

ELECTRONIC COUNTERS

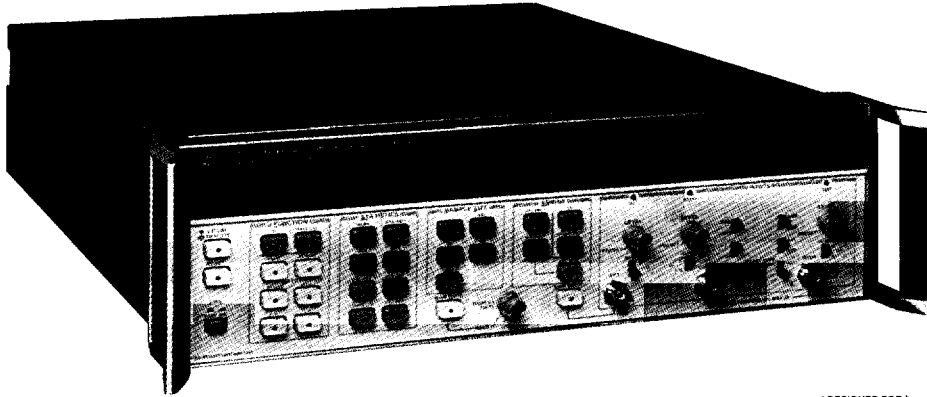
Universal Time-Interval Counter and Low-Pass Filter Kit

HP 5370B, 10856A

163

- 20 ps single-shot LSD
- 11 digits/s frequency resolution
- Up to 8000 measurements/sec

- Built-in statistics functions
- Frequency and period to 100 MHz



HP 5370B



HP 5370B's Precision and Measurement Speed

- IC tester performance verification
- Fast IC characterization
- Disk drive manufacture
- Digital communications—jitter analysis
- Radar/laser ranging calibration
- Nuclear systems
- Calibration labs

Full Range of Measurement and Analysis Functions

Time Interval: Achieve 20 ps single-shot LSD on time intervals from 0 to 10 s, including negative time (in which the STOP channel event occurs before the START channel event)

Frequency: Measure up to 100 MHz with 11 digits of resolution in 1 s. Choose gate times down to 1 period; use 1 period with average mode and access the powerful Statistics capabilities

Period: Measure period average from 1 to 100k samples and use Statistics

Statistics: Reduce external computations, reduce random errors, and improve measurement throughput

Sample size: Select 1, 10, 1k, 10k or 100k samples from the front panel, or 1 to 65,536 samples over HP-IB. For the selected sample size, you can compute:

- Mean
- Standard Deviation
- Minimum
- Maximum

Flexible Arming and Gating: +TI or ±TI with internal or external arming, with or without external hold-off

Full HP-IB Programming and Fast Data Output:

- Up to 8000 readings/s in fast binary mode—125 μs dead time
- 10 to 20 readings/s fully formatted—330 μs dead time

Time Interval Measurement Characteristics

Range

- ± TI: -10 to +10 s, including zero
- + TI: 10 ns to 10 s

Resolution

Measurement resolution depends on input signal noise and slew rate.

Accuracy

Time-interval measurement accuracy is influenced by internal systematic uncertainties, trigger-level timing error for each trigger edge, and timebase aging in addition to resolution or random uncertainties. Uncertainties may be reduced to less than 10 ps by calibration with the HP J06-59992A time interval calibrator. Careful calibration and averaging will result in accuracies to ± 100 ps.

Frequency and Period Measurement Characteristics

Frequency: 0.1 Hz to 100 MHz

Period: 10 ns to 10 s

Resolution

Measurement resolution depends on input signal noise as well as measurement gate time.

Accuracy

Accuracy is influenced by internal uncertainties, timebase aging, and noise on the input signal. Periodic timebase calibration minimizes uncertainty due to timebase aging. Internal uncertainties and noise effects may be reduced by selecting longer gate times, or by averaging results.

HP 10856A Low-Pass Filter Kit

The four low-pass filters of the HP 10856A filter kit are recommended for use with any HP frequency counter to reduce high-frequency noise or unwanted signals that cause frequency or period measurement errors. Further applications for the kit include reducing noise (trace fuzz) in oscilloscope and spectrum analyzer displays.

HP 10856A Specifications

Cutoff Frequency (nominal)	5 KHz	50 KHz	500 KHz	15 MHz
Input Impedance (nominal)	1 MΩ	100 kΩ	10 kΩ	50 Ω
Signal Rejection, 100 MHz to 500 MHz	> 40 dB	> 40 dB	> 40 dB	> 20 dB

Roll-Off: 20 dB per decade

Attenuation: × 2, reduces signal voltage by a factor of 2

Output Impedance: For use with 1 MΩ input instruments

Key Literature

HP 5370B Technical Data Sheet, p/n 5952-7915

HP J06-59992A Technical Data Sheet, p/n 5952-7837

Product Note 5370B-2: *Better than 100 ps Accuracy in HP 5370B Time Interval Measurements Through Bias Error Reduction*, p/n 5952-7834.

Product Note 5370B-3: *High Throughput Picosecond Characterization of Pulse Parameters*, p/n 5952-7769.

Application Note 191-7: *High-Speed Timing Acquisition and Statistical Jitter Analysis*, p/n 5952-7908.

Ordering Information

	Price
HP 5370B Time Interval Counter	\$20,900
Opt 913 Rack Flange Kit for Use with Supplied Front Handles	+\$77
Opt 908 Rack Flange Kit, No Front Handles	+\$33
Opt W30 Extended Repair Service (see page 663)	\$305
Opt W32 Calibration Service (see page 663)	\$1,465
HP 10856A Low-Pass Filter Kit	+\$690
HP J06-59992A Time Interval Calibrator	\$3,000