Agilent 4338B Milliohm Meter

10 µΩ to 100 kΩ

Product Overview

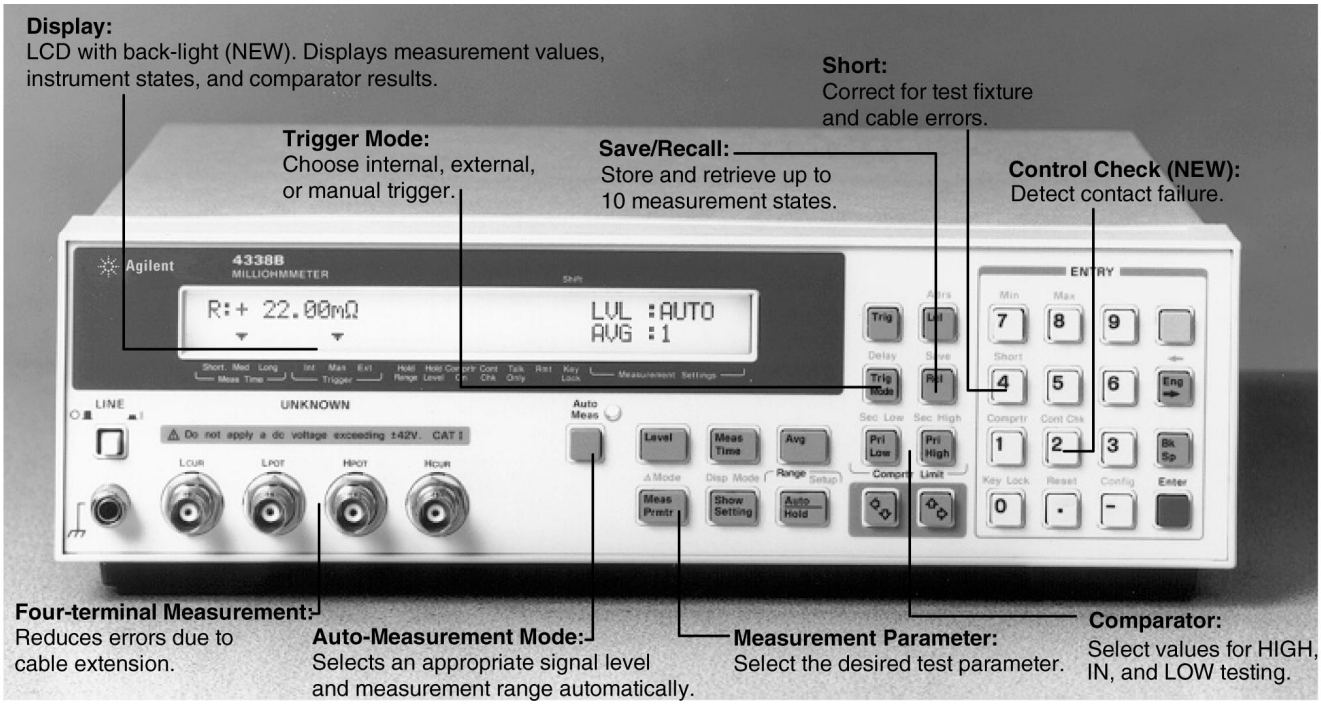
Introduction

Ideal for precise measurements of extremely low resistances using an ac test signal, the Agilent Technologies 4338B suits bench-top applications that require flexible testing and reliable results. The milliohm meter satisfies system throughput demands for fast, high-quality measurements.

Agilent Technologies

Innovating the HP Way

The Agilent 4338B



Satisfy Your Needs for ...

High-quality testing

- Remove parasitics with error correction
- Acheive consistent results with 0.4% basic accuracy
- Verify test connections with contact check function
- Stabilize data with selectable measurement times and averaging
- Eliminate trigger timing errors with trigger delay

Operating versatility

- Select from 5 impedance parameters
- Pick from 7 probes, test fixtures, and accessories
- Configure the instrument quickly with Save/Recall
- Reduce test complexity with auto-measurement function

Fast test throughput

- Get 34 ms/measurement speed
- Perform Pass/Fail testing with comparator function
- Operate remotely via the GPIB interface
- Use the built-in handler interface

