Table 1-3. Specifications

SIGNAL INPUT

Input 1

Range: 10 Hz to 18 GHz.
Symmetry: Sine wave or square wave input (40% duty factor, worst case).
Sensitivity: -30dBm, 10 Hz to 500 MHz; -35dBm, 500 MHz to 10 GHz; -25dBm, 10 to 18 GHz.
Dynamic Range: 37dB, 10 Hz to 500 MHz; 42dB, 500 MHz to 10 GHz; 32dB, 10 GHz to 18 GHz.
Impedance: 50Ω.
VSWR: <2:1, 10 Hz to 12.4 GHz; <3:1, 12.4 to 18 GHz.
Connector: Precision Type N
Coupling: DC to load, AC to instrument.
Damage Level: +30dBm ±7V dc (total power not to exceed 1W)
Acquisition Time: <150 ms mean typical.

Input 2

Range: 10 Hz to 250 MHz direct count.
Sensitivity: 50 mV rms. 150 mV p-p pulses to 0.1% duty factor minimum pulse width 2 nsec.
Impedance: 1MΩ shunted by <25 pF. Option 002 (rear panel input) 1MΩ shunted by <100 pF. 50Ω termination (provided for front panel input) required to meet all specifications with Option 002 installed.
Connector: Type BNC female.
Coupling: AC.
Maximum Input:
10 Hz to 100 Hz 200V rms.
100 Hz to 100 kHz 20V rms.
100 kHz to 250 MHz 2V rms.

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.

Maximum AM Modulation: Any modulation index as long as the minimum voltage of the signal is not less than the sensitivity specification. For example, with a -10dBm input signal at 10 GHz, 94.5% modulation index will cause the signal to drop to -35dBm (4 mV) at its lowest amplitude and would be the limit of modulation.

TIME BASE

Crystal Frequency: 10 MHz.
Stability:
Aging Rate: $<\pm 3 \times 10^{-7}$ 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 >2.4V square wave (TTL compatible) available from rear panel BNC.

External Time Base: Requires 10 MHz approximately 1.5V p-p sine wave or square wave into 1 KΩ via rear panel BNC. Switch selects either internal or external time base.

Table 1-3. Specifications (Continued)

OPTIONAL TIME BASE (Option 001)

Option 001 provides an oven controlled crystal oscillator time base with an aging rate near that of a time standard. This option results in better accuracy and longer periods between calibration. A separate power supply keeps the crystal oven ON and up to temperature when the instrument is turned off as long as it remains connected to the power line.

Frequency: 10 MHz.
Aging Rate: $<\pm 5 \times 10^{-10}$/day after 24 hour warm-up[1] and $<1.5 \times 10^{-7}$/year.
Short Term Stability:
1×10^{-10} for 1 s avg. time
1×10^{-10} for 10 s avg. time.
2×10^{-10} for 100 s avg. time.
Line Variation: $<1 \times 10^{-10}$ for ±10% change from nominal. A 10% change will cause a frequency change of $<1 \times 10^{-8}$ for <2 min.
Temperature: $<7 \times 10^{-9}$ over 0°C to 50°C range.
Warmup: Within 5×10^{-9} of final[2] value 20 minutes after turn-on, at 25°C.
Frequency Adjustment Range: $>1 \times 10^{-6}$ (>±10 Hz from 10 MHz) with 18-turn control.
Frequency Adjustment: 1×10^{-9} (0.01 Hz) 18-turn control.

GENERAL

Accuracy: ±1 count ± time base error.
Resolution: Front panel switch selects 1 MHz, 100 kHz, 10 kHz, 1 kHz, 100 Hz, 10 Hz, or 1 Hz.
Display: Eight in-line long life display tubes with positioned decimal point and appropriate measurement units of kHz, MHz, or GHz.

"DIR" lamp indicates measurement is direct.

"LOCK" lamp indicates phase-lock has been achieved and measurement technique is indirect.

GATE" lamp indicates measurement is in progress.

