

Precision Lcr Digital Bridge Meter 10 Hz To 1 Mhz Component Impedance Analyzer

Item Number: CD10



Introduction

Engineered for comprehensive component characterization this precision digital LCR bridge meter delivers a 10 Hz to 1 MHz test bandwidth 0.05% basic accuracy high speed automated sorting and integrated DC bias control across demanding laboratory research and manufacturing inspection workflows.

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Application	Description	Key Benefit
Advanced Materials & Dielectric Research	Characterizing dielectric constant, loss tangent, and impedance spectra of novel ceramics, polymers, and solid electrolytes.	Wide 10 Hz–1 MHz sweep range identifies phase transitions, relaxation mechanisms, and boundary layer impedances.
Battery & Energy Storage Evaluation	Evaluating internal resistance (ESR), contact impedance, and interfacial capacitance of battery separators and electrode foils.	Low-frequency stability and 1 mHz resolution isolate interfacial charge transfer resistance from bulk electrolyte conductivity.
Precision Passive Component QC	High-speed testing and automated binning of multilayer ceramic capacitors (MLCC), precision resistors, and film capacitors.	200 meas/s acquisition speed and 10-bin comparator maximize throughput during incoming inspection and production sorting.
Magnetic Core & Inductor Profiling	Measuring quality factor (Q), inductance (Ls/Lp), and AC resistance across variable excitation currents and internal DC bias.	Programmable internal and external DC bias currents allow saturation and permeability analysis under realistic operating conditions.
Semiconductor & Sensor Characterization	Impedance analysis of varactors, diodes, piezoelectric transducers, and MEMS devices under variable DC bias potentials.	External bias support up to $\pm 60V$ allows comprehensive C-V profiling and reverse-bias capacitance measurements.
Automated SMT Production Lines	Inline automated testing and real-time pass/fail screening linked directly to pick-and-place handlers via industrial bus protocols.	Standard Handler, GPIB, and LAN interfaces provide noise-immune, sub-millisecond signaling for factory automation.

Parameter	Specification Details
Base Product Identifier	CD10
Variant Model Options	CD10-01 (10 Hz – 100 kHz) CD10-02 (10 Hz – 200 kHz) CD10-03 (10 Hz – 300 kHz) CD10-05 (10 Hz – 500 kHz) CD10-10 (10 Hz – 1 MHz)
Frequency Resolution & Accuracy	1 mHz Resolution, 0.01% Accuracy
Basic Measurement Accuracy	0.05%
Display Resolution	6½ Digits (6.5 Digits)
Measurement Parameters	Cp-D, Cp-Q, Cp-G, Cp-Rp, Cs-D, Cs-Q, Cs-Rs, Lp-D, Lp-Q, Lp-G, Lp-Rp, Ls-D, Ls-Q, Ls-Rs, Rs-Xs, Z -θr, Z -θd, Y -θr, Y -θd, G-B
Measurement Speed (≥ 100 Hz)	Fast: 50 meas/s (20 ms) Medium: 10 meas/s (100 ms) Slow: 1.25 meas/s (800 ms)
Custom Measurement Speed (≥ 1 kHz)	User-programmable from 0.5 meas/s to 200 meas/s
Capacitance Display Range (Cp, Cs)	0.001000 pF to 99.9999 F
Inductance Display Range (Lp, Ls)	0.001000 nH to 99.9999 kH

Parameter	Specification Details
Resistance & Impedance Range (R_p , R_s , $ Z $, X_s)	0.001000 m Ω to 999.999 M Ω
Conductance & Admittance Range (G , B , $ Y $)	0.001000 μ S to 999.999 kS
Phase Angle Range (θ_r / θ_d)	θ_r : ± 0.000001 rad to 3.14159 rad θ_d : ± 0.000001 deg to 179.9999 deg
Dissipation (D) & Quality Factor (Q) Range	D: ± 0.000001 to 9.99999 Q: ± 0.001 to 99999.9
Test Signal Voltage Range	0 to 2.0 Vrms (Resolution: 1 mV, Accuracy: 5% + 5 mV)
Test Signal Current Range	100 μ Arms to 20 mArms (Resolution: 10 μ A, Accuracy: 5% + 50 μ A)
Internal DC Bias Source	Voltage: -2.0 V to +2.0 V Current: -20.0 mA to +20.0 mA
External DC Bias Input	-60.0 V to +60.0 V
Signal Source Output Impedance	Selectable 30 Ω or 100 Ω
Comparator & Sorting Function	10 Bins: 8 Pass Bins, 1 Fail Bin, 1 Auxiliary Bin with statistical counting
Mathematical Operations	Direct Reading, Delta (Absolute value difference), Delta% (Percentage difference)
Calibration & Correction	Self-calibration, Open circuit, Short circuit, Load correction, 100 user frequency points, 256 designated frequency correction sets
List Sweep Function	10-point programmable multi-parameter list sweep
Display Screen	7.0-inch TFT LCD (800 $\times$ 480 Resolution), Chinese/English interface
Memory & Data Storage	Internal non-volatile memory and USB mass storage support
Remote Control Interfaces	GPIO, Ethernet (LAN), RS232C, USB Host, USB Device, Handler
Power Supply Requirements	220V AC $\pm 10\%$, 50 Hz
Power Consumption	< 20 W
Operating Temperature Range	0°C to 40°C
Physical Dimensions (W $\times$ D $\times$ H)	330 mm $\times$ 285 mm $\times$ 136 mm
Net Weight	3.6 kg