



# 5370B Precision Time-Interval Universal Counter

Data Sheet

## Product Specifications

### 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 100 k samples

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

**Sample size:** Select 1, 10, 1 k, 10 k or 100 k 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  $\pm$ TI with internal or external arming, with or without external hold-off

**Full HP-IB Programming and Fast Data Output:** Up to 800 readings/s in fast binary mode -- 125  $\mu$ s dead time  
10 to 20 readings/s fully formatted -- 330  $\mu$ s dead time

### Time Interval Measurement Characteristics

**Range**

$\pm$ 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.

Careful calibration with the HP J06-59992A time interval calibrator and averaging will result in accuracies to  $\pm 100$  ps.

### **Frequency and Period Measurement Characteristics**

#### Range

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 certainties, 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.