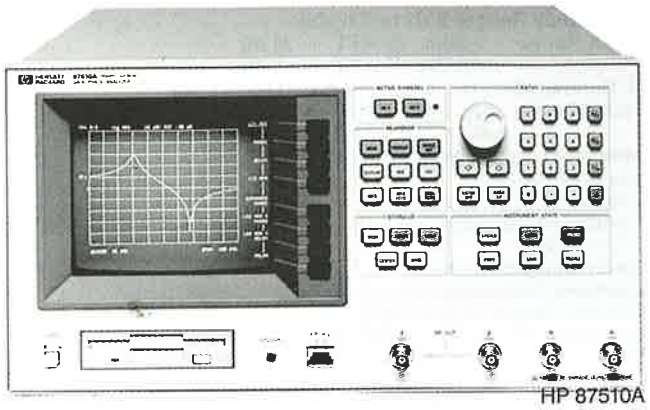
NETWORK ANALYZERS

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

DESIGNED FOR HP-IB SYSTEMS



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: $\pm 5 \times 10^{-6}$/day, typical, at 23° ±5° C. With Opt 001, $\pm 2.5 \times 10^{-8}$/8 h, typical, at 23° ±5° C, 48 h after power-up.
Accuracy: ±20 ppm at 23° ±5° 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° ±5° 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° ±5° 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, ±0.3° (±0.1 dB, ±1.5° with Opt 004) (at 23 ±5°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, ±10%, 47 to 66 Hz, 350 VA (max)
Weight: 27 kg, typical
Size: 425 mm W × 235 mm H × 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 MΩ Input Adapter

Key Literature

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

Ordering Information

	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 0B3 Add Service Manual	+$143