Key Parameters and Specifications

Test frequency:
1 kHz

Impedance parameter sets:
R, |Z|-θ, R-L, R-X

Basic accuracy:
0.4%

Test current levels:
1 µA, 10 µA, 100 µA, 1 mA, 10 mA

Error correction:
Short compensation

Display digits:
3, 4, or 5 digits (selectable)

Save/recall:
10 instrument states

Interfaces:
GPIB and handler interface

Satisfy your need for high-quality testing

- Resolve data to 5 digits
- Make precise measurements with 0.4% basic accuracy
- Eliminate impedance calculations; select the parameter you need: R, |Z|, θ, L, X
- Verify DUT performance under simulated operating conditions
- Perform dry contact testing with minimal test signal (≤ 20 mV)
- Obtain high-confidence testing with contact check function

Test electromechanical devices

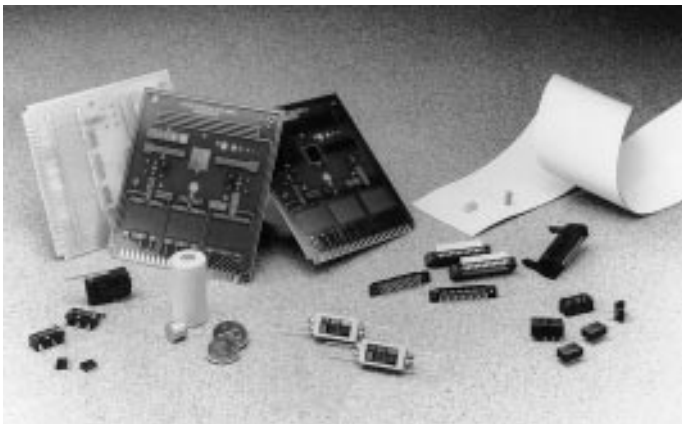
- Perform dry contact testing with low-level test signals
- Select from a variety of probes and test fixtures to fit your application
- Resolve measurements to 10 μΩ
- Test switches, cables, connectors, relays, and pc board traces

Evaluate battery internal resistance

- Protect your investment with voltage protection on terminals (Max. 42 Vdc)
- Perform non-invasive testing with no effects on charge/discharge cycles
- Avoid polarization effects with an ac test signal

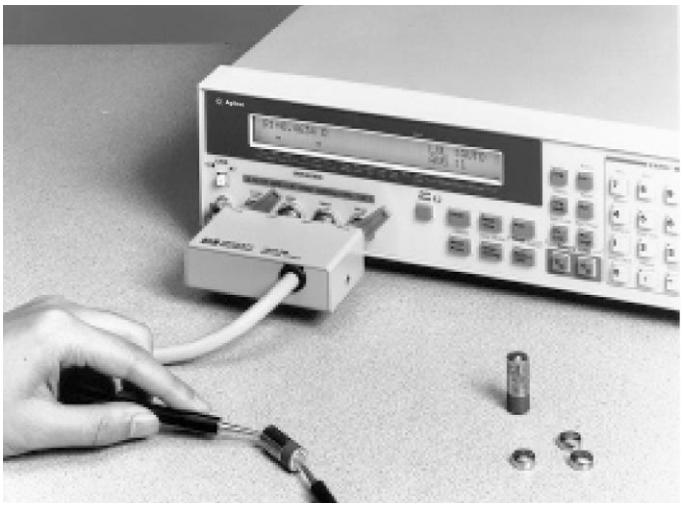
System features for automation in manufacturing

- Maximize accuracy with error correction
- Automate testing with GPIB interface for computer control
- Reduce ground-loops with isolated handler interface
- Continue testing after ac power loss with non-volatile memory
- Perform pass/fail testing with comparator function (HIGH, IN, LOW)



Make precise ultra-low resistance measurements with the 4338B.

Use the milliohm meter for electromechanical contact testing.



The 4338B is ideal for battery evaluation.

