



Agilent 4263B LCR Meter

100 Hz to 100 kHz

Product Overview

Introduction

The Agilent Technologies LCR meter makes fast measurements on components. It is optimized for applications that require precision and versatility. The instrument's performance ranges from general bench-top impedance measurements to complex transformer, coil and electrolytic capacitor measurements. The LCR meter offers fast, reliable, and versatile testing at a low cost.

Satisfy your needs for...

Fast system test throughput

- Maximize testing with rapid 25 ms measurements
- Minimize user intervention with pass/fail testing
- Communicate results with display and GPIB
- Automate testing with built-in handler interface



Fault-free results

- Test with confidence using contact check function
- Remove parasitics with error correction
- Get the best data with 0.1% basic accuracy
- Eliminate trigger timing errors with trigger delay function

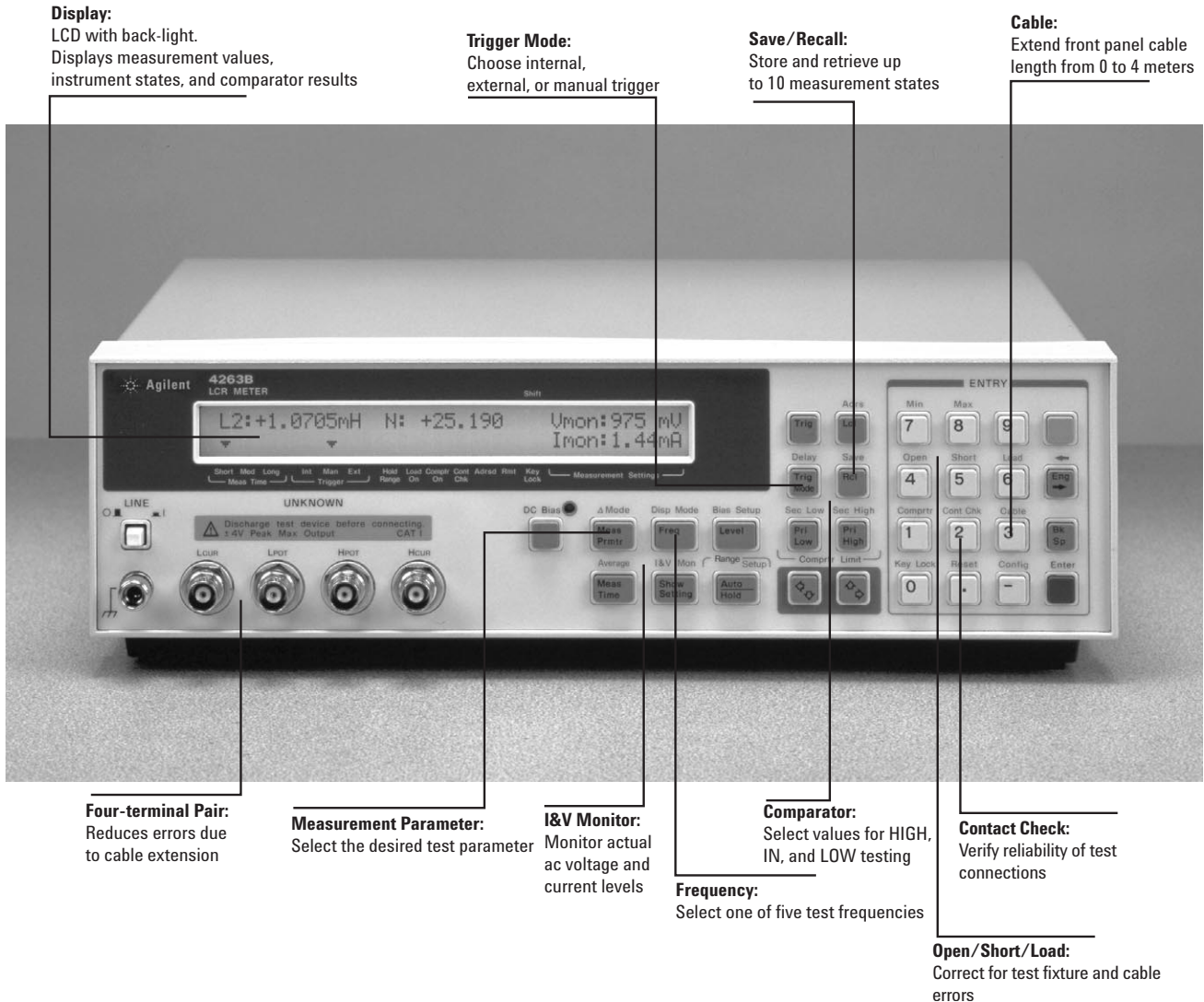
Versatile measurements

- Select from 11 impedance parameters
- Add three complex transformer parameters with Option 001
- Set signal level with 5mVrms resolution
- Monitor actual ac voltage and current levels
- Pick from many test fixtures and accessories
- Save and recall up to ten measurement setups



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Key Parameters and Specifications

Test frequencies:
100 Hz, 120 Hz, 1 kHz, 10 kHz, 100 kHz

Option 002 adds 20kHz

AC test signal levels:
20m–1Vrms, 5mVrms steps

Basic accuracy:
0.1%

Impedance parameters:
 $|Z|$, R , X , $|Y|$, G , B , C , L , D , Q , θ

Option 001 adds transformer measurement functions: turns-ratio, mutual-inductance and dc-resistance

Cable length settings:
0, 1, 2, 4 meters

