

# 1868 Series

# 1868A-D Megohmmeters

## USES:

- Production Testing of Insulation on Switches, Cables, Transformers, Motors and Other Devices
- Testing of Capacitive Components
- Insulation Properties of Natural and Synthetic Materials such as Oils, Plastics, Rubber or Porcelains
- High Resistance Testing of Electrical Connections

## FEATURES:

- Measurement Range: 10k $\Omega$  to 1PW
- Basic Accuracy:  $\pm 2\%$  to 1T $\Omega$
- Programmable Test Voltage: 10V to 1kV (1868A), 50V to 5kV (1868D)
- Selectable Charge Current: to 80mA (1868A), to 18mA (1868D)
- Leakage Current Measurement Down to 1pA ( $\pm 2\%$  Basic Accuracy)
- Programmable Charge, Delay and Discharge Times
- 5 Programmable Limit Sets
- Internal Storage of 4 Tests (20 Steps each) Plus Additional Storage with Optional PCMCIA Memory Card
- Standard RS232, IEEE and Remote I/O Interfaces
- Graphic LCD with Text, Bar Graph and X-Y Graph Displays
- Current or Resistance Display Mode
- 4 Ranges Plus Automatic Ranging
- Automatic Zeroing
- Contact Check Function
- Floating Power Supply (1868A) for Measurements on Grounded Devices

## High Resistance Testing To 1PW

### Introduction

The 1868 Megohmmeters (Models A&D) are precise, full-featured digital instruments with both resistance and current measurement modes. They are capable of measuring Insulation Resistance from 10k to 1P $\Omega$  at programmable DC test voltages between 10 and 1000V (1868A) or 50 and 5000V (1868D). For charging high capacitive devices, the 1868A supplies a powerful charge current up to 80mA and the 1868D up to 18mA. Remote I/O, RS232 and IEEE-488.2 interfaces for remote control operation and communication with other instrumentation are standard on both models.

### Description

**Wide Measurement Ranges:** Measure resistance from 10k $\Omega$  to 1P $\Omega$  with basic accuracy of  $\pm 2\%$  up to 1T $\Omega$ . Measure Leakage Current down to 1pA with basic accuracy of  $\pm 2\%$ .

**Programmable Test Voltage:** From 10V to 1kV in 1V increments on the 1868A Model, and from 50V to 5kV in 1V increments and on the 1868D Model.

**Powerful Charge Capability:** The 1868A Model offers current ranges of 2mA/25mA/80mA and the 1868D offers current ranges of 2mA/10mA/18mA. Currents above 2mA are password protected for safety.

**Programmable Charge, Delay & Discharge Times:** Allows testing of highly capacitive devices without false failures.

**Standard Interfaces:** The 1868 models come standard with RS232 and GPIB interfaces for PC connection in automated applications. Incorporate the 1868 unit into an automated manufacturing environment with remote start and bin results output through the rear panel PLC interface.

**Graphical Display:** The backlit display enables quick, easy setup and display of the test results as text, bar graph or X-Y graph. The X-Y Graph is an excellent tool to view current or resistance measurements over time.

**Test Storage:** Store 2 Global Setups including instrument setup and sequence setups, 4 user-programmable test sequences (up to 20 steps each), and 4 pre-programmed test sequences internally. The PCMCIA interface increases test setup storage with the capability of uploading/downloading test setups to a memory card.



