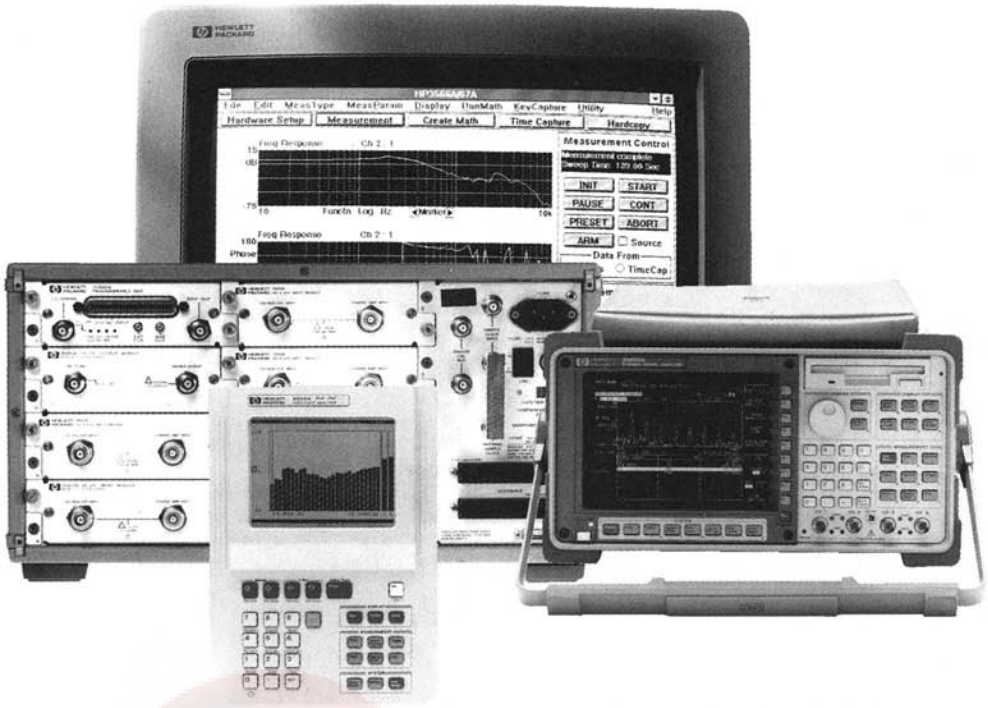

Call 1-800-452-4844 ext. 8585 to receive our free quarterly newsletter for mechanical test professionals.

Hewlett-Packard dynamic signal analyzers use digital sampling and fast fourier transform (FFT) techniques to provide:

- Fast spectrum measurements
- Network analysis
- Transient event analysis

Some of these analyzers additionally provide real-time fractional octave measurements for acoustic analysis of rapidly changing signals, or to satisfy compliance tests.

Solve the Whole Problem

Because solving mesurement problems often requires more than just an anlyzer, HP offers an expanding selection of transducers suitable for general vibration, rotating machinery, and structural dynamics testing. Complete descriptions of these accessories are in the *DSA Accessories Catalog,* p/n 5091-9708E.

To help you arrive at solutions faster, we offer a variety of application and product notes and have application specialists available to deliver seminars and training. For advanced analysis of test results, several independent software vendors offer packages that are compatible with HP instruments and systems.

All HP dynamic signal analyzers support a standard data format (SDF). You can gather measurements in the field with a portable analyzer, then read the files into a benchtop or system-type DSA for advanced analysis at your desk. Cut and paste data and displays to your favorite PC software with HP 35639A data viewer on page 84.