Bias:
1.5 and 2.0 Vdc

Error correction:
Open, short, and load

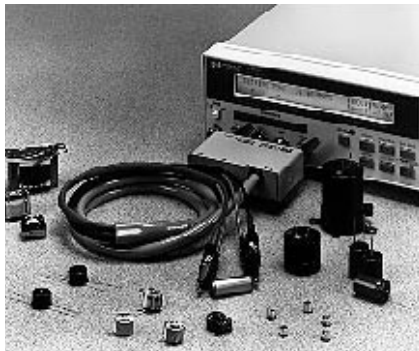
Built-in system features:
GPIB and handler interfaces

Measurement time (typical):
25 ms at best conditions

Contact check time (typical):
5 ms per measurement

High-quality results

- See five digits of data
- Make precise measurements with 0.1% basic accuracy
- Select from 11 impedance parameters
- Verify device performance at simulated operating conditions
- Monitor actual test signal voltage and current levels



Make reliable impedance measurements.

System features for test automation

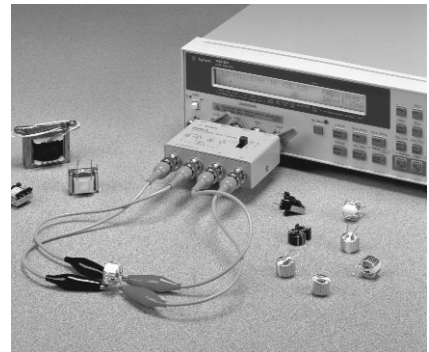
- Maximize accuracy with error correction
- Use performance specified with 0, 1, 2, and 4 meter cables
- Test device contact failure with contact check function
- Automate testing with GPIB interface
- Reduce ground-loops with isolated handler interface
- Continue testing after ac power loss with continuous memory
- Perform pass/fail testing with comparator function (High/In/Low)



The 4263B LCR meter is designed for automated applications.

Evaluate transformers and coils with Option 001

- Measure turns-ratio, mutual inductance and dc-resistance
- Easily make connections with 16060A transformer test fixture
- Measure parameter responses with variable signal levels



Simplify transformer testing.

Make electrolytic capacitor measurements

- Obtain versatile testing with a large capacitance range
- Keep costs down with built-in dc bias source
- Protect your investment: high energy protection on terminals
- Increase test throughput with fast system measurements
- Make reliable handler measurements with contact check function



Quickly evaluate electrolytic capacitors.

