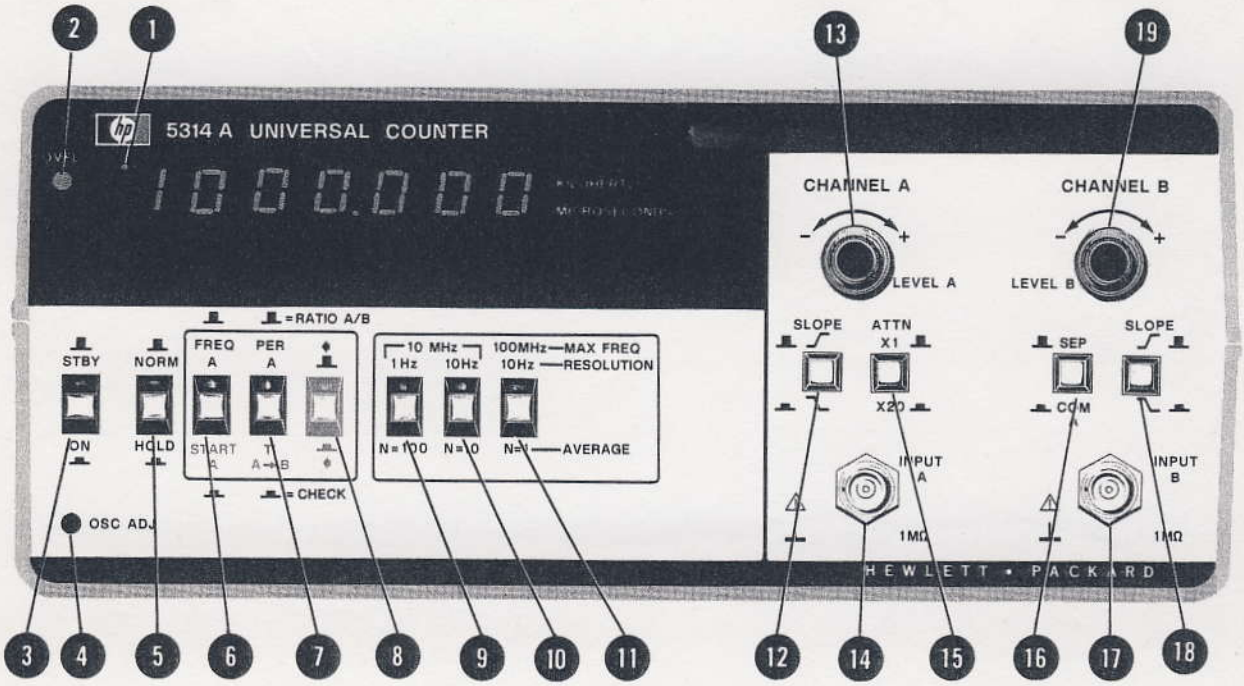

1	GATE	The gate light, when lit, indicates the main gate is open and a measurement is in progress.
2	OVERFLOW	LED annunciator which lights when one or more of the most significant digits (digits left-most from the decimal point) are not displayed. However, the counter continues to count correctly although the digits are only correct to the extent of the time base.
3	STBY/ON	Supplies power to the entire instrument in the ON position. Supplies power only to the Option 002 battery charging circuit in the STBY position.
4	OSC ADJ	Front panel window allowing access to the oscillator frequency - adjustment capacitor (A1C2).
5	NORM/HOLD	In HOLD, switch IN, the measurement (except for totalize) in progress is stopped, the main counter is reset, and the HP 5314A is held ready to make a new measurement. The latches are not updated so the last complete measurement is displayed. When switched back to NORM, a new measurement is initiated. In totalize, when placed in HOLD, the display is held but the counters continue to increment. When the HOLD is released, the display is updated and resumes counting.
6	FREQ A START A	With this switch IN, the HP 5314A is placed in either frequency or totalize (START) mode as determined by the position of the blue shift key 8.
7	PER A T.I. A→B	With this switch IN, the HP 5314A is placed in either period or time interval mode as determined by the position of the blue shift key 8.

Figure 3-2. Front Panel Controls and Connectors

Table 1-1. Specifications

INPUT CHARACTERISTICS

Range:
Channel A 10 Hz to 100 MHz
Channel B 10 Hz to 2.5 MHz

Sensitivity:
Channel A:
25 mV rms to 100 MHz
75 mV peak-to-peak minimum pulse with 5 ns
Channel B:
25 mV rms to 2.5 MHz
75 mV peak-to-peak minimum pulse width of 50 ns

Coupling: AC

Impedance: 1 MΩ NOMINAL shunted by less than 30 pF

Attenuator: X1 or X20 NOMINAL (A Channel only)

Trigger Level:
Continuously variable ±350 mV times attenuator setting around average value os signal.

