

KEYSIGHT TECHNOLOGIES (AGILENT HP)

4156C

The Keysight (Agilent) 4156C Precision Semiconductor Parameter Analyzer is a highly accurate laboratory instrument designed for the detailed characterization and parametric testing of semiconductor devices, materials, and processes. Equipped with four built-in high-resolution Source/Monitor Units (HRSMUs), two Voltage Monitor Units (VMUs), and two Voltage Program Units (VPUs), it offers exceptional current resolution down to 1 fA, making it ideal for low-leakage measurements, transistor curve tracing, and reliability evaluations.

SPECIFICATIONS

General

Interfaces	GPIO, LAN (10Base-T), Parallel (Centronics)
Display	8.4-inch color active matrix LCD (640 × 480 VGA)
Required Warm-up Time	40 minutes

Physical

Power Supply	90 V to 264 V AC, 47 Hz to 63 Hz, 450 VA maximum
Operating Temperature	10 °C to 40 °C °C
Dimensions (W×H×D)	426 mm × 235 mm × 524 mm mm
Weight	21 kg kg

System Configuration & Channels

Number of High-Resolution SMU (HRSMU) Channels	4
Voltage Monitor Unit (VMU) Channels	2
Voltage Program Unit (VPU) Channels	2
Ground Unit (GNDU) Configuration	1 (Standard)
Ground Unit Max Sink Current	1.6 A

SMU Source & Measurement Performance

HRSMU Maximum Voltage Force Range	±100 V
HRSMU Maximum Current Force Range	±100 mA
HRSMU Voltage Force Resolution	2 µV (on 2 V range)
HRSMU Current Force Resolution	10 fA (on 10 pA range)
HRSMU Voltage Measurement Range	±2 V to ±100 V
HRSMU Current Measurement Range	±10 pA to ±100 mA
HRSMU Voltage Measurement Resolution	2 µV (on 2 V range)
HRSMU Current Measurement Resolution	1 fA (on 10 pA range)
Maximum Output Power per HRSMU Channel	10 W
Guarding and Shielding Configuration	Kelvin (force, sense, and guard triaxial outputs)

VMU & VPU Performance

VMU Voltage Measurement Range	± 2 V, ± 20 V
VMU Maximum Voltage Measurement Resolution	0.2 μ V (on 2 V range)
VMU Input Impedance	≥ 10 G Ω
VPU Output Voltage Range	± 40 V
VPU Maximum Current	100 mA
VPU Pulse Output Modes	DC, Pulse, Dual-channel Pulse
VPU Pulse Width Range	20 μ s to 10.4 s
VPU Pulse Period Range	100 μ s to 20 s

Measurement Modes & Functions

Sweep Measurement Modes	Linear, Logarithmic, Single, Double
Maximum Number of Sweep Steps	1001
Sampling Measurement Points	1 to 10001
Minimum Sampling Interval	60 μ s
Integration Time Settings	Short, Medium, Long
Hold Time Range	0 to 655.35 s
Delay Time Range	0 to 65.535 s
Stress Force Modes	DC, Pulse

Controller & User Interface

Internal Storage Drive Type	3.5-inch Floppy Disk Drive (FDD), 1.44 MB
Supported Storage File Formats	HP LIF, DOS/MS-DOS
Internal Programming Language Support	Instrument BASIC (IBASIC)
Keyboard Interface Port	PS/2 mini-DIN

Connectivity & Interfaces

SMU Connector Type	Triaxial
VMU Connector Type	BNC
VPU Connector Type	BNC
GNDU Connector Type	Triaxial
Interlock Connector Type	6-pin circular
GPIO Interface Port	24-pin IEEE-488

Environmental & Safety Compliance

Operating Humidity Range	20% to 70% RH (non-condensing)
Storage Temperature Range	-20 °C to 60 °C
Cooling Method	Forced-air cooling (internal fan with rear exhaust)

Environmental

Maximum Operating Altitude	2,000 m
Maximum Storage Altitude	4,572 m

Compliance

Safety Compliance Standards	EN61010-1, CAN/CSA-C22.2 No. 1010.1
EMC Compliance Standards	EN55011 Group 1 Class A, EN50082-1

Connectivity

R-Box Control Port	15-pin D-sub
Selector Control Port	9-pin D-sub
Trigger Input Port	BNC
Trigger Output Port	BNC

Interfaces

LAN Interface	10Base-T (RJ-45) port
Parallel Interface	25-pin Centronics parallel port

Power Supply

AC Line Voltage	90 V to 264 V
AC Line Frequency	47 Hz to 63 Hz
Maximum Power Consumption	450 VA

System Compatibility

Expander Compatibility	Supports Agilent 41501A/B SMU and Pulse Generator Expander
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Measurement Performance

Sampling Time Stamp Resolution	100 μ s
Differential VMU Voltage Ranges	± 0.2 V and ± 2.0 V

TECHNOLOGY

Precision Semiconductor Parameter Analyzer

APPLICATIONS

Semiconductor device characterization, parametric testing, low-current measurement, transistor curve tracing, and device reliability testing

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