Specifications

Measurement Accuracy

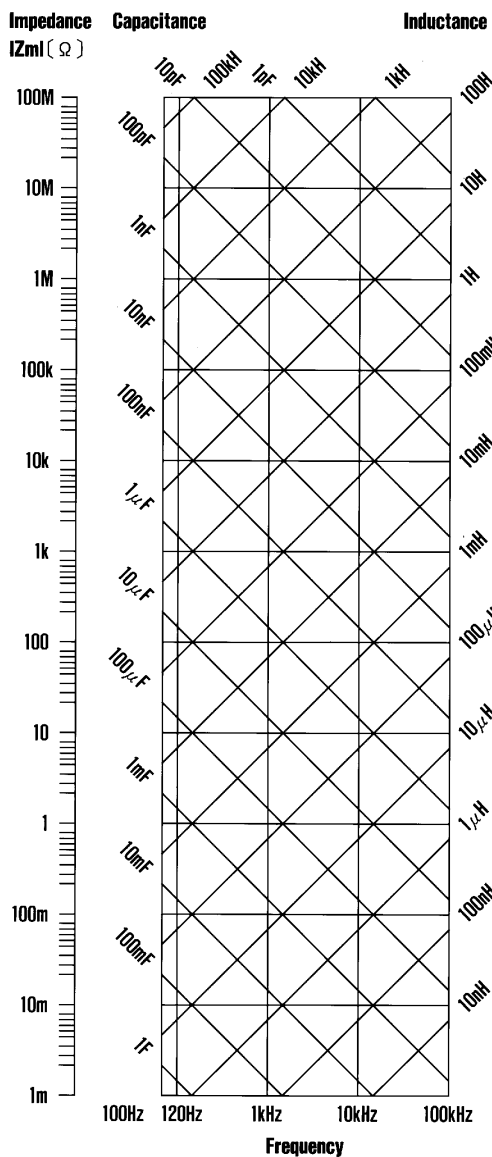


Figure 1.
Conversion Diagram

0.85 + $2.9 \times 10^{-8} / Z_{ml}$	0.15 + $2.9 \times 10^{-8} / Z_{ml}$	0.1 + $5.6 \times 10^{-8} / Z_{ml}$	0.48 + $3.8 \times 10^{-7} / Z_{ml}$	1.9 + $7.7 \times 10^{-7} / Z_{ml}$	Accuracy Not Specified
0.85 + $2 \times 10^{-7} / Z_{ml}$	0.15 + $2 \times 10^{-7} / Z_{ml}$	0.095 + $1.4 \times 10^{-7} / Z_{ml}$	0.36 + $5.1 \times 10^{-7} / Z_{ml}$	1.4 + $1 \times 10^{-6} / Z_{ml}$	1.2 + $1.4 \times 10^{-5} / Z_{ml}$
0.85 + $2 \times 10^{-6} / Z_{ml}$	0.15 + $2 \times 10^{-6} / Z_{ml}$	0.09 + $1 \times 10^{-6} / Z_{ml}$	0.16 + $1.9 \times 10^{-6} / Z_{ml}$	0.8 + $3.7 \times 10^{-6} / Z_{ml}$	
0.85 + $2 \times 10^{-5} / Z_{ml}$	0.15 + $2 \times 10^{-5} / Z_{ml}$	0.09 + $1 \times 10^{-5} / Z_{ml}$	0.16 + $1.5 \times 10^{-5} / Z_{ml}$	0.7 + $3.1 \times 10^{-5} / Z_{ml}$	1.1 + $1 \times 10^{-4} / Z_{ml}$
0.85 + $2 \times 10^{-4} / Z_{ml}$	0.15 + $2 \times 10^{-4} / Z_{ml}$	0.09 + $1 \times 10^{-4} / Z_{ml}$	0.16 + $1.5 \times 10^{-4} / Z_{ml}$	0.7 + $3 \times 10^{-4} / Z_{ml}$	1.1 + $1 \times 10^{-3} / Z_{ml}$
0.85 + $2 / Z_{ml}$	0.15 + $2 / Z_{ml}$	0.09 + $1 / Z_{ml}$	0.16 + $1.5 / Z_{ml}$	0.5 + $3.1 / Z_{ml}$	0.83 + $10 / Z_{ml}$
0.85 + $0.2 / Z_{ml}$	0.17 + $0.22 / Z_{ml}$	0.12 + $0.1 / Z_{ml}$	0.2 + $0.18 / Z_{ml}$	0.6 + $0.35 / Z_{ml}$	0.97 + $1.3 / Z_{ml}$
0.85 + $0.022 / Z_{ml}$	0.4 + $0.022 / Z_{ml}$	0.4 + $0.015 / Z_{ml}$	0.4 + $0.04 / Z_{ml}$	0.6 + $0.08 / Z_{ml}$	0.97 + $0.35 / Z_{ml}$
0.85 + $0.012 / Z_{ml}$	0.4 + $0.012 / Z_{ml}$	0.4 + $0.0075 / Z_{ml}$	0.4 + $0.028 / Z_{ml}$	0.6 + $0.056 / Z_{ml}$	0.97 + $0.26 / Z_{ml}$
DC	100/120	1k	10k	20k (Option 002 only)	100k