Slope: Independent selection of + or – slope

Channel Input: Selectable SEPARATE or COMMON A

Damage Level:

X1:	DC to 100 kHz	350V (DC + peak AC)
	100 kHz to 5 MHz	2.5×10^7C × Hz Product
	Above 5 MHz	5V rms
X20:	DC to 1 MHz	350V (DC + Peak AC)
	1 MHz to 50 MHz	2.5×10^8V × Hz Product
	Above 50 MHz	5V rms

FREQUENCY (A)

Range:
10 Hz to 10 MHz direct count
1 MHz to 100 MHz prescaled by 10

LSD Displayed: Direct count 0.1 Hz, 1 Hz, 10 Hz switch selectable. Prescaled 10 Hz, 100 Hz, 1 kHz switch selectable.

Resolution: ± LSD

Accuracy: ± LSD ± (time base error) × FREQ

PERIOD (A)

Range: 10 Hz to 2.5 MHz

LSD Displayed:
$\frac{100\text{ ns}}{N}$ for N=1 to 1000 in decade steps of N

Resolution:
$$\pm \text{LSD} \pm 1.4 \times \frac{\text{Trigger Error}}{N}$$

Accuracy
$$\pm \text{LSD} \pm 1.4 \times \frac{\text{Trigger Error}}{N} \pm (\text{time base error}) \times \text{PER}$$

TIME INTERVAL (A TO B)

Range: 250 ns to 1 s

LSD Displayed: 100 ns

Resolution: ± LSD ± START Trigger Error ± STOP Trigger Error

Accuracy: ± LSD ± START Trigger Error ± STOP Trigger Error ± (time base error) × TI

Time Interval measurements require an arming signal for both the START and STOP Channels. (See Paragraph 3-11.)

RATIO

Range:
10 Hz to 10 MHz Channel A
10 Hz to 2.5 MHz Channel B

LSD Displayed:
1 part in $\frac{A}{B} \times N$ in decade steps of N for N=1 to 1000

Resolution:
± LSD ± (B Trigger Error × FREQUENCY A)/N

Accuracy:
± 1 count of A ± (B Trigger Error × FREQUENCY A)/N

TOTALIZE (A)

Range: 10 Hz to 10 MHz

Resolution: ± 1 count of input

GENERAL

Check: Counts internal 10 MHz Oscillator

Display: 7-digit amber LED display with gate and overflow indication.

Maximum Sample Rate: 5 readings per second.

Operating Temperature: 0° to 50°C

Power Requirement:
115V, +10%, –25%; 230V, –17%, +9%; 48–66 Hz; 10 VA maximum.

Weight: 2.0 kg (4.4 lbs.)

Dimension: 238 mm wide × 98 mm high × 276 mm long (9⅜ × 3⅜ × 10⅞ in.)

TIME BASE

Frequency: 10 MHz

Aging Rate: <3 parts in 10^7 per month

Temperature: <±1 part in 10^6, 0° to 50°C

Line Voltage: <±1 part in 10^7 for ±10% variation.

OPTIONS

Option 001: High Stability Time Base (TCXO)

Frequency: 10 MHz

Aging Rate: <1 part in 10^7 per month

Temperature: <±1 part in 10^6, 0° to 40°C

Line Voltage: <±1 part in 10^8 for ±10% variation

Option 002: Battery

Type: Rechargeable lead-acid (sealed)

Capacity: TYPICALLY 8 hour of continuous operation at 25°C.

Recharging Time: TYPICALLY 16 hours to 98% of full charge, instrument nonoperating. Charging circuitry included with option. Batteries not charged during instrument operation.

Battery Voltage Sensor: Automatically shuts instrument off when low battery condition exists.

Line Failure Protection: Instrument automatically switches to batteries in case of line failure.

Weight: Option 002 adds 1.5 kg (3.3 lbs.) to weight of instrument.

WARRANTY

ALL COMPONENTS WITHIN OPTION 002, EXCEPT THE BATTERY, ARE WARRANTED FOR ONE FULL YEAR. BATTERY BT1, (HP PART NO. 1400-0253) IS NOT WARRANTED.

DEFINITIONS

Resolution: Smallest discernible change of measurement result due to a minimum change in the input.

Accuracy: Deviation from the actual value as fixed by universally accepted standard of frequency and time.

Trigger Error:
$$\frac{\sqrt{(80\ \mu\text{V})^2 + e_n^2}}{\text{Input Slew Rate at Trigger Point } (\mu\text{V/s})} \text{ (rms)}$$

Where e_n is the rms noise of the input for a 100 MHz bandwidth on Channel A and a 10 MHz bandwidth on Channel B

LSD: Least Significant Digit.