KEYSIGHT TECHNOLOGIES (AGILENT HP)

4274A

The HP 4274A is a classic, high-performance multi-frequency LCR meter designed for highly accurate component and material impedance measurements in the 100 Hz to 100 kHz frequency range. It offers a basic accuracy of 0.1%, 13 spot test frequencies in a 1-2-4-10 sequence, and a continuously variable test signal level from 1 mV to 5 Vrms.

SPECIFICATIONS

General

Interfaces	GPIB (HP-IB) (Option 101)
Display	Dual LED numeric displays with Normal (4-1/2 digit, 19999 count) and High Resolution (5-1/2 digit, 199999 count) modes
Warm-up Time	30 minutes

Physical

Power Supply	100, 120, 220, 240 V AC ±10%, 48-66 Hz
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	425.5 mm × 177 mm × 498 mm mm

Measurement Parameters & Functions

Primary Measurement Parameters	L, C, |Z|
Secondary Measurement Parameters	D, Q, ESR, G, X, B, Phase Angle (θ)
Equivalent Circuit Modes	Auto, Series, Parallel (with parameter combinations)
Deviation Measurement Modes	Deviation (Δ) and Percent Deviation (Δ%) for C, L, and |Z|
Self-Test Capability	Built-in automatic self-test routine

Calibration & Compensation

Offset Compensation	Front-panel zero adjustment for stray capacitance, residual inductance, resistance, and conductance

Test Signal Characteristics

Test Frequency Range	100 Hz to 100 kHz
Test Frequencies	11 spot frequencies (14 with Option 002)
Test Signal Voltage Range	1 mV to 5 Vrms
Test Signal Level Control	Continuously variable across 4 ranges
Test Signal Monitor	displays applied voltage or current

Measurement Speed & Accuracy

Basic Impedance Accuracy	0.1%

DC Bias Source

External DC Bias Input	Two rear panel connectors supporting up to ±200 V
DC Bias Monitor Output	Rear-panel BNC connector for monitoring internal bias voltage

Hardware Interfaces & Connectivity

Trigger Sources	Internal, External, or Manual
Test Port Configuration	Four-Terminal Pair Configuration (BNC front-panel terminals)

Supported Configurations & Accessories

Internal DC Bias Option	Option 001 (provides internal DC bias 0 to ±35 V)

DC Bias

Option 001 DC Bias Range	0 to ±35.0 V

Measurement Support

Test Cable Length Compensation	0 m, 1 m
Measurement Range Control	Auto and Manual
Equivalent Circuit Selection	Auto, Series, Parallel

Power

AC Power Requirements	100 V / 120 V / 220 V / 240 V ±10%, 48 to 66 Hz
Maximum Power Consumption	100 VA

Environmental

Operating Humidity Range	≤ 95% RH @ 40 °C

Measurement Performance

Frequency Accuracy	±0.01%
Measurement Speed Modes	Short, Normal
Typical Measurement Time (Short)	approx. 140 ms (at ≥ 1 kHz)
Typical Measurement Time (Normal)	approx. 210 ms (at ≥ 1 kHz)

Display & Indication

Display Resolution	4.5 digits (normal), 5.5 digits (high-resolution mode)

Measurement Range

Dissipation Factor (D) Measurement Range	0.0001 to 9.999
Quality Factor (Q) Measurement Range	0.01 to 9900

Options

Option 101 Interface	HP-IB (GPIB) Interface

TECHNOLOGY

Auto-balancing bridge

APPLICATIONS

Precision passive component testing, material impedance analysis, quality assurance, and research & development

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