

KEYSIGHT TECHNOLOGIES (AGILENT HP)

N5230A (Option 520/525)

The Keysight N5230A PNA-L series vector network analyzer, when configured with options 520 or 525, offers comprehensive S-parameter measurements from 10 MHz up to 50 GHz. It provides a balanced combination of performance and value, suitable for general-purpose network analysis in both R&D and manufacturing environments, supporting a wide array of applications from wireless LAN to aerospace and defense.

SPECIFICATIONS

General

Interfaces	LAN (Ethernet), USB (Front/Rear), GPIB, VGA, DVI-D, External Trigger I/O, Auxiliary I/O
Display	Integrated 10.4-inch LCD
Warm-up Time	60 minutes

Physical

Power Supply	100-240 VAC, 47-63 Hz, 400 VA Max
Operating Temperature	0 to 55 °C °C
Dimensions (W×H×D)	426 mm × 222 mm × 483 mm mm
Weight	22 kg kg
Rack Mount Kit Part Number	N5230A-60002

General System Characteristics

Measurement Ports	2 or 4 (configuration dependent)
Supported Measurement Parameters	S-parameters (magnitude, phase), group delay, impedance, admittance, VSWR
Number of Measurement Channels	Up to 32
Number of Display Traces	Up to 16 per channel
Number of Measurement Points per Trace	2 to 20001
Internal Hard Drive	Yes (Solid State Drive, standard)
Operating System	Windows Embedded Standard
Display Type	Integrated 10.4-inch LCD (touchscreen optional)
Display Resolution	1024 x 768 (XGA)

Frequency Specifications

Frequency Range	10 MHz to 50 GHz (Option 520/525 dependent)
Frequency Resolution	1 Hz
Frequency Accuracy (Initial)	±7 ppm
Frequency Stability (Aging Rate)	±0.1 ppm/year
External Reference Frequency Input	10 MHz (±2 ppm, 0 dBm to +10 dBm)
External Reference Frequency Output	10 MHz (0 dBm nominal)

Source (Output Power) Specifications

Source Power Range	-85 dBm to +10 dBm (typical, frequency dependent)
Source Power Resolution	0.01 dB
Source Power Accuracy	±1.0 dB (typical)
Harmonic Suppression	<-30 dBc (typical)
Non-Harmonic Spurious	<-50 dBc (typical)
Phase Noise (1 kHz offset)	-90 dBc/Hz (at 10 GHz, typical)
Phase Noise (10 kHz offset)	-100 dBc/Hz (at 10 GHz, typical)
Test Port Output Match	>15 dB (typical)

Receiver (Input) Specifications

Maximum Input Power (Damage Level)	+20 dBm
Maximum DC Input Voltage	35 V
Receiver Compression (1 dB Point)	+5 dBm (typical)
Receiver Input Match	>15 dB (typical)

System Performance (Calibrated S-Parameters)

System Dynamic Range (High Isolation)	Typically >100 dB (at 10 GHz, 10 Hz IFBW)
Stability Magnitude (Calibrated)	±0.005 dB/°C (typical)
Stability Phase (Calibrated)	±0.05 degrees/°C (typical)
Effective System Directivity	>35 dB
Effective Source Match	>35 dB
Effective Load Match	>35 dB
Crosstalk / Isolation (between ports)	<-100 dB (typically at 10 Hz IFBW)

Measurement Capabilities

IF Bandwidth Range	1 Hz to 15 MHz
IF Bandwidth Accuracy	±5%
Sweep Modes	Linear frequency, log frequency, power sweep, CW time, segment sweep
Sweep Time (per point, fastest)	3.5 µs
Data Points per Sweep	2 to 20001
Number of Channels	Up to 32
Number of Traces per Channel	Up to 16
Measurement Speed (201 points, 2-port cal)	8.5 ms (600 kHz IFBW)
Averaging (Number of averages)	1 to 65536

