

## HP 5342A Specifications

### Signal Input

#### Input 1

**Frequency range:** HP 5342A: 500 MHz to 18 GHz

HP 5343A: 500 MHz to 26.5 GHz

**Sensitivity:** HP 5342A: 500 MHz to 12.4 GHz: -25 dBm

12.4 GHz to 18 GHz: -20 dBm

HP 5343A: 500 MHz to 12.4 GHz: -33 dBm

12.4 GHz to 18. GHz: -28 dBm

18.0 GHz to 26.5 GHz: -23 dBm

**Maximum input:** +7 dBm (See Option 002, 003 for higher levels).

**Impedance:** 50, nominal.

**Connector:** HP 5342A: Precision Type N female.

HP 5343A: APC 3.5 male with collar.

**Damage level:** +25 dBm, peak (See Option 006 for +39 dBm protection).

**Coupling:** dc to load, ac to instrument.

**SWR:** < 2:1, (Typical) 500 MHz-10 GHz

< 3:1, (Typical) 10 GHz-18 GHz/26.5 GHz

**FM tolerance:** switch selectable (rear panel)

**Wide:** 50 MHz p-p worst case.

**Normal:** 20 MHz p-p worst case.

**Narrow:** (HP 5343A only) 6 MHz p-p worst case.

For Modulation Rates from dc to 10 MHz.

**AM tolerance:** any modulation index provided the minimum signal level is not less than the sensitivity specification.

**Automatic amplitude discrimination:** automatically measures the largest of all signals present, providing that signal is 6 dB above any signal within 500 MHz; 20 dB above any signal, 500 MHz-18 /26.5 GHz.

### Modes of Operation

**Automatic:** counter automatically acquires and displays highest level signal within sensitivity range.

**Manual:** center frequency entered to within  $\pm 40$  MHz of true value.

### Acquisition Time

#### Automatic Mode

Narrow FM 200 ms worst case (HP 5343A only)

Normal FM 530 ms worst case

Wide FM 2.4 s worst case

**Manual mode:** 80 ms after frequency entered.

### Input 2

**Frequency range:** 10 Hz to 520 MHz direct count.

**Sensitivity:** 50  $\Omega$ : 10 Hz to 520 MHz: 25 mV rms.

1 M $\Omega$ : 10 Hz to 25 MHz: 50 mV rms.

**Impedance:** selectable 1 M $\Omega$ , <50 pF or 50  $\Omega$  nominal.

**Coupling:** ac.

**Connector:** type BNC female.

**Maximum input** 50  $\Omega$ : 3.5 V rms (+24 dBm) or 5 V dc, fuse protected

1 M $\Omega$ : 200 V dc + 5 V rms.

### Time Base

**Crystal frequency:** 10 MHz.

### Stability

**Aging rate:**  $< 1 \times 10^{-7}$ /month.

**Temperature:**  $< \pm 1 \times 10^{-6}$  over the range 0°C to 50°C.

**Short term:**  $< 1 \times 10^{-9}$  for 1 second averaging time.

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

**Output frequency:** 10 MHz,  $\geq 2.4$  V square wave (TTL compatible) 1.5 p-p V into 50  $\Omega$  available from rear panel BNC.

**External time base:** requires 10 MHz, 3.0 V p-p sine wave or square wave into 1 k $\Omega$  via rear panel BNC connector. Switch selects either internal or external time base.

## Amplitude Time Base (option 001)

**Crystal frequency:** 10 MHz.

### Stability

**Aging rate:**  $<5 \times 10^{-10}$ /day after 24-hour warmup.  
**Temperature:**  $<7 \times 10^{-9}$  over the range  $0^{\circ}\text{C}$  to  $50^{\circ}\text{C}$ .  
**Short term:**  $<1 \times 10^{-10}$  for 1 second averaging time.  
**Line variation:**  $<1 \times 10^{-10}$  for 10% change from nominal.  
**Warm-up:**  $<5 \times 10^{-9}$  of final value 20 minutes after turn-on, at  $25^{\circ}\text{C}$ .

## Amplitude Measurement (opt 002) (HP 5342A only)

### Input 1

**Frequency range:** 500 MHz–18 GHz.

### Dynamic range (frequency and level)

–22 dBm to +22 dBm 500 MHz to 12.4 GHz  
–15 dBm to +22 dBm 12.4 GHz to 18 GHz

**Maximum operating level:** +22 dBm.

**Damage level:** +25 dBm, peak.

**Resolution:** 0.1 dBm.

**Accuracy:**  $\pm 1.5$  dB (excluding mismatch uncertainty).

**SWR:**  $<2:1$  Typical (amplitude measurement).

$<5:1$  Typical (frequency measurement).

**Measurement time:** 100 ms + frequency measurement time.

**Display:** simultaneously displays frequency to 1 MHz resolution and level. (Option 011 provides full frequency resolution on HP-IB).