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## 1868A-D Megohmmeter

<b>Resistance Range:</b>	10k $\Omega$ - 1P $\Omega$ (dependent on test voltage) 4 Ranges or Auto Range: Range 1: 1pA to 10nA Range 2: 2nA to 100nA Range 3: 20nA to 10uA Range 4: 2uA to 1mA
<b>Resistance Accuracy:</b>	For Rx <20G (Vx): $\pm$ (2% of reading +5cnt) For Rx >20G (Vx): $\pm$ (Vx/1pA) in ohms. Max reading: Vx/0.1pA Rx = Measured resistance in ohms Vx = Programmed voltage in volts
<b>Voltage Range:</b>	10 to 1000V DC in 1V steps, 1868A 50 to 5000V DC in 1V steps, 1868D
<b>Voltage Accuracy:</b>	2% of setting $\pm$ 1V in uncalibrated mode
<b>Source Resistance:</b>	100 $\Omega$ , 1kV (1868A); 3.3k $\Omega$ , 5kV (1868D)
<b>Charge Current:</b>	2/25/80mA (1868A); 2/10/18mA (1868D)
<b>Discharge Resistance:</b>	100k $\Omega$
<b>Current Measure:</b>	1pA to 1mA
<b>Current Accuracy:</b>	$\pm$ [2% of reading +5cnts +1pA]
<b>Input Impedance:</b>	For Ix > 10nA: 10k $\Omega$ ; For Ix < 10nA: 1M $\Omega$ Ix = Programmed current in amperes
<b>Measure Limits:</b>	5 Programmable Limit Sets
<b>Measurement Result:</b>	Resistance or Current
<b>Measurement Mode:</b>	Continuous or Triggered
<b>Averaging:</b>	1-100 measurements
<b>Test Speed:</b>	Trigger Mode: 40msec Continuous Mode: 90-4000msec (Depending on # to Average)
<b>Programmed Time:</b>	Charge: 0 - 9999msec (Charge R: 200 $\Omega$ ) Measurement Delay: 0 - 9999msec Discharge: 0 - 100sec or Auto mode Auto: 0.1(Cx) as Vx goes to 1% V <sub>t</sub> Cx = Measured capacitance ( $\mu$ F) Vx = Programmed voltage (V)
<b>Zero/Offset:</b>	Automatic Zeroing of All Ranges or Individual Zeroing of 4 Ranges

<b>Display:</b>	LCD graphic display 3.5 digit resolution Bar Graph: 8 ranges/2 decades/graph, Fixed or auto-scale Line Graph: X-Y: I or R versus Time Indicators: HV, Measure, Bin, Remote
<b>Standard Interfaces:</b>	RS232, IEEE 488, Remote I/O
<b>Internal Storage:</b>	2 Global Setups (Save Instrument Setup and Sequence Setups) 4 User-Programmable Sequence Setups, (Up to 20 Steps each) 4 Pre-Programmed Sequence Setups
<b>External Storage:</b>	PCMCIA Interface for 2M SRAM Memory Cards (20 Setups/20 Steps each)
<b>Input Terminals:</b>	HV: BNC Connector I IN: Triaxial Connector GUARD: Sheathed Banana Plug
<b>Safety:</b>	Interlock Plug Password-protected Charge Current (For I > 2mA) HV Break Red LED/Push Button
<b>Dimensions:</b>	(w x h x d):12.5 x 4.5 x 15.5 inches (312.5 x 112.5 x 387.5 mm)
<b>Weight:</b>	28 lbs (12.7kg) net 41 lbs (18.6kg) ship
<b>Environmental:</b>	Operating: 10°C to +40°C, 80% RH
<b>Power:</b>	110V - 240V 50 or 60Hz 400W Max (1.8A at 220V AC, 3.2A at 125V AC)

## Ordering Information

1868A Megohmmeter: 2/25/80mA, 1kV  
1868D Megohmmeter: 2/10/18mA, 5kV

### Includes:

150753	Instruction Manual
700070	Power Cable
1868-01	1868A Alligator Clip Lead Set (1868A only)
1868-02	19" Rack Mount Brackets (Set of 2)
1868-03	1868D Alligator Clip Lead Set (1868D only)
1868-04	Interlock Plug
N/A	Calibration Certificate Traceable to NIST

### Optional Accessories:

	Calibration Data
2100-04	2MEG SRAM PCMCIA Memory Cards

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