

	TCX0	Option 001	Option 010
Aging Rate	$1 \times 10^{-7}$ /month	$5 \times 10^{-9}$ /day	$2 \times 10^{-9}$ /year
Short Term	$1 \times 10^{-9}$ /s	$1 \times 10^{-10}$ /s	$1 \times 10^{-10}$ /s
Temperature 0° to 50° C	$1 \times 10^{-9}$	$1 \times 10^{-9}$	$1 \times 10^{-9}$
Line 10% change	$1 \times 10^{-7}$	$1 \times 10^{-10}$	$1 \times 10^{-10}$
Warmup to <math>5 \times 10^{-9}</math> @ 25° C		10 min	10 min

Table 1. Timebase (10 MHz)

**Input 2**

**Frequency Range:** 10 Hz to 525 MHz

**50 Ω:** 10 MHz to 525 MHz

**1 MΩ:** 10 Hz to 80 MHz

**Sensitivity:** Full operating environment:

**50 Ω:** 10 MHz to 525 MHz, 25 mV rms; 15 mV typical @ 25° C

**1 MΩ:** 10 Hz to 80 MHz, 25 mV rms; 15 mV typical @ 25° C

Gate Time = 1/resolution; 1 ms min

**Maximum input:** 50 Ω: +10 dBm; 1 MΩ: 1V rms

**Damage Level:** 50 Ω or 1 MΩ dc to 5 kHz: 250 V (dc + ac peak);

> 5 kHz: 5.5 V rms (+ 28 dBm) +  $1.25 \times 10^7$  V rms/freq

**Coupling:** ac

**Connector:** Replaceable fuse, type BNC (female)

**Accuracy:**

$$\pm 1 \text{ LSD} \pm \left( \frac{1.4 \times \text{Trigger Error}'}{\text{Gate Time}} \pm \text{Timebase Error} \right) \times \text{Freq}$$

See Graph 2, page 193, for timebase error;

Gate time = 1/resolution = 1 ms minimum

**Impedance:** 1 MΩ nominal shunted by < 70 pF or 50 Ω nominal

**Resolution:** Selectable, 1 Hz to 1 MHz

**High Resolution:** 1 MΩ mode: 0.001 Hz for < 100 kHz input; 0.01 Hz for < 1 MHz input; 0.1 Hz for < 10 MHz input; 1 Hz for > 10 MHz input; 1-second gate

**Timebase Output:** 10 MHz and 1 MHz, 2.4 V square wave ac coupled into 1 kΩ; 1.5V peak-to-peak into 50 Ω; rear panel BNC connectors

**External Timebase:** 1, 2, 5, or 10 MHz, 0.7 V min. to 8 V max. peak-to-peak sine wave or square wave into > 1 kΩ shunted by < 30 pF, via rear-panel BNC connector

**General**

**Display:** Segmented 24-character alphanumeric LCD (backlighted)

**Built-in Features:** Self-check, diagnostics, display and keyboard lockout, overload indicator, HP-IB teach-learn mode

**Data Output:** Over HP-IB bus; varies with frequency and resolution

**Auto mode:** > 100 readings/s, 10 kHz resolution, no math functions, "DUMP" mode

**Manual mode:** > 120 readings/s, 10 kHz resolution, no math functions, "DUMP" mode

**Math Functions:** Scale, offset, smooth (exponential averaging)

**Sample Rate:** Variable from less than 50 ms between measurements to HOLD, which holds the display indefinitely or until trigger occurs.

**Display Rate:** 5/s, variable over HP-IB

**Sleep Mode:** Input 1 emissions reduced to < -70 dBm typical when sleep mode or Input 2 is selected.

**IF Output:** Rear-panel BNC provides 30-110 MHz down-converted microwave signal at > -20 dBm into 50 Ω, ac-coupled.

**HP-IB Interface Functions:** SH1, AH1, T5, L4, SR1, RL1, PP0, DC1, DT1, C0, E1 (see page 85)

**Operation Temperature:** 0° C to 50° C

**Power Requirements:** 100 VA max

**Line Select:** 100 V (90 to 105 Vac rms; 47.5 to 440 Hz)

115/120 V (104/126 Vac rms; 47.5 to 440 Hz)

220 V (198 to 231 Vac rms; 47.5 to 66 Hz)

230/240 V (207 to 252 Vac rms; 47.5 to 66 Hz)