Table 1.
Measurement Accuracy (\pm % of reading)

Measurement Conditions:

1. Warm-up time: ≥ 15 min.
2. Ambient temperature: $23 \pm 5^\circ\text{C}$
3. Test signal voltage: 1 Vrms
4. Test cable length: 0 meter
5. Open and short corrections performed
6. Measurement time: Medium or Long
(Other test condition data is available in the operation manual.)

For $|Z|$, $|Y|$, L, C, R, X, G, and B accuracy (Ae), refer to Table 1. Table 1 equations yield accuracy based on frequency and DUT characteristic impedance (Zm). Zm is from Figure 1, Conversion Diagram.

D accuracy(De) = $\pm Ae/100$

Q accuracy(Qe) = $\pm \frac{(Qm) \times De}{1 \pm (Qm \times De)}$
where (Qm x De < 1)

θ accuracy (θe) = $0.573 \times Ae$

Ae = Accuracy of $|Z|$, $|Y|$, L, C, R, X, G, and B

De = D accuracy

Dm = Measured value of D

Qe = Q accuracy

Qm = Measured value of Q

θe = θ phase angle accuracy

Zm = DUT impedance at test frequency in Hertz

Other Specifications

Measurement Parameters/Ranges

Parameter	Range
$ Z $, R, X	1 m Ω to 100 M Ω
$ Y $, G, B	10 nS to 1000S
C	1 pF to 1 F
L	10 nH to 100 kH
D	0.0001 to 9.9999
Q	0.1 to 9999.9
θ	-180° to $+180^\circ$
Δ	-999.99% to 999.99%

Option 001: DC resistance 1 m Ω to 100 M Ω

Mutual inductance 1 μH to 100 H (typical)

Turns-ratio 0.9 to 200 (typical)

Measurement Conditions and Functions

Test Frequency: 100 Hz, 120 Hz, 1 kHz, 10 kHz, 100 kHz. (Option 002 adds 20 kHz.)

