- Measure analog and digital signals
- Apply analog and digital stimulus
- Make swept sine and FFT frequency response measurements

- Measure spectra, waveforms, and transients
- Extract models with s- and z-domain curve fitting
- Model systems using frequency response synthesis
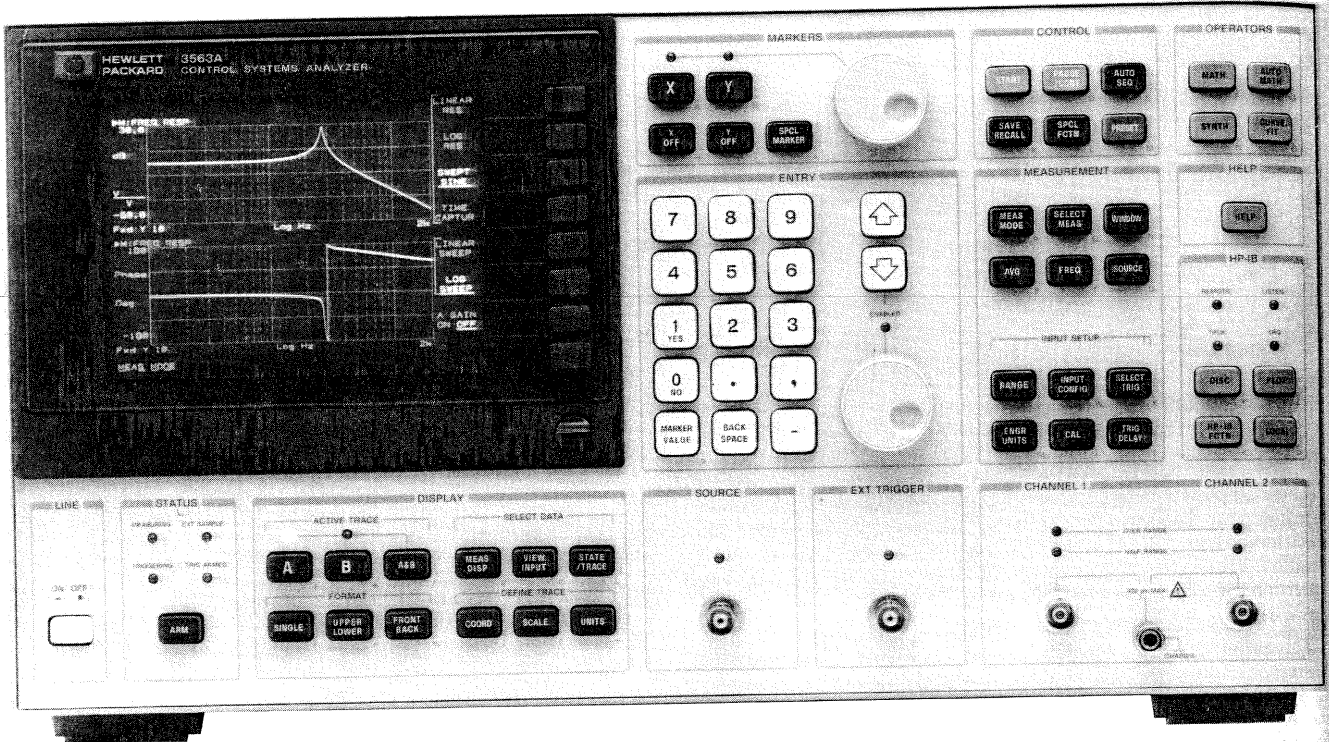
HP 3563A

Direct Measurement of Dynamic Analog and Digital Signals

The HP 3563A control systems analyzer is the development tool that provides test and analysis of analog, digital, and mixed analog/digital systems. In the world of electronics and control systems, designs are shifting from analog to digital. Products ranging from disk drives to robots to spacecraft use closed-loop control systems containing digital filters and microprocessors rather than analog circuitry.

Hewlett-Packard helps you analyze next generation systems with the HP 3563A control systems analyzer. A compatible superset of the popular HP 3562A dynamic signal analyzer, this FFT-based analyzer offers the versatility required to make the most difficult spectrum, network and waveform measurements in both the time and frequency domain. For analog measurements, the analyzer has two differential input channels, a 26.5 μHz-to-100 kHz frequency range, 150 dB measurement range, 80 dB dynamic range, flexible triggering, and a versatile signal source. The digital inputs accept TTL-level parallel data up to 16-bits wide with data rates as high as 256 kHz and clock rates up to 10 MHz.

Protect Your HP 3562A Investment

If you develop, design, or test control systems, chances are you own an HP 3562A dynamic signal analyzer. If your designs now call for digital measurements, you can protect your investment in the HP 3562A by converting it to the functionality of the HP 3563A. Because the control systems analyzer is compatible with auto sequence and computer programs written for the HP 3562A, your programming

investment is also protected. For more information regarding HP 3562A, Option 063, please contact your local HP sales representative.

Test the Performance of Control Systems

Whether a control system is analog, digital, or mixed, you still need to characterize its stability and performance. Characterization of system stability begins with an accurate frequency response measurement. Measure frequency response magnitude and phase quickly using the linear or logarithmic resolution FFT modes. Get a detailed look at the response with the swept sine mode. Linear or logarithmic swept sine frequency response measurements can be made with up to 140 dB dynamic range. With FFT or swept sine tests, frequency response measurements are as accurate as ±0.1 dB and ±0.5 ° (see specifications for details).

Display measurement results in familiar formats such as Bode, Nyquist, and Nichols. Use waveform math to compute the open-loop response from a closed-loop measurement. Activate the special marker function to calculate and display the gain and phase margins.

Key measures of time domain performance such as rise time, overshoot, steady state deviation, and settling time are derived from the system step response. By providing a step stimulus, pre- and post-trigger delay, trace scaling, and separate x- and y-axis markers, the HP 3563A simplifies the measurement of time domain parameters.

The built-in signal source produces the stimuli commonly needed to fully characterize closed-loop control systems. In analog or 16-bit parallel format, the source will output swept sine, fixed sine, sine chirp, step, pulse, ramp, random noise, and arbitrary signals. Data editing combined with waveform math simplifies the creation of arbitrary waveforms such as sine chirps with shaped amplitude.