Choosing the Right Analyzer

	Vibration and Acoustics	Control System Development	Signal Analysis	Device Testing
HP 3560A (page 596)	Portable for vibration, impact testing, and acoustics in the field (battery powered).		Good portable analyzer for general-purpose measurement (battery powered).	Good portable analyzer for general-purpose measurement (battery powered).
HP 3569A (page 596)	Portable real-time analyzer with octave, sound intensity, and optional reverberation time meas. (battery powered)			
HP 3563A (page 601)		Frequency and step response measurements of analog and digital systems, plus s- and z-domain device modeling.	Flexible display functions reveal time and frequency information about analog or digitized signals.	Quicker development of analog and digital systems with testing and modeling in one unit.
HP 35665A (page 598)	Extensive acoustic and rotating machinery measurements.	Similar to HP 35670A capabilities as a lower-cost, benchtop model.	Deep capture memory, waterfall display and fast spectrum measurements.	Similar to HP 35670A capabilities as a lower-cost, benchtop model.
HP 35670A (page 599)	Portable superset of HP 35665A, ruggedized for field work. Nonvolatile memory option. 2- or 4-channel options.	Fast swept-sine and s-domain modeling options for analog systems, system controller option for automated testing.	Portable superset of HP 35665A, ruggedized for field work. Nonvolatile memory option. 2- or 4-channel options.	Automate measurements and external device control via HP Instrument BASIC programming option.
HP 3565S (page 604) **or VXIbus** (page 85)	Modular workstation-based systems for advanced structural testing and rotating machinery analysis.		Create high speed multiple-input custom systems using the HP 35635R/T software tools.	
HP 3566A (page 603)	A compact PC-based system with up to 48 channels and a choice of input modules and frequency ranges. The HP 3567A offers higher frequency range.	Cost-effective solutions for automated test of multiple systems in parallel with optional swept sine. The HP 3567A offers higher frequency range.	Flexible data display and Microsoft Windows interface for analysis of waveforms and spectra. The HP 3567A offers higher frequency range.	Cost-effective solutions for automated testing of multiple devices simultaneously. The HP 3567A offers higher frequency range.
HP 89410A (page 294)			Flexible frequency, time, and modulation analysis for frequencies and spans to 10 MHz, 1 and 2 channel.	

FFT DYNAMIC SIGNAL ANALYZERS

Portable Dual-Channel Dynamic Signal Analyzer

HP 3560A, 3569A

- Frequency response, spectrum, transient analysis
- 6 hr (typical) operation on rechargeable battery pack
- Lightweight (3.2 kg / 7 lbs) and portable
- Multispectrum display (HP 3569A)
- Spectral map displays (HP 3560A)
- 1/3 and 1/1 octave analysis
- Online zoom for greater resolution

HP 3560A

Ultra-Portable Dual-Channel Measurements

The internal, rechargeable battery pack permits the HP 3560A and HP 3569A to make spectrum and frequency response and acoustic measurements in the field. The HP 3560A and HP 3569A are built to withstand the harsh environmental conditions normally encountered in portable applications. With a 3.2 kg (7 lb) total weight, the HP 3560A and HP 3569A can be taken virtually anywhere.

HP 3560A Portable Dynamic Signal Analyzer

The HP 3560A portable dynamic signal analyzer is an FFT-based instrument capable of measuring time domain and frequency signals from both steady state and quickly changing signal sources. With two input channels, the HP 3560A provides a variety of frequency response measurements with a frequency range from 31.25 mHz to 40 kHz. The HP 3560A provides more than raw measurements. The ICP input mode directly powers accelerometers and hammer kits, so external signal-conditioning hardware is not required. Synthesized octave measurements, spectral map displays and marker functions make the HP 3560A a powerful, portable measurement and analysis tool.

HP 3569A Real-Time Frequency Analyzer

The HP 3569A is a portable, battery-powered real-time frequency analyzer designed for onsite product-noise characterization, including real time sound intensity analysis. Octave and 1/3-octave resolution measurements are made in real time. For tonal measurements of single frequencies or narrowband signals, the optional FFT mode provides from 100 to 1600 lines of linear frequency resolution for high accuracy.

The sound-intensity mode in the HP 3569A can be used to identify noise sources or measure sound power. Individual surface areas are entered into a sound-power measurement table and sound-power is automatically calculated at the end of the measurement. Sound-intensity probes are directly compatible.

Reverberation time analysis can be added as an option. An ICP and microphone input mode can directly power accelerometers and microphones so external signal conditioning is not required. Built in pink and white noise sources provide a convenient source for reverberation time and stimulus/response measurement.

