



ELECTRONIC COUNTERS

Automatic Microwave Counter

Model 5340A

- Single input 10 Hz to 18 GHz
- Automatic amplitude discrimination
- High sensitivity -35 dBm
- Optional extension to 23 GHz
- High AM and FM tolerance
- Exceptional reliability



HP 5340A



HP 5340A Frequency Counter

The HP 5340A Frequency Counter is an easily used, versatile instrument for direct measurement of frequencies from 10 Hz through 18 GHz via a single input connector.

The exceptional sensitivity of this instrument enhances measurement in the microwave field, where signals are commonly low-level and connected via directional coupler or lossy devices.

Access to the HP Interface Bus via Option 011 provides a flexible systems interface. The ability to program octave range through this input reduces acquisition time to less than 40 ms (typical).

HP 5340A Specifications

Signal Input

Input 1

Range: 10 Hz to 18 GHz.

Symmetry: sinewave or squarewave input (40% duty factor, worst case).

Sensitivity: -30 dBm, 10 Hz to 500 MHz; -35 dBm, 500 MHz to 10 GHz; -25 dBm, 10 to 18 GHz.

Dynamic range: 37 dB, 10 Hz to 500 MHz; 42 dB, 500 MHz to 10 GHz; 32 dB, 10 GHz to 18 GHz.

Impedance: 50 Ω .

VSWR: <2:1, 10 Hz-12.4 GHz; <3:1, 12.4-18 GHz.

Connector: precision Type N.

Coupling: dc to load, ac to instrument.

Damage level: +30 dBm.

Total power (ac + dc) not to exceed 1 watt. See Option 006 for up to +39 dBm protection.

Acquisition time: <150 ms mean typical.

Input 2

Range: 10 Hz-250 MHz direct count.

Sensitivity: 50 mV rms. 150 mV p-p pulses to 0.1% duty factor; minimum pulse width 2 ns.

Impedance: 1 M Ω shunted by <25 pF.

Connector: type BNC female.

Coupling: ac.

Maximum input: 200 V rms, 10 Hz to 100 Hz; 20 V rms, 100 Hz to 100 kHz; 2 V rms, 100 kHz to 250 MHz.

Automatic amplitude discrimination: automatically selects the strongest of all signals present (within 250 MHz to 18 GHz phase-lock range), providing signal level is: 6 dB above any signal within 200 MHz; 10 dB above any signal within 500 MHz; 20 dB above any signal, 250 MHz-18 GHz (typical performance).

Maximum AM modulation: any modulation index as long as the minimum voltage of the signal is not less than the sensitivity specification.

Time Base

Crystal frequency: 10 MHz.

Stability

Aging rate: <3 $\times 10^{-7}$ per month.

Short term: <5 $\times 10^{-10}$ rms for 1 second averaging time.

Temperature: < $\pm 2 \times 10^{-6}$ over the range of 0°C to 50°C.

Line variation: < $\pm 1 \times 10^{-7}$ for 10% line variation from nominal.

Output frequency: 10 MHz, ≥ 2.4 V square wave (TTL compatible) available from rear panel BNC.

External time base: requires 10 MHz approximately 1.5 V p-p sine wave or square wave into 1 k Ω via rear panel BNC. Switch selects either internal or external time base.

Optional time base (opt 001) aging rate: <5 $\times 10^{-10}$ per day after 24-hour warm-up for less than 24 hour off-time.

General

Accuracy: ± 1 LSD $\pm$ time-base error.

Resolution: front-panel switch selects 1 Hz to 1 MHz.

Display: eight digit LED with positioned decimal point and appropriate measurement units of kHz, MHz, or GHz.

Self check: counts and displays 10 MHz for resolution chosen.

Sample rate: controls time between measurements. Continuously adjustable from 50 ms typical to 5 seconds. HOLD position holds display indefinitely. RESET button resets display to zero and activates a new measurement.

HP-IB interface functions: SH1, AH1, T1, L2, SL1, RL2, PP0, DC1, DT1, C0, E1 (see page 126).

Operating temperature: 0°C to 50°C.

Power: 115 V or 230 V $\pm 5\%$, -10%, 48-66 Hz, 100 VA.

Weight: net, 11.3 kg (25 lb). Shipping, 14.1 kg (31 lb).

Size: 88.2 mm H x 425 mm W x 467 mm D (3.47 in. x 16.75 in. x 18.39 in.).

Ordering Information

HP 5340A Frequency Counter

Opt 001 High Stability Time Base

Opt 002 Rear Panel Connectors

Opt 005 Frequency Extension to 23 GHz

Opt 006 Limiter Input Protection (+39 dBm)

Opt 011 Remote Programming-Digital Output (HP-IB)

Opt 908 Rack Flange Kit

Price

HP 5340A \$13,500

Opt 001 + \$750

Opt 002 + \$200

Opt 005 + \$600

Opt 006 + \$600

Opt 011 + \$550

Opt 908 + \$30