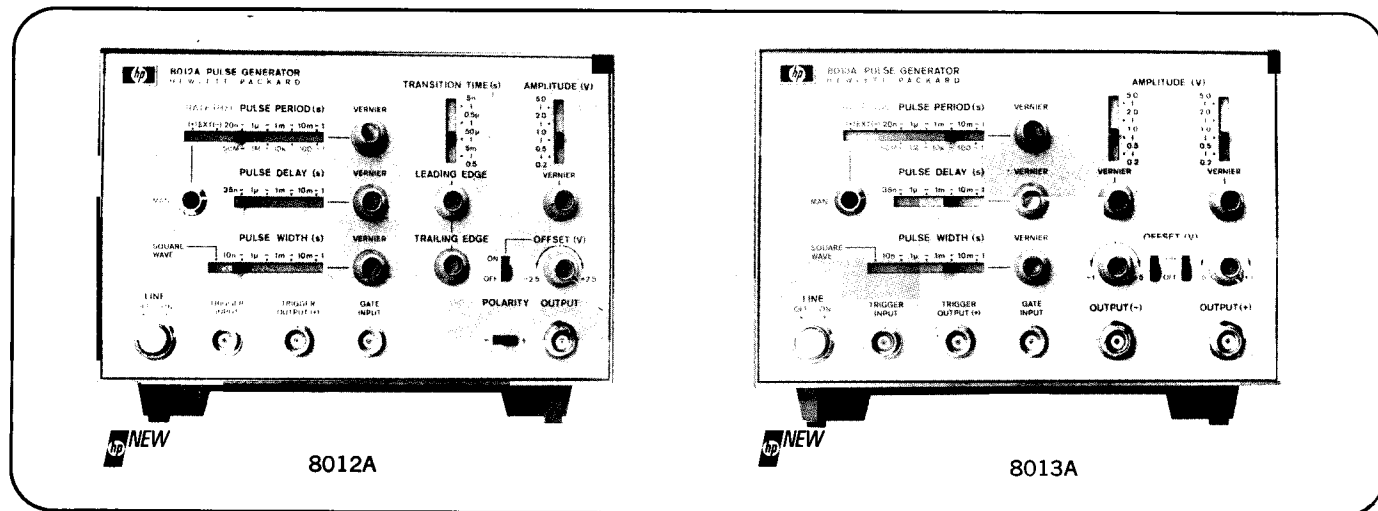




PULSE GENERATORS

Repetition rate up to 50 MHz, high flexibility
Models 8012A, 8013A



The 8012A and the 8013A are extremely flexible pulse generators with repetition rate, delay, width, amplitude and DC offset variable over very wide ranges.

The 8012A has one output and offers independently variable transition times, ranging from 5 ns to 0.5 s.

The 8013A has two outputs, providing simultaneous pulses of opposite polarity. Transition times are fixed at 3.5 ns.

Both instruments feature external triggering, synchronous gating, square wave mode and pulse shaping capability for RZ and NRZ signals.

Specifications

Pulse characteristics (50 Ω source and load impedance):

Transition times: 8012A: 5 ns — 0.5 s in four ranges. Ranges common for both transition times, verniers provide separate control of leading and trailing edge within each range up to maximum ratios of 100:1 or 1:100. 8013A: 3.5 ns fixed.

Linearity: (8012A) for transition times >30 ns maximum deviation from a straight line between the 10% and 90% points is 5% of pulse amplitude.

Preshoot, overshoot, ringing: $<5\%$ of pulse amplitude.

Pulse width: <10 ns to 1 s in four ranges. Vernier provides continuous adjustment within ranges.

Width jitter: $<0.1\%$ — 50 ps on any width setting.

Maximum duty cycle: $>75\%$ from 1 Hz to 10 MHz, decreasing to $>40\%$ at 50 MHz.

Maximum output: 5 V across 50 Ω , (10 V across open circuit).

Output circuit protected, cannot be damaged by shorting. 8013A: internal 50 Ω load may be disconnected, providing 10 V across 50 Ω .

Attenuator: four-step attenuator reduces output voltage to 0.5 V. Vernier provides continuous adjustment between steps. Minimum output 0.2 V.

Polarity: 8012A: positive or negative selectable. 8013A: two outputs, positive and negative.

Source impedance: 8012A: 50 Ω $\pm 10\%$ shunted by typ. 20 pF. 8013A: 50 Ω $\pm 3\%$ shunted by typ. 20 pF.

DC offset: (across 50 Ω load) 8012A: ± 2.5 V. 8013A: positive output: +1 V to -5 V, negative output: -1 V to -5 V. Independent of amplitude control settings, may be switched off.

Pulse delay: <35 ns to 1 s (with respect to trigger output), four ranges; continuous adjustment within ranges.

Delay jitter: $<0.1\%$ + 50 ps on any delay setting.

Repetition rate and trigger: 1 Hz to 50 MHz in four ranges, continuous adjustment within ranges.

Period jitter: $<0.1\%$ + 50 ps on any rate setting.

Square wave: 0.5 Hz to 25 MHz in four ranges. Duty cycle 50% $\pm 5\%$ up to 1 MHz, tolerance increases to $\pm 15\%$ at 25 MHz.

Trigger output: $>+1$ V across 50 Ω , 16 ns ± 10 ns wide. Suitable for triggering another 8012A.

External triggering: 0 to 50 MHz. For square wave output, frequency divided by factor 2.

Trigger input: sine waves 1.5 V_{p-p} (about zero), pulses 0.8 V, either polarity, >7 ns. Maximum input ± 7 V.

Impedance: 50 Ω $\pm 10\%$, dc coupled.

Delay: 25 ns ± 8 ns between leading edge of trigger input and trigger output signals.

Manual: pushbutton for single pulse.

Gating:

Synchronous gating: gating signal turns generator "on". Last pulse is completed even if the gate ends during pulse.

Gate input: dc-coupled; voltage at open connector approx. +1.8 V. Shorting current ≤ 12 mA. Input impedance approx. 160 Ω .

Gate input signal: voltage $>+1.5$ V or resistor $>300\Omega$ to ground enables rep. rate generator. Voltage $<+0.8$ V or resistor $<150\Omega$ disables rep. rate generator. Gate input TTL compatible.

Maximum input signal: ± 5 V.

External width and RZ:

External width: output pulse width determined by width of drive input signal. Amplitude, transition times selectable.

RZ mode: external drive input switched to delay generator. Period determined by period of drive input signal. Delay, amplitude width, transition times selectable.

Rep. rate generator: provides trigger output independent of external width input signal.

Input signal: $>+1$ V, >7 ns wide. Maximum ± 5 V. Impedance 50 Ω , dc coupled.

General

Operating temperature range: 0 $^{\circ}$ C to +55 $^{\circ}$ C.

Power: 115 or 230 V +10%, -15%, 48 to 440 Hz, 70 VA max.

Weight: net, 9 lbs (4 kg); shipping, 14.6 lbs (6.5 kg).

Dimensions: 7.9" wide, 5.6" high, 13" deep (200 x 142 x 30 mm).

Price: 8012A \$875.

8013A \$625.