Agilent 4338B Specifications

Measurement Accuracy

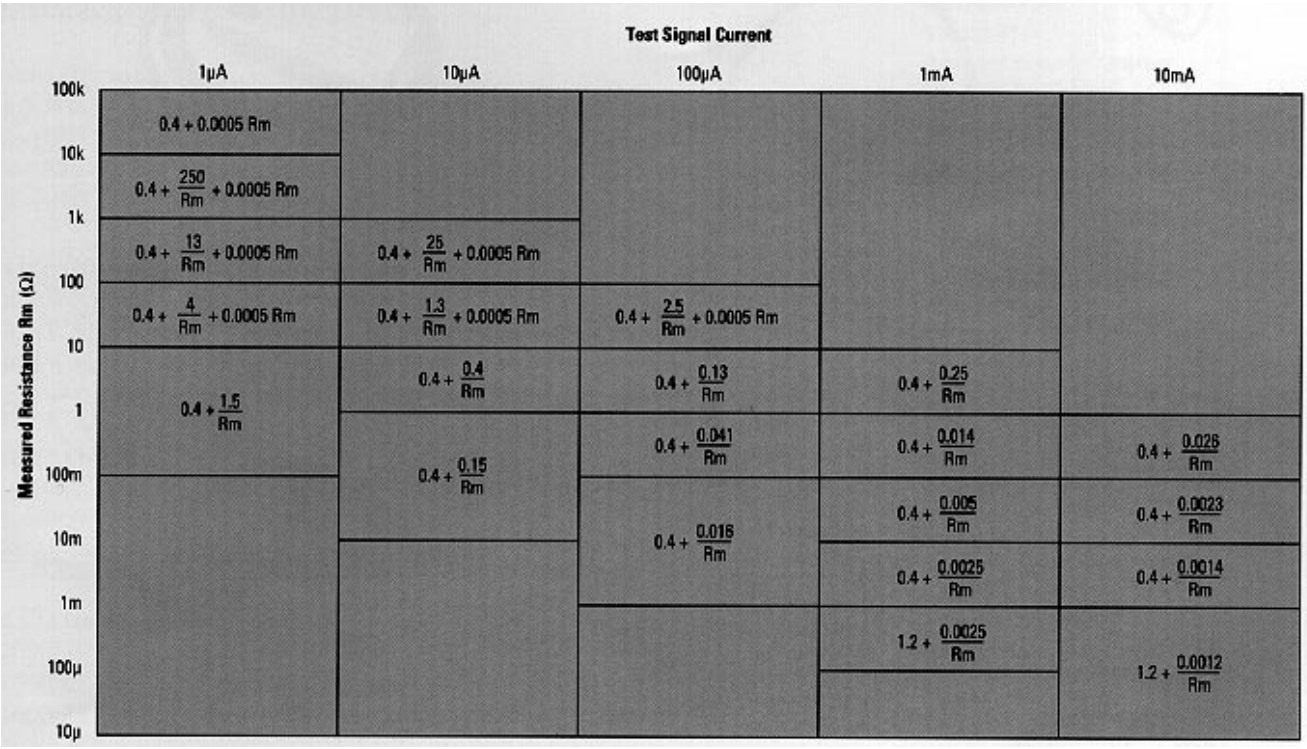


Table 1. Measurement Accuracy (± % of reading)

Measurement Conditions

The following test conditions apply for the data shown in Table 1:*

1. Warm-up time: ≥ 30 minutes
2. Ambient temperature: 23°C ± 5°C
3. Test cable length: 0 meter
4. Short error correction performed.
5. Measurement time: LONG

* Other test-condition data is available in the operation manual

Measurement Parameters/Ranges

Parameter	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°

Measurement Conditions and Functions

Test Frequency: 1 kHz ± 0.1%

AC Test Signal Level (rms current): 1 µA, 10 µA, 100 µA, 1 mA, 10 mA

Maximum Applied AC Voltage: 20 mV peak

Maximum DC Voltage to BNC terminals: 42 V

Ranging: Auto and Hold

Maximum Cable Length: 2 meters

Trigger: Internal, Manual, and External

Delay time: 0 to 9999 ms in 1-ms steps

Averaging: 1 to 256

Measurement time (typical):

SHORT	MEDIUM	LONG
34 ms	70 ms	900 ms

Other Instrument Functions

Math Functions: Deviation (Δ) and Percent Deviation (%Δ).

Short Error Correction: Eliminates measurement errors due to parasitic impedances in cables and test fixtures.

Comparator: HIGH, IN, and LOW for primary and secondary parameters.

Continuous Memory: All instrument settings are automatically saved for up to 72 hours when power is lost or the instrument is turned off.

