KEYSIGHT TECHNOLOGIES (AGILENT HP)

4278A

The Keysight HP 4278A is a high-speed, precision 1 kHz/1 MHz capacitance meter designed for rapid, highly reliable component testing and quality control of low to medium value capacitors.

SPECIFICATIONS

General

Interfaces	HP-IB (GPIB) standard; Handler interface (optional), Scanner interface (optional)
Display	LCD (40 characters x 2 lines with LED backlight)
Memory Backup	Non-volatile memory for storing instrument setups

Physical

Power Supply	90 V to 132 V / 198 V to 264 V, 47 Hz to 66 Hz, <= 150 VA
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	426 mm × 177 mm × 498 mm mm
Weight	15 kg

Measurement Capabilities

Primary Measurement Parameters	Capacitance (C)
Secondary Measurement Parameters	Dissipation Factor (D), Quality Factor (Q), Equivalent Series Resistance (ESR), Conductance (G)
Equivalent Circuit Modes	Series, Parallel
Capacitance Measurement Range (1 kHz)	0.001 pF to 200 µF
Capacitance Measurement Range (1 MHz)	0.00001 pF to 2663 pF

Test Signal Specifications

Test Frequencies	1 kHz, 1 MHz
Test Signal AC Voltage Range	0.1 V to 1 V
AC Signal Level Resolution	0.1 V steps

Accuracy and Speed

Basic Capacitance Accuracy (1 kHz)	0.07% (at 21 ms integration time)
Basic Dissipation Factor Accuracy (1 kHz)	0.0005 (at 21 ms integration time)
Basic Capacitance Accuracy (1 MHz)	0.5% (at 21 ms integration time)
Basic Dissipation Factor Accuracy (1 MHz)	0.0002 (at 21 ms integration time)
Measurement Speed (Fast)	6.5 ms
Measurement Speed (Medium)	10 ms
Measurement Speed (Slow)	21 ms
Measurement Resolution	6 digits
Dissipation Factor Resolution	0.00001

Correction and Compensation

Correction Functions	Open, Short
Cable Length Compensation Settings	0 m, 1 m, 2 m

Comparator and Binning Functions

Comparator Binning	Built-in 10-bin sorting

Environmental and Compliance

Operating Humidity Range	<= 95% RH at 40 °C
Storage Temperature Range	-40 °C to +70 °C

DC Bias

Standard DC Bias Levels	0 V, 1 V, 2 V
Optional DC Bias Range (Option 001)	0 V to ±40 V
DC Bias Level Accuracy	±(1% of setting + 2 mV)

Test Signal

Test Signal Frequency Accuracy	±0.01%
Test Signal Level Accuracy	±10%
Output Impedance	20 Ω or 100 Ω (range dependent)

Measurement Ranges

Dissipation Factor (D) Measurement Range	0.00001 to 9.99999
Quality Factor (Q) Measurement Range	0.1 to 99999.9

Measurement Features

Measurement Terminal Configuration	4-terminal pair

Power

Power Consumption	≤ 150 VA
Line Voltage Options	90-132 V AC / 198-264 V AC (selectable)
Line Frequency	47 Hz to 66 Hz

Measurement Control

Trigger Sources	Internal, Manual, External (BNC or Handler interface), GPIB

Interfaces & Connectivity

Standard Interfaces	GPIB (IEEE-488)
Optional Interfaces	Handler Interface (Option 002), Scanner Interface (Option 301)

Performance

Optional Cable Compensation	4 m cable compensation (Option 101)
Ranging Modes	Auto, Hold
Deviation Measurement Mode	Deviation (Δ) and Percent Deviation (Δ%) from a reference value
Comparator Sorting Bins	9 bins for primary parameter (C), 1 bin for secondary parameter, 1 out-of-limit bin
Optional DC Bias Resolution (Option 001)	10 mV steps (0.00 V to 9.99 V), 100 mV steps (10.0 V to 40.0 V)

TECHNOLOGY

LCR / Capacitance Meter

APPLICATIONS

Production line sorting, incoming inspection, and quality control of film and ceramic capacitors

Generated by SpecAtlasHub (specatlashub.com). Specifications are compiled from available sources and are subject to change — verify critical values against the manufacturer before purchase.