Calibration and Analysis Features

Supported Calibration Types	SOLT, TRL/LRM, ECal, Unknown Thru, OSM, Line-Reflect-Match (LRM)
Calibration Standards Support	Mechanical calibration kits, Electronic Calibration (ECal) modules
Test Set Type	S-parameter test set (transmission/reflection)
Time Domain Analysis (Option Dependent)	Yes (with Option 010)
Fixture De-embedding	Yes
Port Extension	Yes
Limit Lines	Yes
Markers (Number, Type)	Up to 9 standard, 1 reference, peak, valley, target, bandwidth, statistical
Equations and User Defined Functions	Yes

Connectivity & System Interfaces

LAN (Ethernet) Ports	1 (RJ-45, 1000Base-T)
USB Ports (Front)	4 (Type-A)
USB Ports (Rear)	4 (Type-A)
GPIO (IEEE-488) Interface	Yes
Display Outputs	VGA, DVI-D
External Trigger Input	Yes (BNC)
External Trigger Output	Yes (BNC)
Auxiliary I/O (Handler I/O)	Yes (25-pin D-sub)
Power Sensor Input	Yes (USB)

Power Requirements

Input Voltage Range	100-240 VAC
Input Frequency Range	47-63 Hz
Maximum Power Consumption	400 VA
Fuse Rating	T 5 A, 250 V

Environmental Specifications

Storage Temperature Range	-40 to 70 °C
Operating Humidity Range	15% to 80% RH (non-condensing)
Non-Operating Humidity Range	Up to 90% RH (non-condensing)
Altitude (Operating)	Up to 2000 m
Altitude (Non-Operating)	Up to 4572 m
Vibration (Operating)	MIL-PRF-28800F, Class 3
Shock (Non-Operating)	MIL-PRF-28800F, Class 3

Physical Characteristics

Rack Mount Kit Compatibility	Yes
Test Port Connector Type	3.5 mm
Test Port Connector Gender	Male
Test Port Impedance	50 Ohm

Regulatory Compliance

Safety Standards	IEC/EN 61010-1, CSA C22.2 No. 61010-1, UL 61010-1
EMC Standards	IEC/EN 61326-1, CISPR 11/EN 55011 Group 1, Class A
CE Mark	Yes
CSA/UL Listing	Yes
ISM Group/Class	Group 1, Class A

Receiver Performance

Absolute Power Accuracy (Test Port)	±0.5 dB (at -15 dBm to +5 dBm, 200 kHz IFBW, after 2-port calibration)
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Source Performance

Source Output Power Flatness (after 2-port cal)	±0.2 dB (250 kHz to 26.5 GHz)
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Sweep Characteristics

Max Sweep Segments	200
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Triggering

Trigger Modes	Continuous, Hold, Single, External (TTL compatible), Bus
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Connectivity & Control

Programmatic Interfaces	SCPI, COM/DCOM, IVI-COM, VISA
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Inputs & Outputs

Handler I/O Detail	8 input bits, 8 output bits, Strobe, Ready, External Trigger
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Calibration

Detailed Calibration Types	Enhanced Response, Full 2-port, TRL/LRL, Unknown Thru, Adapter Removal
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Display

Display Size	10.4 inch (26.4 cm) diagonal
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System Resources

Internal Storage Capacity	80 GB (minimum)
Internal Storage Type	HDD (Hard Disk Drive) / SSD (Solid State Drive) (year/firmware dependent)
RAM Capacity	1 GB (minimum, configuration dependent)
RAM Type	DDR SDRAM
Processor Type	Embedded PC (e.g., Intel Celeron M)
Operating System Version	Windows XP Embedded / Windows Embedded Standard 7 (firmware/year dependent)

Connectivity

LXI Standard	LXI Class C
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TECHNOLOGY

Vector Network Analysis

APPLICATIONS

RF Component Characterization, Microwave Component Characterization, Wireless Device Testing, Radar System Testing, Material Measurement, S-Parameter Measurement

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