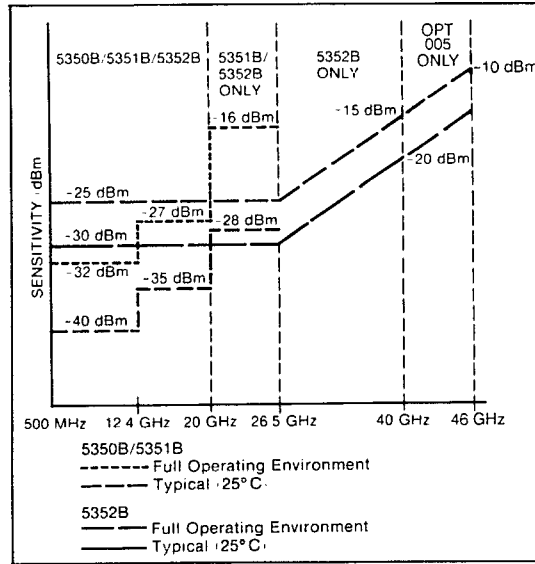
**Accessories Furnished:** Power cord, manual

**Size:** 133 mm H x 425 mm W x 358 mm D (5¼ in x 16¼ in x 14 in)

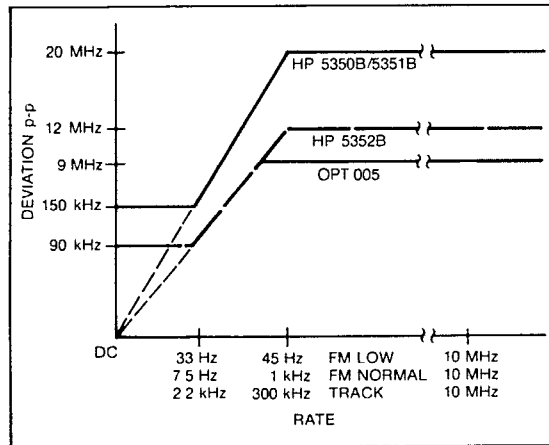
**Weight:** 11 kg (24 lb)

$$\text{Trigger error} = \frac{\sqrt{(e_e^2 + e_s^2)}}{\text{Input slew rate in V/S at trigger point}} \text{ s rms}$$

Where  $e_e$  = effective rms noise of counter's input channel (100 μV typical)  
 $e_s$  = rms noise of the input signal for a 500 MHz bandwidth.



Graph 1. Sensitivity



Graph 2. FM rate tolerance

**Ordering Information**

<b>HP 5350B</b> 20 GHz Microwave Frequency Counter	\$5,950
<b>HP 5351B</b> 26.5 GHz Microwave Frequency Counter	\$7,150
<b>HP 5352B</b> 40 GHz Microwave Frequency Counter	\$11,000

**Options for HP 5350B/5351B/5352B:**

<b>Opt 001</b> Oven Timebase	+ \$780
<b>Opt 002</b> Rear-Panel Inputs (HP 5350B/51B only)	+ \$315
<b>Opt 005</b> Frequency Extension to 46 GHz (HP 5352B only)	+ \$4,050
<b>Opt 006</b> Microwave Level Limiter (HP 5350B/51B only)	+ \$800
<b>Opt 010</b> High-Stability Oven Timebase	+ \$1,560
<b>Opt 910</b> Additional Operating and Service Manual	+ \$78
<b>Opt 908</b> Rack Mount Kit for Use with Front Handles removed	+ \$65
<b>Opt 913</b> Rack Mount Kit for Use with Supplied Front Handles	+ \$85
<b>Opt IA3</b> Bellcore CLEI Barcode Sticker	+ \$30
<b>Opt W30</b> Extended Repair Service (see page 624)	Call HP
<b>Opt W32</b> Calibration Service (see page 624)	+ \$865

**Additional Equipment Available:**

Transit Case (HP 9211-2643)	\$430
Waveguide (3 inch straight) Adapter WR28-APC3.5 (HP 05356-20217)	\$1,950
Waveguide (3 inch straight) to Coaxial Adapter WR42-APC3.5 (HP 05356-20216)	\$1,900
Adapter: In series APC 3.5 male-to-male (HP 1250-1748)	\$170
Adapter: In series APC 3.5 female-to-female (HP 1250-1749)	\$185