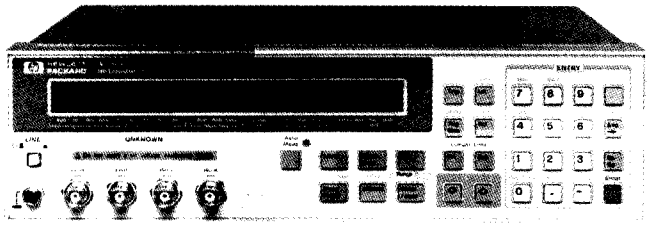
- Low and selectable test signal current: 1 μA to 10 mA
- Wide measurement range: 10 μΩ to 100 kΩ
- 10 μΩ resolution
- 1 kHz ac measurement
- High-speed measurement: 34 ms
- Built-in comparator
- Auto-measurement mode



HP 4338A

DESIGNED FOR HP-IB SYSTEMS

HP 4338A Milliohmmeter

The HP 4338A milliohmmeter is a precise, reliable, high-speed test tool for measurements of low resistance.

Precise, Low-Resistance Measurement

Contact failure of electromechanical components in a low-current circuit is a key issue for component reliability. The HP 4338A offers selectable low ac test signals (1 μA to 10 mA). Users can now characterize low resistances of electromechanical components under low-current conditions. A high resolution of 10 μΩ allows you to determine the slightest differences in contact resistance testing of relays, switches, connectors, PC board traces and cables. The 1 kHz test signal eliminates potential errors introduced by thermoelectric effects on the device-under-test (DUT) contacts. The 1 kHz ac test signal is the best solution to evaluate the internal resistance of batteries, because it avoids dc energy consumption.

High-Speed Measurements

The high-speed (34 ms), built-in comparator and HP-IB/handler interfaces make it possible to construct a measurement system using an automatic handler and external computer to minimize production test time.

Auto-Measurement Mode

When performing gross continuity testing where the test signal level is not a significant factor in the test, the auto-measurement function allows the instrument to select an appropriate test signal and measurement range setting.

Specifications (Refer to data sheet for complete specifications.)

Measurement Function

Measurement parameters: R (ac resistance), X (reactance), L (inductance), |Z| (impedance), θ (phase [°])
Combinations: R, R-X, R-L, |Z|-θ (series mode only)
Mathematical Functions: Deviation and percent deviation
Ranging: Auto and manual
Trigger: Internal, external, manual, and HP-IB
Delay Time: 0 to 9999 ms in 1 ms steps
Measurement Time: Short, medium, and long
Averaging: 1 to 256
Test Signal Characteristics
Test frequency: 1 kHz
Frequency accuracy: ±0.1%
Test signal level: 1 μA, 10 μA, 100 μA, 1 mA, 10 mA rms
Level accuracy: ±(10% + 0.2 μA)
Maximum voltage across sample: 20 mV peak in any case
Measurement Range

Parameter	Measurement range
R	10 μΩ to 100 kΩ
X, |Z|	10 μΩ to 100 kΩ (typical)
L	10 nH to 10 H (typical)
θ	−180° to +180° (typical)

Measurement Accuracy: ±0.4% Basic for R
Measurement Time: Time interval from a trigger command to the end of measurement (EOM) signal output at the handler interface port.

Mode	Time (typical)
Short	34 ms
Medium	70 ms
Long	900 ms

Display: 24 digits LCD display. Capable of displaying: measured values, control settings, comparator limits and decisions, self-test messages, and annunciations.
Correction Function
Zero SHORT: Eliminates measurement errors due to parasitic impedances in the test fixture.
Comparator Function
HIGH/IN/LOW for each primary measurement parameter and the secondary measurement parameter.
Other Functions
Superimposed dc: ±42 Vdc maximum may be present on measurement terminals.
Save/recall: Ten instrument setups can be saved/recalled from the internal nonvolatile memory.
Continuous memory capability: If the instrument is turned off, or if a power failure occurs, instrument settings are automatically memorized (≤72 hours at 23 ±5° C).
HP-IB interface: All control settings, measured values, and comparator information
Handler interface: All output signals are negative-logic, optically isolated open collectors.
Output signals include: HIGH/IN/LOW, index, end of measurement, and alarm. Input signalsare keylock and external trigger.

General Specifications

Power Requirements: 90 to 132 V or 198 to 264 V, 47 to 66 Hz, 45 VA max
Operating Temperature: 0° to 55° C
Size: 320 mm W × 100 mm H × 300 mm D (12.6 in × 3.94 in × 11.81 in)
Weight: 4.5 kg (9.9 lb)

Furnished Accessories

Operation manual, power cable (mating cable and test leads, or HP 16338A test lead set, must be ordered separately.)

Key Literature

HP 4338A Milliohm Meter Data Sheet, p/n 5091-2146E.

Ordering Information

	Price
HP 16338A Test Lead Set	$785
HP 16143B Mating Cable (0.6 m)	$325
HP 16005B Kelvin Clip Lead (0.4 m, with large clip)	$102
HP 16005C Kelvin IC Clip Lead (0.4 m, with IC clip)	$143
HP 16006A Pin-Type Probe Lead (0.4 m)	$54
HP 16007A Alligator Clip Leads (0.4 m, with 2 red clips)	$26
HP 16007B Alligator Clip Leads (0.4 m, with 2 black clips)	$26
HP 16064B LED Display/Trigger Box	$335
HP 4338A Milliohmmeter	$4,080
Opt 009 Delete Operation Manual	−$54
Opt W30 Extended Repair Service	+$80

For the most current prices and product information, contact your local Hewlett-Packard sales office—see page 691.