Save/Recall: 10 instrument states from non-volatile memory.

Contact Check: Detects contact failure.

GPIB: Implementation of IEEE-488 for control and data.

Handler Interface:
Negative logic and optically isolated;
Output signals: HIGH/IN/LOW, End-Of-Measurement, Index, and Alarm;
Input signals are Keylock and External Trigger.

Physical Characteristics

Power: 90-132 Vac or 198-264 Vac. 47-66 Hz. 45 VA typical.

Operating Temperature: 0°C to 45°C

Dimensions: 320(W) x 100(H) x 300(D) mm

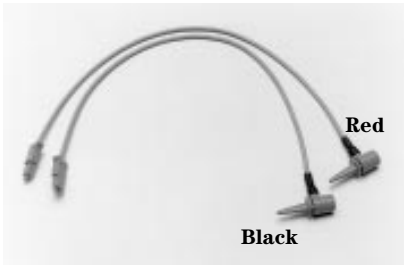
Weight: 4.5 kg

Test Fixtures/Accessories for the Agilent 4338B Milliohm Meter

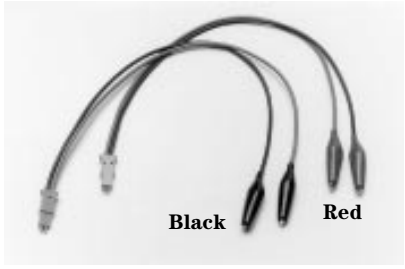
16005B Kelvin Clip Lead (large)
Cable length, 0.4 meter. Jaws mate with large terminal devices. One lead supplied only.

16006A Pin-type Probe Lead
Cable length, 0.4 meter. Spring-loaded probe tips for firm contact. Useful for manual contact measurements. One lead supplied only.

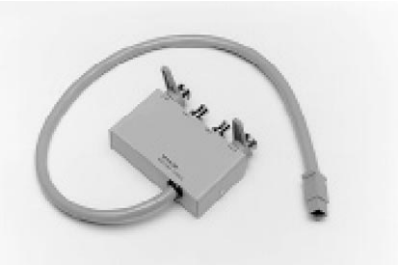
16064B LED Display/Trigger Box
Displays comparator status. Cable length, 1.5 meters. External trigger.



16005C Kelvin IC Clip Lead (red clip)
16005D Kelvin IC Clip Lead (black clip)
Cable length, 0.4 meter. Small contacts for devices with fine leads. One lead supplied only.



16007A Alligator Clip Lead (red clip)
16007B Alligator Clip Lead (black clip)
Alligator Clip Lead. Cable length, 0.4 meter. Each test lead has a separate alligator clip voltage and current terminal. One lead supplied only.



16143B Mating Cable
Interface between test leads and 4338B. Cable length, 0.5 meter.

16338A Test Lead Kit
Contains one each of the following: 16143B, 16005C, 16005D, 16007A, 16007B, carrying case. Contains two each of the following: 10005B and 16006A.

Ordering Information*

Agilent 4338B Milliohm Meter
Furnished accessories:
Operation manual, power cable.

(Must specify the manual language using the manual option ABA or ABJ.)

Test fixtures must be ordered separately.

Manual options:
ABA English operation manual
ABJ Japanese operation manual
0B0 Delete operation Manual
0B1 Extra operation Manual

Service options:
W30 Three year customer return repair
W32 Three year customer return calibration

Cabinet options:
1CM rack mount kit
1CN front handle kit
(Rack flange and handle kit are not compatible)

Calibration Certificate Option:

UK6 Commercial cal. certificate w/ test data

Test fixtures and accessories:

16005B Kelvin clip lead (1 lead only)

16005C Kelvin IC clip lead, red clip (1 lead only)

16005D Kelvin IC clip lead, black clip (1 lead only)

16006A pin-type probe lead (1 lead only)

16007A alligator clip lead, red (1 lead only)

16007B alligator clip lead, black (1 lead only)

16143B mating cable (Requires 2 leads)

16338A test lead kit. Includes 16005B/5C/5D/6A/7A/7B leads, 16143B mating cable and carrying case.

16064B LED display/trigger box

* Accessories and options are priced individually.

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(fax) (64 4) 495 8950

Asia Pacific:
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