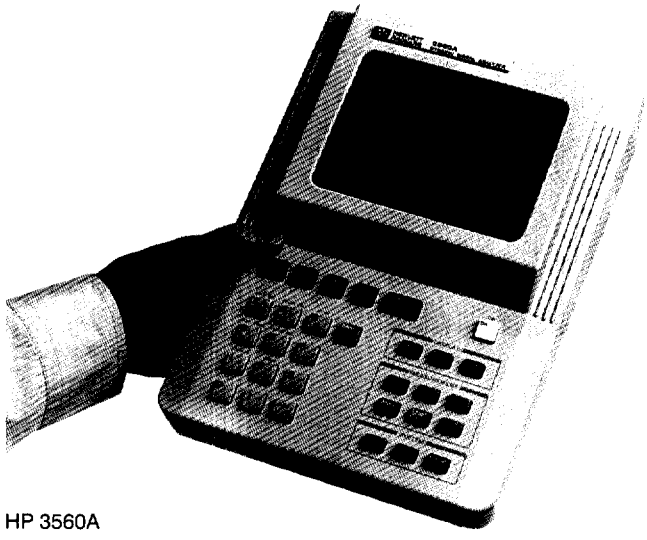
FFT DYNAMIC SIGNAL ANALYZERS

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.