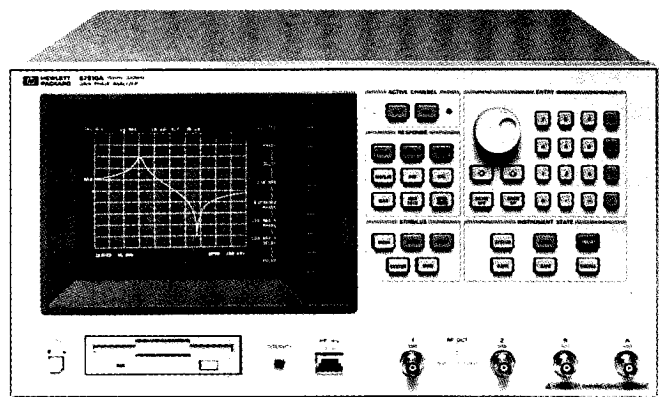


NETWORK ANALYZERS

Gain-Phase Analyzer, 100 kHz to 300 MHz

HP 87510A

- Vector transmission measurement (IFBW = 8 kHz)
- 0.25 ms-per-point high-speed measurement
- Automatic and fast filter, and resonator parameter-extraction commands
- HP Instrument BASIC for easy automation
- 24-bit digital I/O for machine interface



HP 87510A

HP 87510A Gain-Phase Analyzer

The HP 87510A gain-phase analyzer is a 100 kHz to 300 MHz high-speed analyzer designed for use in high-volume production lines. Optimized for manufacturing, the HP 87510A improves productivity in resonator and filter production lines as well as for any application that requires reliable gain- and phase-transmission measurements. Many advanced features are standard with the HP 87510A, including automatic parameter-extraction commands; HP Instrument BASIC (HP I-BASIC); 3½-in disk drive; RAM disk; built-in power splitter; digital I/O; and single-keystroke -3 dB bandwidth function.

Specifications

Signal Source Characteristics

Frequency Range: 100 kHz to 300 MHz

Frequency Resolution: 1 mHz

Stability: $\pm 5 \times 10^{-9}$ /day, typical, at $23^\circ \pm 5^\circ$ C. With Opt 001, $\pm 2.5 \times 10^{-8}$ h, typical, at $23^\circ \pm 5^\circ$ C, 48 h after power-up.

Accuracy: ± 20 ppm at $23^\circ \pm 5^\circ$ C. With Opt 001, ± 1 ppm at 0° to 55° C, 20 min after power-up.

Output Level

Range: -15 dBm to +5 dBm, at output connector
-45 dBm to +15 dBm, at output connector (Opt 010)

Resolution: 0.2 dB

Accuracy: ± 1 dB, at 50 MHz, 0 dBm, $23^\circ \pm 5^\circ$ C

Power Splitter (except Opt 004)

Insertion loss: 6 dB (nominal)

Tracking: 0.1 dB (100 kHz to 100 MHz, typical), 0.2 dB (> 100 MHz, typical)

Equivalent output SWR: 1.2 (100 kHz to 100 MHz, typical), 1.4 (> 100 MHz, typical)

Receiver Characteristics

Frequency Range: 100 kHz to 300 MHz

IF Bandwidth (IFBW): 20 Hz, 200 Hz, 1 kHz, 4 kHz, 8 kHz

Input Impedance: 50 Ω (nominal)

Maximum Input Level: 0 dBm at 100 kHz to 300 MHz

Damage Level: 20 dBm, 50 Vdc, typical

Noise Level: IFBW = 20 Hz: -110 dBm at 100 kHz to 300 MHz, A ch, $23^\circ \pm 5^\circ$ C

Input Connector: BNC, 50 Ω , two inputs (R, A). With Opt 003, Type N (for A ch), BNC (for R ch), 50 Ω , two inputs. With Opt 004, one input (A).

Measurement Modes: A/R, A, R. With Opt 004, A.

Dynamic Accuracy: ± 0.05 dB, $\pm 0.3^\circ$ (± 0.1 dB, $\pm 1.5^\circ$ with Opt 004) (at $23 \pm 5^\circ$ C, IFBW = 20 Hz, Rch = -10 dBm, Ach = -20 dBm; with Opt 004 applies immediately after calibration)

Group Delay Measurement Characteristics

Aperture Frequency: $200/(N - 1)\%$ to 100% of SPAN, where N = number of measurement points

Display Range: ± 10 ps to ± 0.5 s

General Characteristics

Operating Temperature: 10° to 50° C

Humidity: 15 to 80% RH

Warmup Time: 30 min

Line Power: 100/120/220/240 V, $\pm 10\%$, 47 to 66 Hz, 350 VA (max)

Weight: 27 kg, typical

Size: 425 mm W \times 235 mm H \times 553 mm D, typical

Supplemental Characteristics

Source Control

Sweep parameter: Frequency, power (with Opt 010)

Sweep type: LIN, LOG, list sweep

Measured points per sweep (NOP): 2 to 801

Measurement calibration: Through, isolation, three-term

Data processing: Averaging, smoothing

Display: 7-in CRT, green display

Flexible-disk drive: 1.44 MB, LIF or DOS formats, binary or ASCII format

RAM disk: 58 KB, battery backup

Programming: HP Instrument BASIC

Sweep Time: 0.25 ms/point (at IFBW = 8 kHz, sweep time = AUTO)

Display Time (in ms):

Measurement	Number of measurement points			
	51	201	401	801
Amplitude	25	75	135	265
Phase	25	75	135	265
Group delay	30	100	190	370
Amplitude/phase	30	95	180	350
Amplitude/delay	35	120	230	450

At sweep time = AUTO, IFBW = 8 kHz

Parallel I/O Port: 24-bit output, 8-bit input. With Opt 005, 8-bit output, 4-bit input. With Opt 006, 24-bit output, 8-bit input.

Accessories

HP 41800A Active Probe

HP 41802A 1 M Ω Input Adapter

Key Literature

HP 87510A Gain-Phase Analyzer Data Sheet, p/n 5091-3284E.

Ordering Information

HP 87510A Gain-Phase Analyzer	Price
HP 87510A Gain-Phase Analyzer	\$17,850
Opt W30 Three-Year Repair Warranty	+ \$425
Opt W32 Three-Year Calibration Warranty	+ \$475
Opt 001 High-Stability Frequency Reference	+ \$865
Opt 002 Keyboard for HP I-BASIC	+ \$265
Opt 003 Type-N Input Connector	+ \$61
Opt 004 Delete Reference Channel	- \$900
Opt 005 Digital I/O Mode A	\$0
Opt 006 Digital I/O Mode B	\$0
Opt 010 Extended Output Power Range	+ \$685
Opt 907 Front Handle Kit	+ \$77
Opt 908 Rack Mount Kit (no handles)	+ \$41
Opt 909 Rack Flange and Handle Kit	+ \$107
Opt ABA U.S.—English Localization	\$0
Opt ABB Europe (HPSA)—English Localization	\$0
Opt ABK Intercon—English Localization	\$0
Opt AR5 Intercon—Japanese Localization	\$0
Opt OB0 Delete Manual Set	- \$160
Opt OB1 Add Manual Set	+ \$163
Opt OB3 Add Service Manual	+ \$143