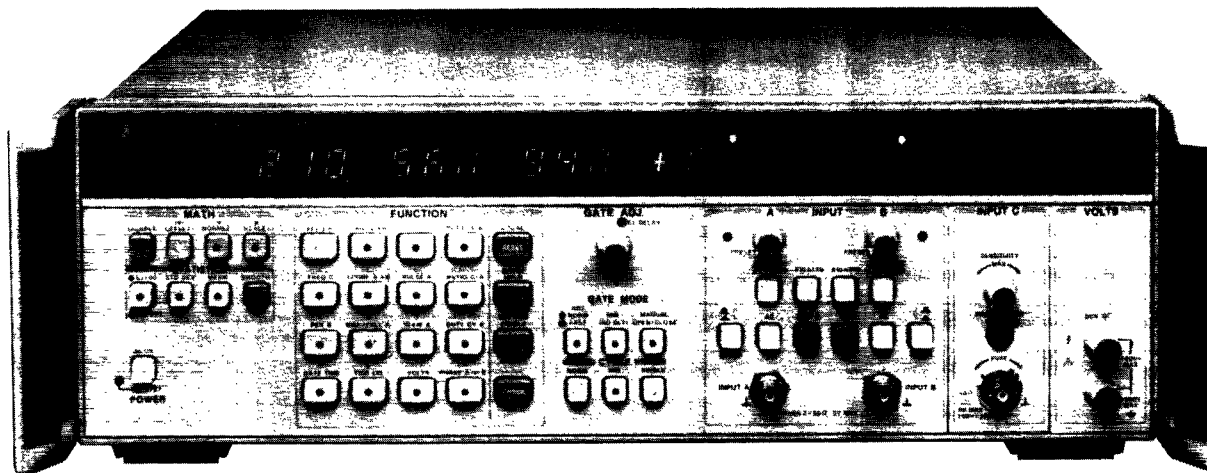


ELECTRONIC COUNTERS

Our Highest Performance Universal Systems Counter

Model 5335A

- A high performance 200 MHz/2 ns Universal Counter
- Built-in automatic rise time, duty cycle, pulse width, slew rate and phase measurements
- Advanced automatic triggering capabilities
- HP-IB plus math and statistics functions standard



HP 5335A



Remarkable Automatic Measurement Power

The HP 5335A is an advanced universal counter with automatic measurement power built in. Designed either for bench or systems applications, the counter has 16 front-panel measurement functions, plus four "phantom" functions, all automatically selected by push button or by HP-IB. These twenty functions, plus greatly expanded arming and triggering capability, make the HP 5335A a most powerful universal counter. In addition, math and statistics features, matched Channel A and B input amplifiers, and HP-IB are all included in the standard unit, making the HP 5335A easily the most advanced universal counter available at its price.

Pulse Characterization Measurements

The HP 5335A possesses the expected universal measurements, and does them better than ever before. Beyond the expected measurement set, the HP 5335A has the ability to automatically measure waveform characteristics for various applications. Op amp characterization is one area where a number of measurements are needed to define the amplifier's performance. Using the HP 5335A and a signal source, rise and fall times, output slew rate, and propagation times can be measured with one test set-up. Also, duty cycle can be measured to see the distortion on a square wave through the amplifier due to different rising and falling slew rates. Phase measurements are also push-button selectable and automatically performed by the counter.

Complete Triggering Capability

To get good measurement results, a counter must properly trigger on the input signal. The HP 5335A employs both manual and automatic trigger modes to quickly and easily set the right trigger points.

Manual Triggering

The counter has a ± 5 Vdc range to help reduce input attenuator use for most input signals, including TTL.

Automatic Triggering

Two auto trigger modes help you trigger automatically. Just press *auto trig* or select auto trig on the HP-IB and the counter automatically selects 10%-90% rise/fall time trigger points, 50% phase trigger points, or the preset value of your choice. Then it tracks the signal's dc offset continuously to stay on the right trigger point. Option 040 allows programmability of trigger levels via HP-IB.

Trigger Level DVM

Built into the basic counter. Just press TRG LVL to see both input channel trigger levels displayed.

A Full Set of Universal Measurement Functions

In addition to waveform characterization features, the HP 5335A has an extremely wide set of measurement functions covering frequency, time, events and volts. These functions let you characterize signals quicker and more thoroughly than ever before possible.

Frequency

Frequency is the most common measurement performed by counters. The HP 5335A measures to 200 MHz in Channel A, 100 MHz in Channel B, and 1.3 GHz in its optional Channel C. Due to the counter's advanced design and reciprocal measurement technique, resolution is a constant 9 digits per second of gate time across its entire measurement range.

Time

In a universal counter, a time interval measurement equates to a stopwatch measurement started and stopped by unique events. Precision is dependent on the counter's circuitry.

To ensure precision, the HP 5335A has matched custom input amplifiers to greatly reduce trigger errors that might be produced if the start and stop signals were amplified differently. Further, the counter employs an analog interpolation technique that turns its 10 MHz clock into the equivalent of a 1 GHz time base. The HP 5335A is thus able to resolve single shot time interval measurements to better than 2 nanoseconds (100 ps with averaging). This analog interpolation eliminates the need found in some counters for a phase-modulated (jittered) time base for time interval average measurements.

Math and Statistics

Averaging techniques are often used to extend the resolution of a counter. For averaging, the HP 5335A provides sample sizes of $N = 100$ or $N = 1,000$. Best of all, averaging can be employed for all measurements except phase. In addition to mean, and selection of sample size, the counter takes standard deviations of the current measurement for the sample size selected.

Math functions are another built-in feature that provide operator convenience. These functions let you convert the display into direct indications of parameters like flow, speed, pressure, and temperature. Additionally, the counter remembers the offset, scale, and normalize factors for each measurement function.