9550 Series

Digital Delay Pulse Generator

The 9550 series pulse generator was designed to meet the demand for laboratories and users who require additional channels.

Simple programming, high functionality, and easy memory recall

This rack-mount unit is available in a 1U or 2U 19" form factor, depending on the number of channels. The standard configuration features a timing resolution of 250 ps and low jitter of less than 50 ps.

Specifications

- Dimensions:
  - 1U 19" x 10" x 1.75" 6/12 independent channels
  - 2 U 19" x 10" x 3.50" 24/36 independent channels
- Weight: 8 lbs to 12 lbs
- Power: IEC Power Cord
  - Voltage: 100 to 240 VAC
  - Current: 3A
- Memory: 6 to 36 user storage bins, varies by unit
- Rate: 20 MHz
- Resolution: 250 ps
- Jitter: <50 ps
- Communication: USB, RS232, Ethernet
- Inputs: 3 selectable Trigger/Gate Inputs

Service Features

Our industry-leading lab instruments come with full support and service.

- Full 2-Year Warranty
- Integration Assistance, Full Customer Support
- Rental Instruments Available
- 30-Day Demo Period

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Channel Timing Generator	
Pulse Width Range	10 ns - 1000 s
Width Accuracy	1 ns + [0.0001 x (width+delay)]
Width Resolution	250 ps
Pulse Delay Range	10 ns to 2000 s
Delay Accuracy	1 ns + (0.0001 x delay)
Delay Resolution	250 ps
Jitter (Channel to Channel RMS)	< 50 ps
Channel Modes	Single shot, normal, burst, duty cycle
Control Modes	Internally triggered or externally gated. Each channel may be independently set.

Internal Rate Generator	
Rate (T0 period)	0.0002 Hz to 20 MHz
Resolution	5 ns
Accuracy	1 ns + (0.0001 x Period)
T0 Period Jitter (RMS)	< 50 ps
Timebase	200 MHz, low jitter PLL
Oscillator	50 MHz, 25 ppm crystal oscillator
System Output Modes	Single, continuous, burst, duty cycle, external gate/trigger
Burst Mode	1 to 4,000,000 pulses
Duty Cycle Mode	1 to 4,000,000 pulses
Pulse Control Modes	Internal rate generator, external trigger/gate

Trigger / Gate	
Trigger Edge	Rising/Falling
Threshold	0.2 to 15 V
Max Input Voltage	30 V
Resolution	10 mV
Trigger Rate	DC to 5 MHz
Trigger Input Jitter (RMS)	800 ps
Trigger Input Insertion Delay	160 ns
Trigger Input Minimum Pulse Width	20 ns
Gate Pulse Inhibit Delay	160 ns
Gate Output Inhibit Delay	160 ns

Output Module	
TTL/CMOS Mode	
Output Impedance	50 Ohms
Output Level	4.0 VDC into ≥ 1 k ohm
Rise Time (10%-90%)	< 3ns typical into ≥ 1 k ohm
Output Current	5 mA typical into 1 k ohm 50 mA typical into 50 ohm
Adjustable Mode	
Output Level	2.0 to 20 VDC into ≥ 1 k ohm, 1.0 to 10 VDC into ≥ 50 ohms
Resolution	10 mV
Output Current	200 mA typical, 400 mA (short pulses)
Rise Time (10%-90%)	15 ns typical @ 20 V (High Imp) 25 ns typical @ 10 V (50 ohm)
Overshoot	< 100 mV + 10% of pulse amplitude

Multiplexing

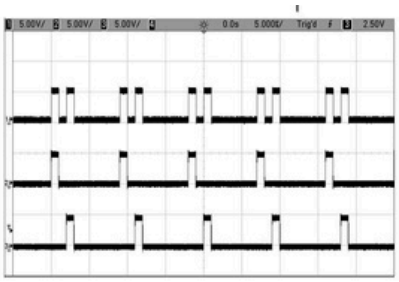
Utilizing the MUX function with channel modes enables various complex functions, including double pulsing and modulating pulse widths, as demonstrated in the following examples:

Ex. 1: Double Pulse – A double pulse waveform can be generated, as shown in the figure, by using the MUX function to combine two channels.

Scope Ch 1: Channel 1 output after combining channel 1 and channel 3 (mux code: 3).

Scope Ch 2: Channel 1 output before combining channel 3 (mux code: 1).

Scope Ch 3: Channel 3 output delayed as necessary to generate the required second pulse (mux code: 1).

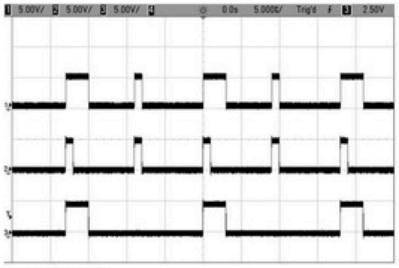


Ex. 2: Alternating Pulsewidth – An extended pulse can be generated every other pulse, as shown in the figure, by using the MUX function to combine two channels.

Scope Ch 1: Channel 2 output after combining channel 2 and channel 4 (mux code: 3).

Scope Ch 2: Channel 2 output before combining channel 4 (mux code: 1).

Scope Ch 3: Channel 4 output extended as necessary to generate the required second pulse (mux code: 1). The channel is in duty cycle mode (1 on, 1 Off) to generate the alternating pattern.



