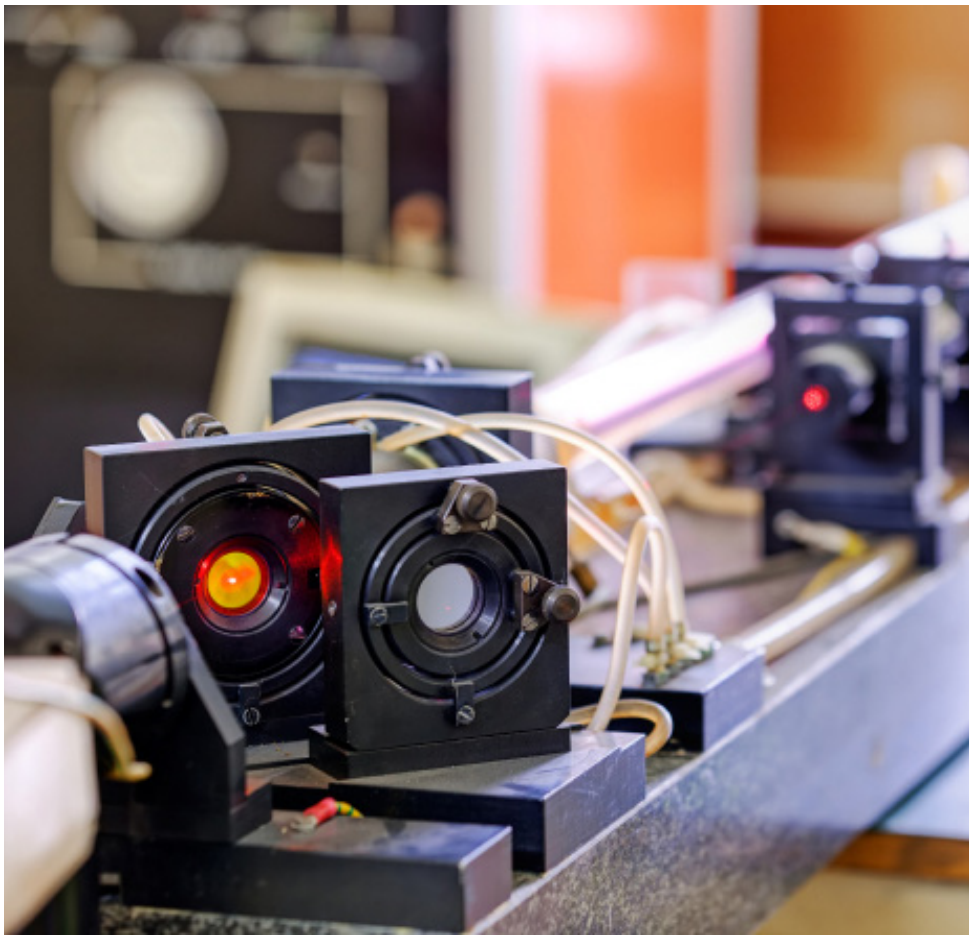
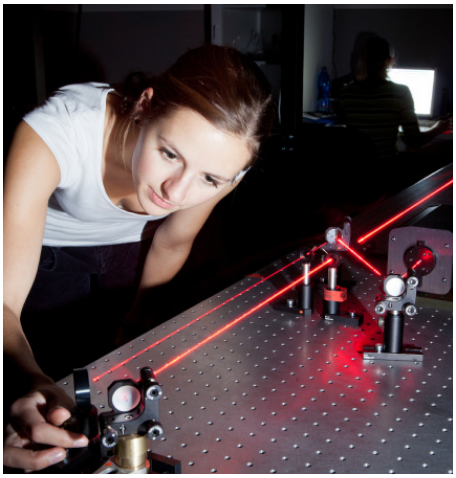
Model 577 Pulse / Digital Delay Generator





Features

- Outputs: 4 or 8 Independent Channel Outputs
- Pulse Width: 10 ns - 1000 s
- Pulse Delay: 0 ns - 1000 s
- Pulse and Delay Resolution: 250 ps

Applications

- ICCD/PIV Testing
- Laser Triggering / Gating
- Pulse DUTs and Pump Lasers
- Radar / Sonar Simulation
- High Speed Photography

Model 577 Datasheet V1.2

4 or 8 Channel Pulse / Digital Delay Generator

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Model 577 Pulse / Digital Delay Generator

MODEL 577

Description

The Model 577 Digital Delay / Pulse Generator represents the latest in timing capabilities. With up to 8 outputs configurations as varied as the applications the product serves, the Model 577 is clearly our most versatile instrument.

