

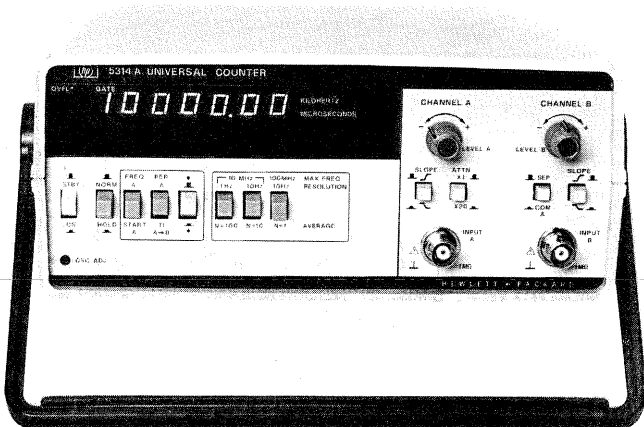
# ELECTRONIC COUNTERS

Low Cost Universal

Model 5314A



- 100 MHz
- 100 ns Time Interval
- Portable



5314A

The 5314A Universal Counter is the newest result of HP's continuing low cost counter product development effort. It combines excellent performance and traditional HP quality at a very attractive price. This counter is designed to deliver reliable, high quality operation in such areas as: Production Test, Frequency Monitoring, Education, Training, Service and Calibration. Additionally, the optional battery (option 002) makes the 5314A especially attractive for field and portable applications.

### Input Characteristics (Channels A and B):

**Range:** CHANNEL A: 10 Hz to 10 MHz Direct.

1 MHz to 100 MHz Prescaled.

CHANNEL B: 10 Hz to 2.5 MHz.

**Sensitivity:** CHANNEL A: 25 mv rms to 100 MHz.

75 mv peak-to-peak at minimum pulse width of 5 ns (100 MHz range).

CHANNEL B: 25 mv rms to 2.5 MHz.

75 mv peak-to-peak at minimum pulse width of 200 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  $\pm 350$  mV times attenuator setting around average value of signal.

**Slope:** Independent selection of + or - slope.

**Channel Input:** Selectable SEPARATE OR COMMON A.

**Dynamic Range:** 75 mV p-p to 4 V p-p.

### Frequency:

**Range:** 10 Hz to 10 MHz direct count.

10 Hz to 100 MHz prescaled by 10.

**Least Significant Digit (LSD) Displayed:** Direct count 0.1 Hz, 1 Hz, 10 Hz switch selectable. Prescaled 10 Hz, 100 Hz, 1 KHz switch selectable.

**Resolution:**  $\pm$  LSD.

**Accuracy:**  $\pm$  LSD  $\pm$  (time base error) x Freq.

### Period:

**Range:** 10 Hz to 2.5 MHz.

**LSD Displayed:** 100 N ns for N=1 to 1000 in decade steps of N.

**Resolution:**  $\pm$  LSD  $\pm \frac{(1.4 \times \text{TRIGGER ERROR})}{N} \times \text{Per.}$

**Accuracy:**  $\pm$  LSD  $\pm \frac{(1.4 \times \text{TRIGGER ERROR})}{N} \times \text{Per.}$

$\pm$  (time base error) x Per.

### Time Interval:

**Range:** 250 ns to 1 sec.

**LSD Displayed:** 100 ns.

**Resolution:**  $\pm$  LSD  $\pm$  START trigger error  $\pm$  STOP trigger error.

**Accuracy:**  $\pm$  LSD  $\pm$  START trigger error

$\pm$  STOP trigger error  $\pm$  (time base error) x TI.

External arming required for START/STOP channels.

### Ratio:

**Range:** 10 Hz to 10.0 MHz CHANNEL A.

10 Hz to 2.5 MHz CHANNEL B.

**LSD Displayed:** 1/N in decade steps of N for N = 1 to 1000.

**Resolution:**  $\pm$  LSD  $\pm$  (B trigger error x Frequency A)/N.

**Accuracy:**  $\pm$  LSD  $\pm$  B trigger error x Frequency A.

### Totalize:

**Range:** 10 Hz to 10 MHz.

**Resolution:**  $\pm$  1 count of input.

Totalize controlled by front panel switch.

### General:

**Check:** Counts internal 10 MHz oscillator.

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

**Max Sample Rate:** 5 readings per second.

**Operating Temperature:** 0° to 50 °C.

**Power Requirement:** 100/120/230/240 V RMS +5%, -10%, 48-66 Hz; 10 VA max.

**Weight:** 2.0 kg (4.4 lb.).

**Dimension:** 238 mm W x 98 mm H x 276 mm D (9 $\frac{3}{8}$  x 3 $\frac{3}{8}$  x 10 $\frac{1}{2}$  in.).

### Time Base:

**Frequency:** 10 MHz.

**Aging Rate:** < 3 part in 10<sup>7</sup> per month.

**Temperature:** <  $\pm 10$  parts in 10<sup>6</sup>, 0 to 50°C.

**Line Voltage:** <  $\pm 1$  part in 10<sup>7</sup> for  $\pm 10\%$  variation.

### Options:

**Option 001:** High stability time base (TCXO).

**Frequency:** 10 MHz.

**Aging Rate:** < 1 part in 10<sup>7</sup> per month.

**Temperature:** <  $\pm 1$  part in 10<sup>6</sup>, 0 to 40°C.

**Line Voltage:** <  $\pm 1$  part in 10<sup>8</sup> for  $\pm 10\%$  variation.

**Option 002:** Battery.

**Type:** Rechargeable lead-acid (sealed).

**Capacity:** Typically 8 hours of continuous operation at 25°C.

**Recharging Time:** Typically 16 hours to 98% of full charge, instrument non-operating. 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 typically 1.5 kg (3.3 lb.) to weight of instrument.

### 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 standards of frequency and time.

**Trigger Error: (RMS)**

$\sqrt{(80 \mu\text{V})^2 + e_n^2} / \text{input slew rate at trigger point } (\mu\text{V/s}).$

Where  $e_n$  is the RMS noise of the input for a 100 MHz bandwidth in CHANNEL A and 10 MHz bandwidth in CHANNEL B.

### Options

**001** High stability time base

**002** Battery

**910:** Extra product manual

All orders must include one (1) of these line power options:

**Option 115:** 86-127V

**Option 230:** 190-250V

5314A 100 MHz/100 ns Universal Counter