

# PULSE GENERATORS & DATA GENERATORS

## Fast, High Power Pulse Generator

### HP 214B

459

- High power 100 V, 2 A output into 50  $\Omega$
- 10 MHz repetition rate

- Constant duty cycle
- Counted pulse burst option



HP 214B with Option 001, Counted Burst.

### HP 214B Pulse Generator

The HP 214B pulse generator employs semiconductor technology for high power pulse generation at up to 10 MHz repetition rate. Delivering 100 V pulses with 15 ns risetimes, the HP 214B meets the speed demands of today's applications.

State-of-the-art VMOS FETS used as current sources for the output amplifier tubes enable pulse width to be specified down to 25 ns. The HP 214B is thus well-equipped for low duty cycle applications such as laser diode pulsing or transient simulation.

Where changing duty cycle threatens destruction to the device under test, the HP 214B Constant Duty Cycle (CDC) mode provides device protection. In CDC operation the duty cycle, hence power, remains constant as frequency is varied. The HP 214B is itself protected against excessive duty cycles via an overload protect circuit.

Easy operation is assured by the timing error indication. Calibrated dials enable fast accurate adjustments. Operating into unmatched loads, clean pulse shape is guaranteed by the low reactance 50  $\Omega$  source impedance. Pulse distortions such as preshoot and overshoot are specified as 5% at all amplitudes.

### Specifications

#### Timing

**Repetition Rate:** 10 Hz to 10 MHz in 6 ranges. In 30 V to 100 V amplitude range, maximum rep. rate is 4 MHz. Calibrated vernier provides continuous adjustment within ranges. **Vernier Accuracy:**  $\pm$  (10% of setting + 1% full scale). **Period Jitter:**  $\leq$  0.1% + 300 ps.

**Pulse Delay/Advance:** Pulse can be delayed/advanced with respect to the trigger output from 10 ns to 10 ms ( $\pm$  fixed delay of 45 ns) in 5 ranges. Calibrated vernier provides continuous adjustment within ranges. **Vernier Accuracy:**  $\pm$  (10% of setting + 1% full scale) + fixed delay. **Position Jitter:**  $\leq$  0.1% + 500 ps

**Maximum Pulse Position Duty Cycle:**  $\geq$  50%

**Double Pulse:** 5 MHz maximum in all ranges except 30 V to 100 V range which is max. 2 MHz. Minimum separation is 100 ns.

**Pulse Width:** 25 ns to 10 ms in 6 decade ranges. Calibrated vernier provides continuous adjustment within ranges. **Accuracy:**  $\pm$  (10% of setting + 1% full scale) + 5 ns. **Width Jitter:**  $\leq$  0.1% + 500 ps

**Max. Duty Cycle:**  $\geq$  10% for 30 to 100 V range.  $\geq$  50% all other ranges.

**Constant Duty Cycle Mode** (disabled in ext. trigger mode): Duty cycle of output pulse remains constant as the period is varied. The duty cycle limits in this mode are typically 8% fixed for the 10 MHz to 1 MHz range (max. 4 MHz); 2.5% to 10% for 1 MHz to 0.1 MHz range; 0.25% to 10% for 0.1 MHz to 10 kHz range; 0.1% for all other ranges. Calibrated vernier provides continuous adjustment within ranges.

**Accuracy:**  $\pm$  (15% of setting + 1% of full scale)

#### Trigger Output

**Amplitude:**  $\geq$  +5 V (50  $\Omega$  into open circuit)

**Pulse width:** 10 ns typical

### External Operating Modes

**External Input (impedance 10 k $\Omega$ , dc coupled)**

**Repetition rate:** dc to 10 MHz

**Sensitivity:** 500 mVp-p, dc coupled

**Slope:** Pos. or neg.

**Trigger level:** +5 V to -5 V adjustable

**Maximum input level:**  $\pm$  100 V

**Trigger pulse width:**  $\geq$  10 ns

**EXT TRIG Mode:** An output pulse is generated for each input pulse.

**GATE Mode:** Gate signal turns on rep. rate generator synchronously. Last pulse always completed.

**BURST Mode (optional):** Preselected number of pulses generated on receipt of trigger signal

**Number of pulses:** 1 to 9999

**Minimum spacing between bursts:** 200 ns

**Manual:** Pushbutton can be used for triggering single pulses (EXT TRIG mode), generating gate signals (GATE mode), or triggering pulse bursts (BURST mode).

### Output

**Amplitude:** 0.3 V to 100 V in 5 ranges. Calibrated vernier provides adjustment within ranges. **Vernier accuracy:**  $\pm$  10% of setting.

**Source Impedance:** Fixed 50  $\Omega$  nominal on ranges up to 10 V. Selectable 50  $\Omega$  nominal or HI-Z on 10 - 30 - 100 V ranges (with 50  $\Omega$  / 50  $\Omega$  impedance, amplitude decreases to 5 - 15 - 50 V).

**Polarity:** Pos. or neg. selectable

**Transition Times:**  $\leq$  15 ns for leading and trailing edges

**Pulse Top Perturbations:**  $\leq$   $\pm$  5% of amplitude

### General

**Operating Temperature:** 0 $^{\circ}$  C to 55 $^{\circ}$  C

**Power:** 100/120/220/240 V rms; +5%, -10%, 48 to 66 Hz, 360 VA max

**Size:** 426 mm W  $\times$  133 mm H  $\times$  422 mm D (16.8 in  $\times$  5.2 in  $\times$  16.6 in)

**Weight:** Net, 13.6 kg (30 lb); shipping, 15.6 kg (34.3 lb)

### Ordering Information

**HP 214B Pulse Generator**

**Price**

\$5,950

**Opt 001 Counted Burst**

\$940

**Opt H04 48-440 Hz Line**

on request

**Opt 907 Front Handle Kit** (HP p/n 5061-9689)

\$56

**Opt 908 Rack Mount Kit** (HP p/n 5061-9677)

\$33

**Opt 909 Opt 907, 908 Combined** (HP p/n 5061-9683)

\$82

**Opt 910 Set of Operating/Progr. and Service Manuals**

\$34

**Opt W30 Extended Repair Service** (see page 636)

\$120

☎ For off-the-shelf shipment, call 800-452-4844.