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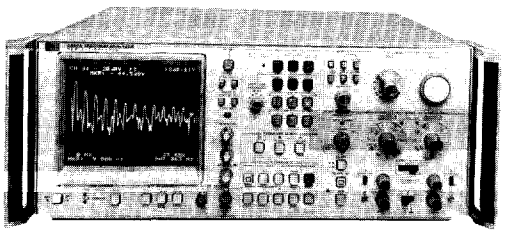
SIGNAL ANALYZERS

Dual-Channel, Dynamic Signal Analyzer 0.02 Hz to 25.5 kHz

Model 3582A

- Transfer function magnitude and phase measurements
- Coherence function measurement
- Phase spectrum measurement
- Transient capture and frequency domain analysis
- Internal periodic and random noise source
- Band selectabe analysis for 0.02 Hz resolution

HP 3582A



DESIGNED FOR HP-IB SYSTEMS

From the HP-IB it is a simple matter to command the HP 3582A to output results, as well. Not only can the various control settings be retrieved, but numeric marker data can be extracted. More importantly, the full display can be read in ASCII format along with complete annotation.

Description

The HP 3582A offers outstanding value in a dual-channel, real-time spectrum analyzer that solves bench and systems measurement problems in the frequency range of 0.02 Hz to 25.599 kHz. Sophisticated LSI digital filtering combined with microcomputer execution of the Fast Fourier Transform (FFT) provides exceptional measurement capability and performance.

Exceptional Frequency Resolution And Coverage

Unlike conventional dynamic signal analysis which extends from dc to some maximum frequency, the HP 3582A can "zoom in" to analyze any selected band of frequencies with dramatically improved resolution. The start or center frequency of the 5 Hz to 25 kHz band analysis spans can be adjusted in 1 Hz increments to cover the entire frequency range of the instrument. This provides resolution, representing as much as a 5000 to 1 improvement over conventional "baseband" analysis. With frequency ranges from 25 kHz down to 1 Hz full scale, the HP 3582A is extremely well suited to audio and sub-audio measurements.

Real Time Measurement Speed and Wide Dynamic Range

In high volume testing or in applications requiring substantial on-line tuning, long measurement times are both expensive and inconvenient. Since the HP 3582A uses an advanced microcomputer to execute the FFT, it can perform equivalent measurements as much as one to two orders of magnitude faster than a swept analyzer. For a spectrum analyzer to provide useful information about low level components in the presence of a large signal, it must offer wide dynamic range. The HP 3582A dynamic range is specified as 70 dB-more than adequate for most applications.

Phase Spectrum Measurement

Most spectrum analyzers can measure only the amplitude spectrum of a signal, yet complete characterization in the frequency domain also requires phase information. The advanced digital signal processing techniques incorporated in the HP 3582A provides direct measurement of phase spectra.

Transient Capture and Analysis

By using digital processing techniques, the HP 3582A can capture and analyze transients as short as a few milliseconds. This means that spectrum analysis and transfer function analysis are no longer limited to stable, time invariant signals.

Transfer Function Measurements

The HP 3582A directly measures the complete transfer function, both magnitude and phase. With dual channels analysis of linear and non-linear networks, respectively. In addition, the sources are band-limited to concentrate all stimulus energy in the analysis range.

The HP 3582A coherence function indicates the probability for causality between the two input signals at each frequency. If the coherence between input and measured output is low, the output signal contains a large amount of energy that is not related to the input. Thus, the transfer function measured at that frequency is not reliable.

Digital Averaging Capability

The RMS averaging mode takes the power average of 4 to 256 successive spectra in order to reduce the uncertainty of the estimate of random spectral components.

When a synchronizing trigger signal is available, the TIME average can enhance the signal-to-noise ratio by as much as 24 dB. Since it involves the averaging of successive time records before transformation, it is also significantly faster than other types of averaging.

Powerful HP-IB Capability

All major front panel controls are fully programmable via the HP-IB.

HP 3582A Specifications

Frequency

Range: 0.02 Hz to 25.5 kHz
Spans: 1 Hz to 25 kHz in a 1-2.5-5-10 sequence.
Accuracy: ±0.003% of display center frequency.
Resolution: 0.4% of the frequency span for single channel or 0.8% of the frequency span for dual channels.

Amplitude

Display Modes
Log: 10 dB/division or 2 dB/division.
Linear: constant voltage/division.
Measurement Range
Log: +30 dBV to −120 dBV noise floor.
Linear: +30 V to 1μV noise floor.
Dynamic range: 70 dB.
DC response: Adjustable to >40 dB below maximum input level.
Accuracy

Accuracy at the Passband Center	±0.5 dB
Flat top filter:	+0, −0.1 dB
Hanning filter:	+0, −1.5 dB
Uniform filter:	+0, −4.0 dB

Note: Overall accuracy is the sum of the accuracy at the passband center plus the selected filter accuracy.
Resolution
Log: 0.1 dB.
Linear: 3 digits.

Phase

Display range: +200° to −200°.
Accuracy: ±10°.
Resolution: 1°.

Transfer Function

Measurement Range
Log: +160 dB full scale to −80 dB full scale.
Linear: 4 x 10^{8} full scale to 4 x 10^{-8} full scale.
Phase display range: +200 degrees to −200 degrees.

Input

Impedance: 10^{6} Ω ±5% shunted by <60 pF from input high to low (for less than 75% relative humidity).
Isolation: Input low may be floated up to 30V.
Coupling: Switch selection of ac or dc coupling. The low frequency 3 dB roll off is <1 Hz.
Common Mode Rejection: >58 dB.

General

Power Requirements: 100, 120, 220 or 240 volts (+5%, −10%); 48-66 Hz; less than 150 VA.
Dimensions
Size: 425.5 W x 552.5 D x 188 mmH (16.75″ x 21.75″ x 7.4″).
Weight: Net, 24.5 kg (54 lb); shipping, 29 kg (63 lb).

Ordering Information	Price
HP 3582A Spectrum Analyzer	$12,800
Opt W30: Extended Warranty	$560

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