Channel Phase Locking

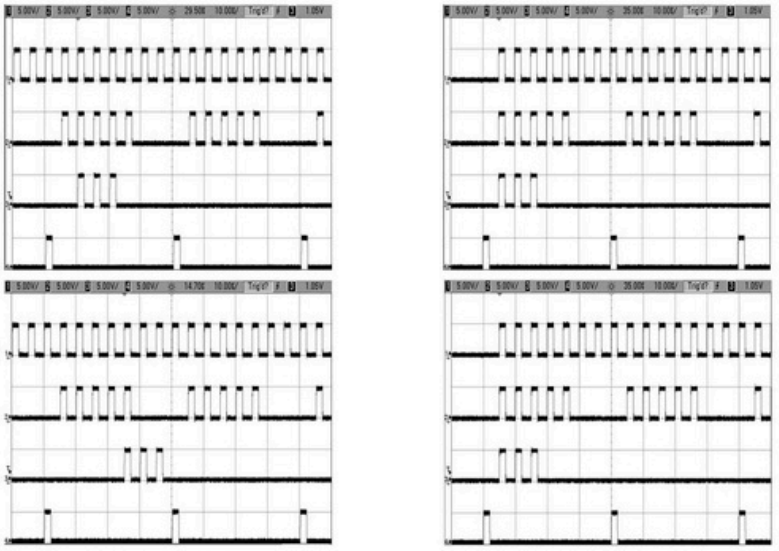
The QC 9550 channel sync feature can lock the channel to the sync pulse, as shown in column 2. Note that when sync is enabled, the Ch3 burst is always locked to the start of the Ch2 output.

Channel Sync Function	6 / 12	24	36	12	24	36	6 / 12	24	36
MODEL #	SYNC-A			SYNC-B			SYNC-T		
6 / 12 Channel Units	6			12			trigger sync		
24 Channel Units	6			12	24				
36 Channel Units	6			12	24	36			

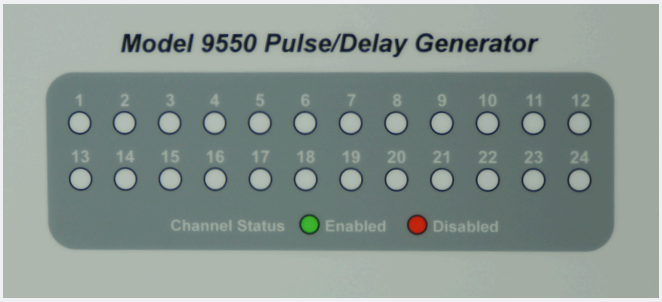
Command: **:PULSEn:SYNC SYNA | SYNB | SYNT**

Column 1 – Sync Mode Disabled

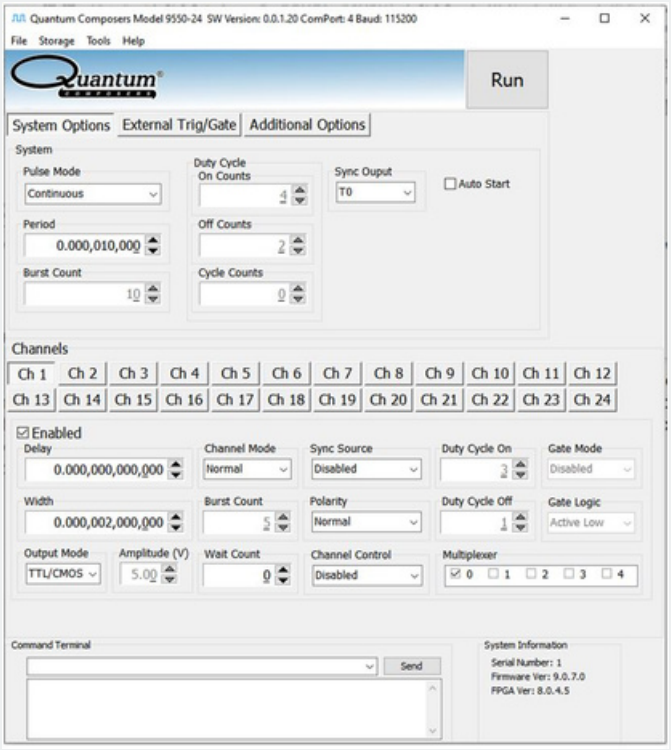
Column 2 – Sync Mode Enabled

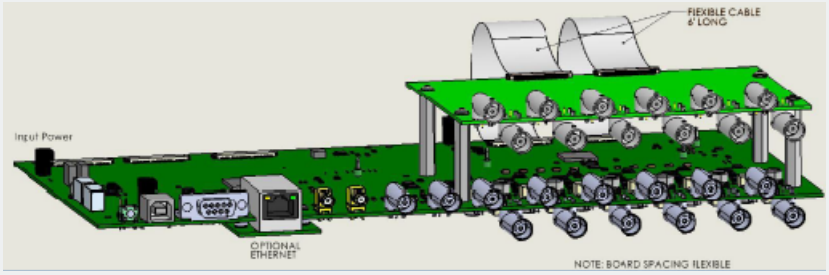


Scope Ch1 – channel 1 - normal mode, wait = 1
Scope Ch2 – channel 2 - duty cycle mode (5 on, 3 off), wait = 1
Scope Ch3 – channel 3 - burst mode (3 pulses), wait = 0
Scope Ch4 – channel 6 - (sync pulse) duty cycle mode (1 on, 7 off), wait = 0.



Software included





Board Level Available

Rear view of 9550-24

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