohms

V_x : Programmed voltage in volts

FS : Full scale current range in amperes

Voltage Range: 1 to 1000 volts programmable in two ranges

Voltage Accuracy: 1 - 100V: 1% of setting + 1V, 25mV resolution
100 - 1000V: 1% of setting + 2V, 250mV resolution

Output Voltage

Impedance: $1k\Omega, \pm 5\%$

Current Limited: $< 2mA$

Current Measure: $1 \times 10^{-13} - 1 \times 10^{-3}A$

Current* Accuracy: 1nA- 1mA $\pm [0.5\% + (0.0005FS + 2 pA)]$
100pA- 1nA $\pm [1\% + (0.0005FS + 2pA)]$
1pA - 100pA $\pm [10\% + (0.0005FS + 2 pA)]$

*Specified at front panel connectors

Input Impedance: $5k\Omega, \pm 5\%$

Measure Limits: Pass/Fail (1 limit)

Display:

- LCD graphics display
- Voltage warning indicator
- Pass/Fail indicator

Test Cycle:

Manual: Charge, Measure, Discharge
Automatic: Charge: (0 - 300 sec),
Measure: (0 - 300 sec), Dwell: (0 - 300 sec),
Discharge: (0 - 300 sec)

Interfaces:

Standard: RS-232, I/O Port (w/safety interlock)
Optional: IEEE-488 & Data/ Program Storage
3 1/2" disk

Input Terminals:

Four sheathed banana jacks, front or rear (optional) mount

- + unknown (red)
- guard (blue)
- - unknown (black)
- ground (green)

Other Features:

- Menu Programming
- Stop on Pass
- Automatic Zeroing
- Safety Interlock
- Stored Test Conditions
- Keypad Lockout
- Measurement units (engineering or scientific)
- Measurement averaging (1 - 400)

Dimensions:

Benchtop unit with tilt back bail
(w x h x d): (17.5 x 5.25 x 16in)
(444.5 x 133.4 x 408.4mm)

Weight:

18 lbs (8.2kg) - Net
26 lbs (11.8kg) - Shipping

Power:

90 to 250V,
47 or 63 Hz
60W max

Environmental:

In accordance with MIL-T-29800D,
Type 3, Class 5, Style E & F
Operating: 0°C to +50°C,
Storage: -40°C to +70°C



1865-52 Component Test Fixture

Components

Leaded Module: Body Size < 1inch

Accommodated:

Lead Size < 1.4mm dia

SMD Module: Width: 0.5 to 10mm

Height: 0.5 to 10mm

(Diameter 0.5 to 3.0mm)

Length: 0.1 to 8mm

Alligator Clips: < 5mm diameter

Dimensions:

(w x h x d): (8 x 5.5 x 9in), (203 x 140 x 230mm)

Weight:

5 lbs (2.3kg) - Net, 9 lbs (4kg) - Shipping

Ordering Information

1865-00 Megohmmeter/IR Tester

Includes:

150073 Instruction Manual
XX Calibration Certificate Traceable to NIST
700070 AC Power Cable
800014 100kΩ Capacitor Adaptor
800015 1MΩ Capacitor Adaptor
520049 Spare T2.5A, 250V Power Line Fuse

Optional Accessories:

1865-01 IEEE Interface Option (factory installed)
1865-02 Data/Extended Program Storage Option (factory installed)
1865-03 Rear Panel Input Option (factory installed)
1865-50 Rack Mount Kit
1865-51 Shielded Lead Set
1865-52 Component Test Fixture
1865-70 IEEE Interface Option (field retrofit)
Calibration Data



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