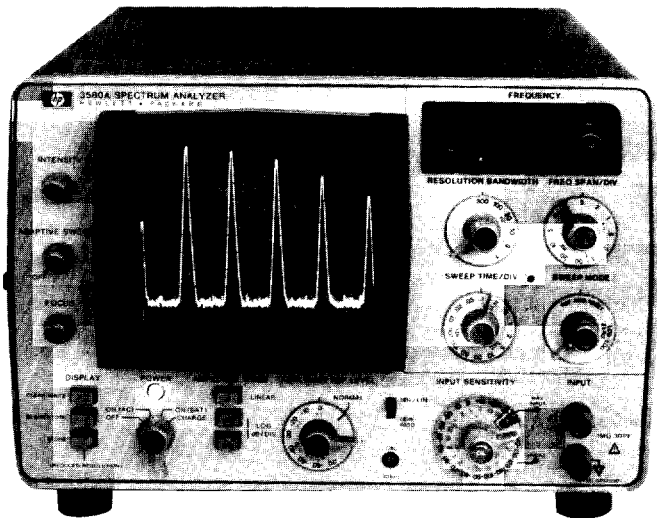


# SIGNAL ANALYZERS

## 5 Hz to 50 kHz Spectrum Analyzer

### Model 3580A

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HP 3580A

#### Description

Hewlett-Packard's 3580A Spectrum Analyzer is a low frequency high performance analyzer. Its 1 Hz bandwidth allows the user to examine noise and extraneous signal content close in to a signal of interest.

For low frequency applications where sweep speeds can be slow and time-consuming, a special feature, adaptive sweep, allows the user to set a threshold above which only the spectra of interest are observed. In this mode, the CRT is rapidly swept. When a signal is encountered, the sweep slows down to reproduce full response. A factor of ten speed gain is possible.

Digital storage is another important feature which enhances the display for slowly swept low frequency signals. The analyzed signals are digitized and stored in memory. Trace information is then read from memory at a rate appropriate for obtaining an analog-like display.

#### Digital Storage for Spectra Comparison

Digital storage makes it possible to store one or two traces. When two are stored, both may be simultaneously displayed for easy comparison.

#### Digital Frequency Display

The display provides 1 Hz resolution for setting analysis range and for determining tuned frequency. In the automatic sweep modes, the sweep start or center frequency is displayed. In the manual sweep mode, actual tuned frequency is indicated. This mode effectively provides a cursor function for easy and accurate determination of the frequency at any point on the screen.

#### 1 Hz Bandwidth

Resolution bandwidths as narrow as 1 Hz are available to expose and measure closely-spaced spectral components like 50–60 Hz power line sidebands or low-rate modulation. This resolution is available at all frequencies.

#### Specifications

##### Frequency Characteristics

**Range:** 5 Hz to 50 kHz.

##### Digital Frequency Display

**Resolution:** 1 Hz.

**Accuracy:**  $\pm 3.5$  Hz, 0 to 55°C.

**Typical stability:**  $\pm 10$  Hz/hr after 1 hour;  $\pm 5$  Hz/°C.

**Bandwidths:**  
(accuracy  $\pm 15\%$ )

**Shape factor:**

1 Hz (25°C $\pm$ 5°C)	3 Hz	10 Hz	30 Hz	100 Hz	300 Hz
10					8

**Out of range blank:** If controls are set so portions of displayed signal lie below 0 Hz or above 50 kHz, the baseline is displayed.

#### Amplitude Characteristics

##### Overall Instrument Range

Linear: 20 V –100 nV full scale

Log: +30 dBm or dB V;  
–150 dBm or dB V

##### Amplitude Accuracy

Frequency response:

20 Hz–20 kHz

5 Hz–50 kHz

Switching between bandwidths (25°C):

3 Hz–300 Hz

1 Hz–300 Hz

Amplitude display

Input attenuator

Amplitude reference level:

(IF attenuator)

Most sensitive range

All other ranges

**Dynamic range:** 80 dB

**IF feedthru:** Input level > 10 V, –60 dB; < 10 V, –70 dB.

**Spurious responses:** > 80 dB below input reference level.

**Smoothing:** 3 positions, rolloff is a function of bandwidth.

**Overload indicator:** This LED indicator warns of possible input amplifier overloading. Without this indication it would be possible to introduce spurious responses without knowing it.

#### Sweep Characteristics

**Scan width:** 50 Hz to 50 kHz.

**Log sweep:** 20 Hz to 43 kHz  $\pm 20\%$  after 3 sweeps.

**Sweep times:** 0.1 s to 2000 s.

**Rep:** Repetitive sweeps over the specified band.

**Reset:** Resets to the beginning of the sweep—used to adjust start or center frequency.

**Manual:** In combination with the concentric knob, manual sweep fully duplicates the span of the electronic sweep.

**Adaptive sweep:** When in adaptive sweep below the threshold level, scan speed is 20 to 25 times faster. Threshold is adjustable to cover 0–60% of screen. Signals greater than about 6 dB above threshold are detected and swept slowly.

**Sweep error light:** This LED indicates a sweep that is too fast to capture full response. When the light is on, response can be > 5% lower than it should.

**Zero scan:** To look at the time varying signal at the center or start frequency within the bandwidth selected, the zero scan is used.

#### Output Characteristics

**Tracking generator output:** (Also known as BFO or tracking oscillator output).

**Range:** 0 to 1 V rms into 600  $\Omega$ .

**Frequency response:**  $\pm 3\%$ , 5 Hz to 50 kHz.

**Impedance:** 600  $\Omega$ .

**Total harmonic and spurious content:** 40 dB below 1 volt signal level.

#### X-Y Recorder Analog Outputs

**Vertical:** 0 to +5 V  $\pm 2.5\%$ .

**Horizontal:** 0 to +5 V  $\pm 2.5\%$ .

**Impedance:** 1 k $\Omega$ .

**Pen lift:** Contact closure to ground during sweep.

**Recommended Accessory:** HP 7090A Measurement Plotting System.

**Size:** 203.2mm H x 285.8mm W x 412.8mm D (8" x 11 1/4" x 16 1/4").

**Weight:** Net, 12.25 kg (27 lb); HP 3580A Opt 001: net, 15.88 kg (35 lb).

**Temperature range:** 0°C to 55°C.

**Power:** 100 V, 120 V, 220 V, or 240 V  $\pm 5\%$  – 10%; 48 to 440 Hz; 35 VA max.

**Opt 001 battery:** 5 hours from full charge. 14 hours to fully recharge. The internal battery is protected from deep discharge by an automatic turn off. Useful life of batteries is over 100 cycles.

#### Ordering Information

**HP 3580A Spectrum Analyzer**

**Opt 001:** Internal Rechargeable Battery

**Opt 002:** Balanced Input

**Opt 003:** Rack Mount

**Opt W30:** Extended Warranty

#### Price

**\$8,400**

**\$700**

**\$260**

**\$335**

**\$350**