AC Test Signal Level: 20 m - 1 Vrms, 5 mVrms steps

Bias:

Internal: + 1.5 and +2.0 Vdc

External: 0 to + 3.0 Vdc

Ranging: Auto and Hold

Trigger: Internal, Manual, and External

Trigger delay time: 0 to 9999 ms in 1 ms steps

Test Cable Lengths:

0, 1 meter @ $f \leq 100$ kHz

2 meter @ $f \leq 10$ kHz (20 kHz)

4 meter @ $f \leq 1$ kHz

Measurement Time:

SHORT	MEDIUM	LONG
25ms	65ms	500ms

Other Instrument Functions

Test Signal Level Monitor:

Voltage, Current

Error Correction: Open, Short, Load

Comparator: HIGH, IN, and LOW for each displayed parameter

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

Front-end Protection:

$V_{max} = \sqrt{8/C}$ @ $V_{max} \leq 250$ V

$V_{max} = \sqrt{2/C}$ @ $V_{max} \leq 1000$ V

C in Farads

Handler Interface: Negative logic and isolated. Signals are HIGH/IN/LOW, No-Contact, EOM, Index, Alarm, Keylock, Ext. Trigger.

GPIB Interface: Instrument control, TALK-only mode for LISTEN-only printers using GPIB or Centronics/GPIB converter

Physical Characteristics

Power: 90-132 Vac or 198-264 Vac.

47-66 Hz. 45 VA typical.

Operating Temperature: 0-45 $^\circ\text{C}$

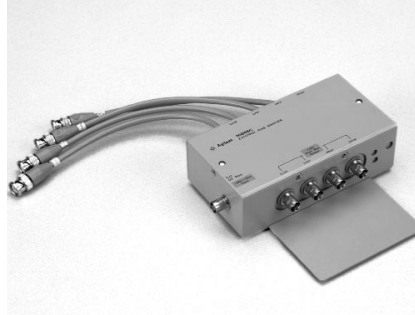
Dimensions: 320 (W) x 100 (H) x 300 (H) mm

Weight: 4.5 kg (typical)

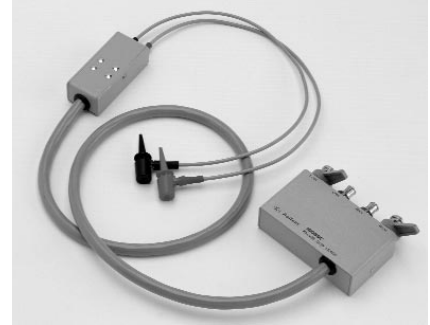
Test Fixtures/Accessories for the Agilent 4263B



16060A transformer test fixture
Allows fast connections to transformers



16065C external bias adapter
For external dc bias of DUT. $V_{max} \leq 40$ Vdc.



16089C Kelvin IC clip leads
IC package clip. 1 meter length.



16064B LED display/trigger box
Displays comparator status.
1.5 meter cable. External trigger.



16089A Kelvin clip leads
Large clip. 1 meter length.

16089B Kelvin clip leads
Medium clip. 1 meter length.

16089D Alligator clip leads
Four clips. 1 meter length.

Ordering Information**4263B LCR Meter**

Furnished accessories: Operation manual, power cable

Instrument Options:

Option 001 Add N/M/DC-R measurement function

Option 002 Add 20 kHz test frequency

Manual Options:

Option ABA English operation manual

Option ABJ Japanese operation manual

Option 0B0 Delete operation manual

Option 0B1 Extra operation manual

Service Options:

Option W30 Three-year customer return repair

Option W32 Three-year customer return calibration

Option W34 Three-year customer return standards compliant calibration

Cabinet Options:

Option 1CN Front handle kit

Option 1CM Rack mount kit (Rack flange and handle kit are not compatible)

Test Fixtures and Accessories

16034E SMD component test fixture

16047A Axial and radial test fixture

16334A SMD tweezer test fixture

16048A 0.94-meter/BNC test leads

16048B 0.94-meter/SMC test leads

16048D 1.89-meter/BNC test leads

16048E 3.8-meter/BNC test leads

16060A Transformer test fixture

16064B LED display/trigger box

16065A 200-Vdc external voltage bias fixture

16065C 40-Vdc external voltage bias adapter

16089A Large Kelvin clip leads

16089B Medium Kelvin clip leads

16089C Kelvin IC clip leads

16089D Alligator clip leads

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