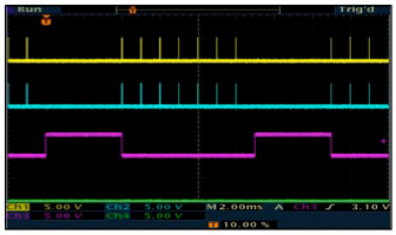
The 250 ps width and delay resolution and 50 ps internal jitter give gating, triggering, delaying, clocking and synchronizing a precision sufficient for nearly every application. Add to this performance: optical or electrical outputs and inputs, pulse picking capabilities, selectable external clocks and USB/RS232 programming.

Selectable Clock Reference

The Model 577 offers additional inputs and outputs for external clock syncing. Specify your input / output reference frequency (10MHz to 100MHz) . Sync with the Mode Lock Oscillator of a laser, or phase lock multiple units with one clock.

Flexible Gating Options

The Model 577 is packed with gating options for almost any setup. You may gate with a channel or on any input . You may gate individual channels or gate all. Gate immediately (output inhibit) or gate after a pulse (pulse inhibit).



Individual Rates

Each channel may have patterns that may be continuous, a single burst, a series of repetitive bursts, a sub-harmonic of a previous channel, a single timed pulse. All the while the pulses have their own delay and widths. A typical application is to have a channel issue series of pulses to trigger flashlamps or laser diodes. Other channels can trigger Q-switches, detectors and cameras with single timed pulses synchronized to the pulse series in the first

Auto-Save

Forgot to save your settings? The Model 577 stores your setup configurations while powering down. Recall is automatic on power-up.

Front Panel Optical

Many applications benefit from optical signals. For noisy environments, or communications applications, we offer an LED output stage at the front panel. This modular option can be configured for 2, 4, or 8 outputs at 820nm or 1300nm

Dual Input Panel Connectors

The Model 577 offers two inputs for triggering or gating. User may specify electrical or optical input signals, and configure any trigger /gate combination. Use Trigger #2 to disable a triggered pulse train.

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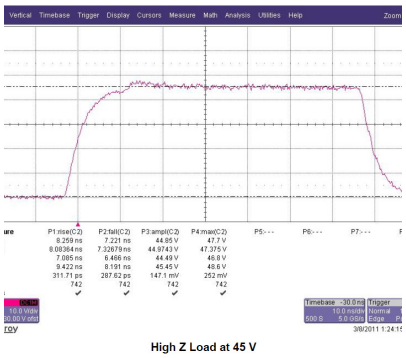
Front Panel High Voltage

Our modular architecture allows us to offer expanded functionality on user-selected front panel outputs. We offer a front panel High Voltage option (adjustable from 5v to 45V, 200 mV steps) on 2 or 4 channels.



High Z Load at 45 V

Combined Output Types

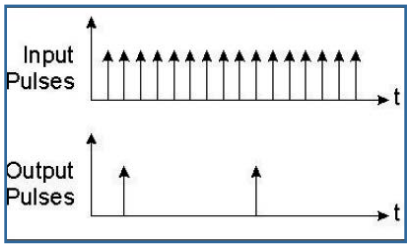
The outputs are configured in modules and output types are combined in pairs. Thus one may select optical, standard electrical or high voltage electrical in pairs for their instrument. For example, a 8 channel unit may have optical, standard electrical and high voltage outputs all on one instrument. Custom or additional output modules may be added as the need arises.

Field Programmability:

The instrument can now have functions upgraded in the field, such as a special or custom feature upgrade via a fully programmable FPGA.