"RMT" lamp indicates instrument is controlled via external or remote device.

"OVFL" indicates most significant digits will not be displayed. Digits displayed when "OVFL" is lighted are accurate ±1 count ± time base accuracy. "OVFL" is necessary for some high frequency measurements where resolution of 100 Hz, 10 Hz, or 1 Hz is required.

"*" lamp indicates Option 001 crystal oven time base is in the process of warming up (10-15 min. approximately). (The lamp will remain on for longer periods of time if the line voltage is low.)

Self-Check: Counts and displays 10 MHz for resolution chosen.

Sample Rate: Controls time between measurements. Continuously adjustable from 50 milliseconds typical to 5 seconds. Hold position holds display indefinitely. Reset button resets display to zero and activiates a new measurement.

Operating Temperature: 0° to 50°C.

Power: 115V or 230V ±10%, 50-60 Hz, 100 VA.

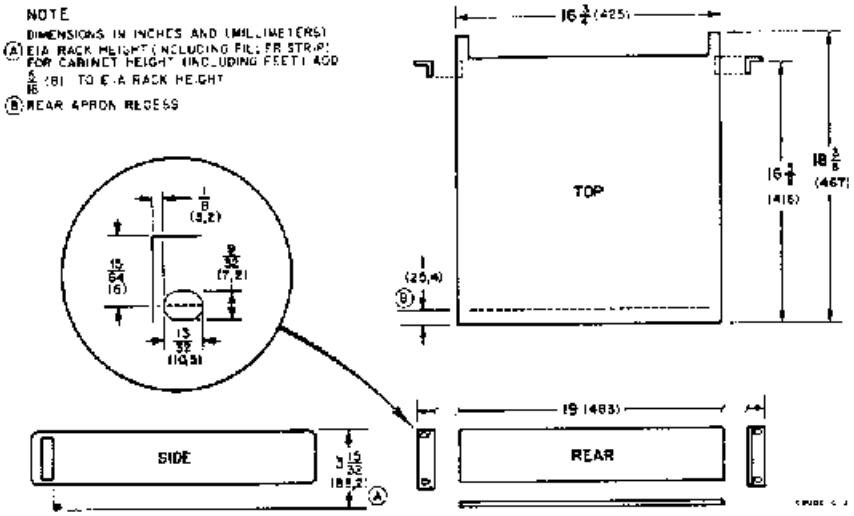
Weight: Net: 25 lb. (11, 3kg). Shipping: 31 lb. (14, 1kg).

[1]For oscillator off-time less than 24 hours.
[2]Final value is defined as frequency 24 hours after turn-on.

Table 1-3. Specifications (Continued)

GENERAL (CONTINUED)

Dimensions:



Accessories Furnished: Power cord 7½ ft (200 cm), NEMA plug (HP Part Number 8120-1378).

Accessories Available: 59310A Interface Kit for use with 5340A Option 011 and Hewlett-Packard computers.
11144A, Option 20 Interface Kit for use with 5340A Option 011 and Model 9820A Calculator.
ASCII (Option 011) to parallel BCD converter K01-5340A.

Rear Panel Connectors (Option 002)

This option provides input connectors on the rear panel. Input specifications remain the same. Input 1 (Type N) is on the rear panel in place of installation on the front panel. Input 2 (BNC) is available on the front and rear panels. Input impedance is reduced to 50Ω.

Remote Programming and Digital Output (Option 011)

Option 011 adds the capability of digital outputting and remote programming via a 24-pin, series 57 microribbon connector on the rear panel marked DIGITAL INPUT/OUTPUT. The TTL and DTL compatible, bi-directional bus consists of eight data lines plus seven status and control lines. Both program and output information are seven-bit ASCII (USA Standard Code for Information Interchange) characters. They are passed over the data lines on a character-serial basis.

Connector: 24-pin female Amphenol #57-20240-2, HP #1251-3283.
Mating connector male, Amphenol #57-10240, HP #1251-0389.