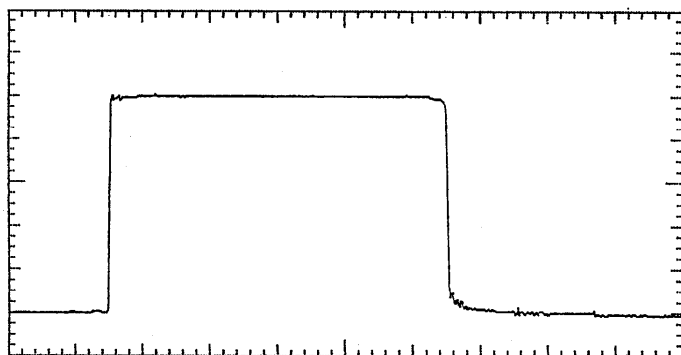




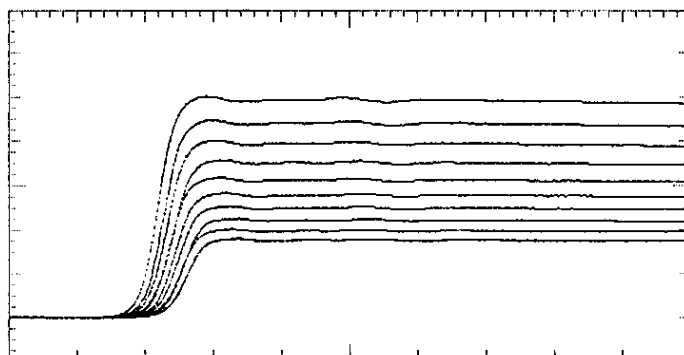
Model 10,060A

Programmable Pulse Generator

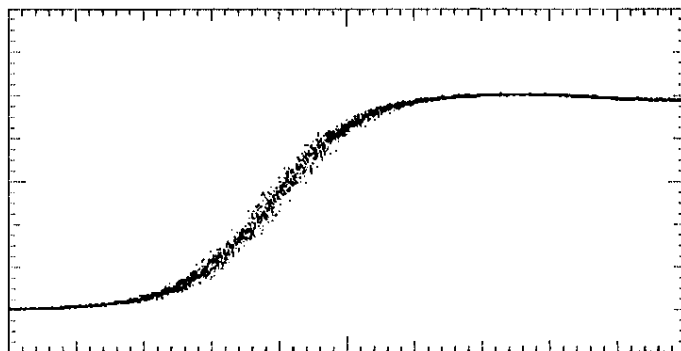
- Programmable IEEE- 488
- 55 ps Risetime
- 10 V Amplitude
- 100 ps - 10 ns Duration



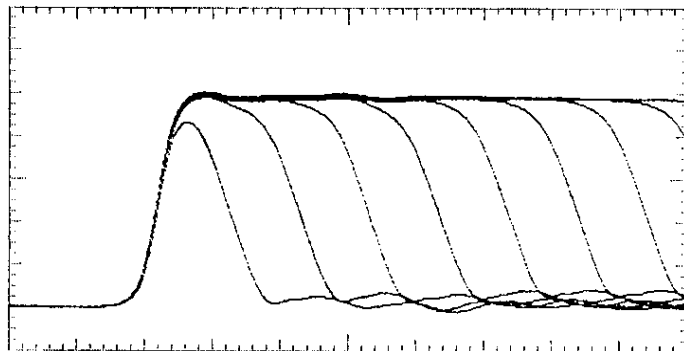
2 V/div and 2 ns/div
10 V Amplitude into 50 Ohms.



2 V/div and 100 ps/div
Adjustable Amplitude in 1 dB steps.



2 V/div and 20 ps/div
Leading edge 55 ps Risetime.



2 V/div and 100 ps/div
Adjustable Duration in 2.5 ps steps.

Output Pulse Parameters [1]	
Amplitude into 50 Ω	10 V, max ± 0.2 V [2]. 900 μ V min adj 1 dB steps
Polarity	Positive only
Baseline	0 V
Risetime (10% - 90%)	55 ps typical, 65 ps max.
Falltime (90% - 10%)	115 ps typical
Duration (50%) [2]	100 ps (nominal) to 10 ns adjustable in 2.5 ps steps
Baseline Precursor	< 1 %
Topline Overshoot	< 4%
Topline Perturbations	< $\pm 3\%$ for $t < 2$ ns
Topline Flatness	< $\pm 0.5\%$, for 2 ns $< t < 10$ ns
Source Impedance	50 Ω , nominal
Reflection Coefficient	$\pm 5\%$ during pulse, +80% -40% after pulse. Improves with increasing attenuation.