### Input 2 (50 $\Omega$ impedance only)

**Frequency range:** 10 MHz–520 MHz.

**Dynamic range (frequency and level):** –17 dBm to +20 dBm.

**Damage level:** +24 dBm.

**Accuracy:**  $\pm 1.5$  dB (excluding mismatch uncertainty).

**SWR:**  $<1.8:1$  Typical

**Measurement time:** 100 ms + frequency measurement time.

**Display:** simultaneously displays frequency and input level.

## Extended Dynamic Range (opt 003) (HP 5342A only)

**Frequency range:** 500 MHz to 18 GHz.

**Sensitivity:** 500 MHz to 12.4 GHz: –22 dBm.  
12.4 GHz to 18 GHz: –15 dBm.

**Maximum operating level:** +22 dBm.

**Dynamic range:** 500 MHz to 12.4 GHz: 44 dB.  
12.4 GHz to 18 GHz: 37 dB.

**Damage level:** +25 dBm, peak.

**SWR:**  $<5:1$ .

## Microwave Limiter (option 006)

### Input 1

**Frequency range:** HP 5342A: 500 MHz – 18 GHz.

HP 5343A: 500 MHz – 26.5 GHz.

**Sensitivity:** HP 5342A: 500 MHz – 12.4 GHz: –21 dBm.  
12.4 GHz – 18 GHz: –15 dBm.

HP 5343A: 500 MHz – 12.4 GHz: –30 dBm.

12.4 GHz – 18 GHz: –24 dBm.

18 GHz – 26.5 GHz: –18 dBm.

**Maximum operating level:** +7 dBm.

**Damage level:** 500 MHz – 6 GHz: +39 dBm (8W).

6 GHz – 18 GHz: +36 dBm (4W).

(HP 5343A only) 18 GHz – 26.5 GHz: +34.8 dBm (3W).

**SWR:** 2.5:1, 500 MHz – 10 GHz.

3.5:1, 10 GHz – 18 GHz/26.5 GHz.

**Note:** Option 006 is incompatible with Option 002, Option 003, and Option 005 for HP 5342A. Please consult factory special to combine Options 005 and 006.

## General

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

**Resolution:** front panel push buttons select 1 Hz to 1 MHz.

**Display:** 11 digit LED display, sectionalized to read GHz, MHz, kHz, and Hz.

**Self-check:** selected from front panel pushbuttons displays 75 MHz for resolution chosen.

**Frequency offset:** selected from front panel pushbuttons. Displayed frequency is offset by entered value to 1 Hz resolution.

**Frequency multiply:** (HP 5343A only) (mx  $\pm$ b) measured data is multiplied by any integer up to 99. Offset can then be added or subtracted. Front-panel selectable.

**Totalize (HP 5343A only):** input 2 can totalize at rates up to 520 MHz. Readout on the fly is controlled by front panel or HP-IB.

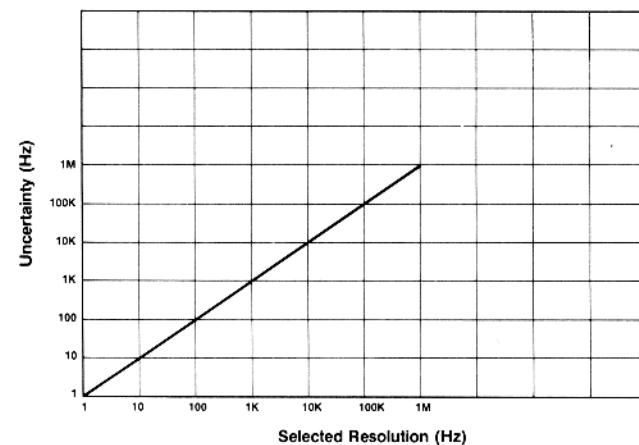
**Sample rate:** variable from less than 20 ms between measurements to HOLD which holds display indefinitely.

**IF out:** rear panel BNC connector provides 25 MHz to 125 MHz output of down-converted microwave signal.

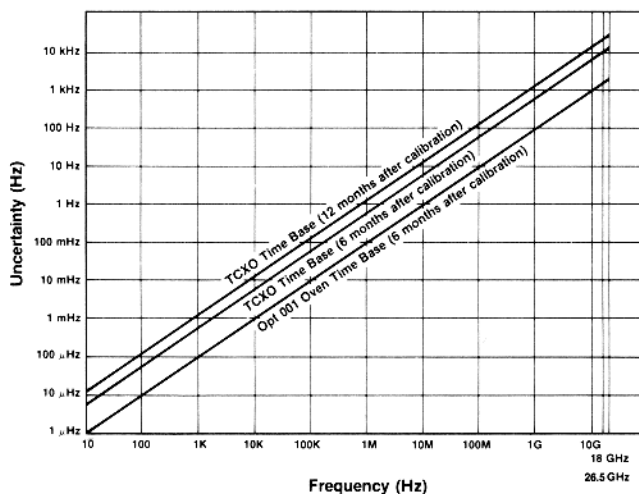
**Power requirements:** 100/120/220/240 V rms, +5%, –10%, 48–66 Hz; 100 VA max.

**Weight:** net 9.1 kg (20 lb). Shipping 12.7 kg (28 lb).

**Size:** 133 H x 213 W x 498 mm D (5.25" x 8.38" x 19.6").



Graph 1. Uncertainty due to selected resolution.



Graph 2. Uncertainty due to time base error can be reduced by calibrating the time base more frequently, or by using a time base with a lower aging rate.