Documentation and Analysis

The HP 3560A and HP 3569A measurements can be printed on HP DeskJet or HP LaserJet printers, or HP-GL plotters via RS-232. Stored data can also be transferred to a computer via RS-232 and is compatible with Hewlett-Packard's SDF (Standard Data Format) which allows data transportability to other Hewlett-Packard dynamic signal analyzers and third-party analysis packages. An optional utilities package for the HP 3569A (Opt 550) allows data backup to the HP 95LX palmtop PC's RAM diskcards, plus other conveniences.

Specification Summary

Octave Mode (HP 3569A)
- **Frequency:** Maximum span of 36 bands plus two overall bands
  - **1/3 octave bands, single channel:** 1.6 Hz to 20 kHz (real time)
  - **Octave bands, single channel:** 2.0 Hz to 16 kHz (real time)
  - **Maximum octave bands, dual channel:** 10 kHz (1/3) and 8 kHz (1/1)
- **Amplitude accuracy:** ±0.3 dB
- **Dynamic range:** 72 dBfs
- **Input ranges:** 70 to 130 dB SPL in 10-dB steps (5 mV to 5 V)
- **Weighting filters:** A-weight, C-weight, linear, flat (all pass)
- **Measurement results:** Leq, SPL (maximum), SPL (minimum), Ln, PSD
- **Averaging:** Integration and exponential; from 3.9 μs to 100,000 s
- **Trigger source:** SPL level, SPL event, external TTL

Intensity Mode (HP 3569A Opt AY1) (other specs same as octave mode)
- **Frequency:** Maximum span of 33 bands plus two overall bands
  - **1/3 octave:** 1.6 Hz to 10 kHz; **Octave:** 2.0 Hz to 8 kHz
- **Indicator accuracy:** ±0.2 dB
- **Measurement results:** Active intensity; average sound-pressure level, P-I index, field indicator function (per ISO 9614-2)
- **Averaging:** Integration: 0.032 s to 100,000 s, exponential
- **Trigger source:** External TTL for start or gating

Narrowband Mode (HP 3560A and HP 3569A Opt AY2)
- **Frequency:** 100 to 1600 lines of resolution.
  - **Baseband spans:** 50 Hz to 25.6 kHz (40 kHz for HP 3560A)
  - **Digital zoom spans:** 20 Hz to 10 kHz
- **Windows:** Uniform, Hann, flat top, force/exponential
- **Measurement results:** Spectrum/SPL, power spectral density, time, differentiated time, frequency response, coherence, cross-correlation, cross-spectrum, intensity (HP 3569A)
- **Averaging:** RMS, RMS exponential, peak hold, time

Reverberation Time Mode (Opt AY3)
Computes reverberation time in octave or 1/3 octave bands by using Schroeder's reverse integration method to compute the decay times. Single channel; maximum bandwidth is 11.4 kHz; minimum integration time is 3.9 μs.

Data Storage: Up to 3000 third-octave spectra can be saved in the nonvolatile RAM-disk memory. Up to 1000 third-octave spectra can be measured and stored at a rate of 256 spectra/s. (HP 3569A)

General
- **Power:** Internal battery power; rechargeable during operation
- **Recharger:** 100/120 or 220/240 Vac +5%, −10%, 48 to 66 Hz
- **Weight:** Approximately 3.2 kg (7 lbs)
- **Size:** 210 mm W × 300 mm H × 95 mm D (8.25 in × 11.75 in × 3.75 in)
- **Accessories included:** Battery, ac adapter, carrying case, SDF utilities

Key Literature

HP 3560A Technical Data Sheet, p/n 5952-2990.
HP 3569A Technical Data Sheet, p/n 5091-4805E.
HP 3569A Configuration Guide, p/n 5962-7919E.
Standard Data Format Utilities, p/n 5091-2945E.
DSA Family Brochure, p/n 5091-5887E.
DSA Accessory Catalog, p/n 5091-9708E.

Ordering Information

	Price
HP 3560A Portable Dynamic Signal Analyzer	$7,960
HP 3569A Real-Time Frequency Analyzer	$9,000
Opt AY1 Real-Time Intensity	$2,000
Opt AY2 Narrowband FFT	$2,000
Opt AY3 Reverberation Time	$2,000
Opt 550 Data Transfer Utilities for HP Palmtop PC	$250

For the most current prices and product information, contact your local Hewlett-Packard sales office—see page 691.