Trigger and Timing	
Trigger Output Pulse	2.4 V into 50 Ω , 50 ns
Delay [2]	0 to 63 ns, 1 ns (nom) steps
Delay Jitter	1.5 ps rms typical 3 ps rms max.
Period	10 μ s to 1 sec, 0.1 μ s steps
Repetition Rate	1 Hz to 100 kHz
Trigger Mode	Int., ext., manual or GPIB
Ext. Trigger Input Level	-2 V to +2 V, 1 mV steps positive or negative slope
Max. Ext. Trigger Input	± 5 V
Ext. Trigger Impedance	50 Ω
Trigger In/Out Delay	90 ns
Ext. Trigger Jitter	5 ps rms typ. (< 1 ns rise)
Ext. Gate Input	TTL, > 2 V on, < 0.5 V off
Ext. Gate Impedance	50 Ω

GPIB Capabilities	
Standard	IEEE 488.1 – 1987
Interface Functions	SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0 and E2
Programmable Parameters	
Voltage	Amplitude, max limits – on/off
Time	Duration, delay, period and frequency
Trigger Source	Int, ext, manual and GPIB
Trigger	Level, slope, hysteresis and gate
Set Up	Save/recall in 10 memories with battery back up
Other	Enable, disable, header and reset

General Specifications	
Controls	Power, menu, data entry, disable enable, local and manual trigger
Connectors	SMA for 10 V pulse output, BNC for trig in, gate in and trig out
Power Supply (mains)	100, 115 or 230 V AC, $\pm 10\%$ switch selectable, 50 or 60 Hz
Power Consumption	48 VA (60 Hz), 65 VA (50 Hz)
Operating Environment	Indoors, 0 C to 50 C, < 80%rh, [2]
Safety Certifications	Conforms to EN-061010-1 (CE mark) UL-1244 and IEC-348. Safety class I. For lab use only by qualified personnel
EMI Certifications	Conforms to EU Directive 89/336/EEC EN55011 and EN50082-1, CE mark
Calibration	Calibration report with waveforms furnished, NPL/NIST-traceable, valid at +23 C ± 3 C and 100 kHz rep. rate
Warranty	One year. Thirty day limited warranty on 4050RPH Pulse Head. See Terms and Conditions of Sale for details.
Accessories Included	Power cord, rack mount kit, instruction manual and video
Dimensions	19" x 15.2" x 5.5" (48.3 x 38.6 x 14 cm)
Weight	21 lbs (9.5kg), 28 lbs (13kg) shipping

Notes

[1] The performance parameters listed here are typical values as measured using an HP-54121A, 20 GHz, digital sampling oscilloscope and 30 dB, DC-26GHz attenuator. Parameters are guaranteed only when max. and/or min. limits are given.

[2] The duration and delay values displayed on the front panel LCD and programmed over the GPIB are only to be considered "nominal" values and not absolute values. The duration and delay parameters do exhibit some thermal drift, rep. rate dependency and interaction. There will be some loss in amplitude at minimum pulse durations. The amplitude tolerance of ± 0.2 V holds only for > 2 ns durations. Always use an oscilloscope as an independent check of these pulse parameters. The instrument is adjusted and calibrated at the factory in an ambient temperature of 23 C (± 3 C) at a rep. rate of 100 kHz. The instrument will operate over a temperature range of 0 C to +50 C but will not meet all specifications over this range.

[3] The Model 10,060A is a Model 10,050A with the addition of a microwave quality, programmable step attenuator. The step attenuator has a range of 0 dB to 81 dB with 1 dB steps. The 10,050A uses an external Model 4050RPH Pulse Head. On the 10,060A, this pulse head is permanently installed within the cabinet ahead of the step attenuator.

[4] **CAUTION:** The semiconductors in the Pulse Head are fragile and susceptible to damage by static discharge. Use care when handling it. Always discharge cables and loads prior to connecting to the pulse generator. The Pulse Head is designed to work into a 50 Ω load or an open or short circuit. It can be damaged if an external voltage is applied.