Pulse Picking

Using an external modulation up to 100MHz, you may select 1 out of every X pulses for
a given channel.

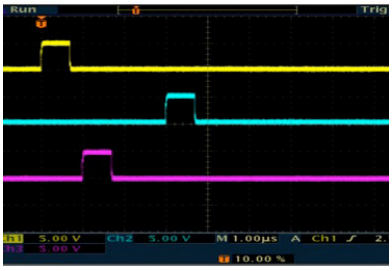


Custom Output Modes

Custom modules give users an expanded list of capabilities with the Model 577. One example is our TZ-50 option, which allows customers to output at a 4V TTL signal into 50 ohms load.

Negative Delay

Use the handy negative delay feature to reference one channel with respect to another channel in positive or negative time increments. By allowing a channel to reference another channel as its trigger, you can synchronize the channels with respect to each other.



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MODEL 577

Model 577 Specifications

Internal Rate Generator	
Rate (T0 period)	0.001 Hz to 20.000 MHz (1000 s – 50 ns)
Resolution	5 ns
Accuracy	1 ns + (0.0001 x period)
T_0 Period Jitter	< 50 ps RMS
Time Base	100 MHz, low jitter PLL
Oscillator	50 MHz, 50 ppm crystal oscillator
System Output Modes	Single, Normal, Burst, Duty Cycle, External Gate/Trigger
Burst Mode	1 to 10,000,000 pulses
Duty Cycle Mode	1 to 10,000,000 pulses ON and/or OFF
Pulse Control Modes	Internally triggered, externally triggered or external gate
Timing Generator	
Pulse Width Range	10 ns -1000 s
Width Accuracy	1 ns + 0.0001 x width setting
Width Resolution	250 ps
Pulse Delay Range	0 - 1000s
Delay Accuracy	1 ns + 0.0001 x delay setting
Delay Resolution	250 ps
Jitter (channel to channel)	< 50ps RMS
Output Multiplexer	Any/all channels may be OR'd to any/all outputs.
Time Base	Same as the internal rate generator
Channel Output Modes	Single, Normal, Burst, Duty Cycle
Burst Mode	1 to 10,000,000 pulses
Duty Cycle Mode	1 to 10,000,000 pulses ON and/or OFF
Wait Counts	1 to 10,000,000 pulses
Channel Control Modes	Internally triggered or external gated. Each channel may be independently set to either mode.
Standard Module Specification	
TTL/Adjustable Dual Channel Output Module (Standard)	
TTL/CMOS Mode	
Output Impedance	50 Ω
Output Level	4.0 V (typical) into 1 kΩ
Rise Time	<3ns (1.5ns typical)
Jitter (channel to channel)	< 50 ps RMS
Adjustable Mode	
Output Level	2 V to 20 VDC into Hi-Z 1 V to 10 VDC into 50 Ω
Amplitude Resolution	10 mV
Current	200 mA typical, 400 mA (short pulses)
Rise Time	15 ns (typical) @ 20V into Hi-Z 25 ns typ @ 10V into 50 Ω
Slew Rate	> 0.1V/ns
Overshoot	< 1 V + 10% of pulse amplitude

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Trigger/Gate Dual Input Module (Standard)	
Trigger Input	
Function	Generate individual pulses, start a burst or continuous stream
Rate	DC to 1/ (200 ns + longest active pulse). Maximum of 5 MHz
Slope	Rising or Falling
Threshold	200 mV to 15 VDC
Maximum Input	60 V Peak
Resolution	10 mV
Trigger Accuracy	±3% of Threshold Voltage
Impedance	5.3 kΩ + 40pF
Trigger Jitter	< 800 ps RMS
Insertion Delay	< 110 ns
Minimum Pulse Width	20 ns
Pulse Inhibit Delay	< 150 ns RMS
Output Inhibit Delay	< 100 ns RMS
Gate Input	
Mode	Pulse Inhibit or Output Inhibit
Polarity	Active High or Active Low
Options	
Option TZ50 - TTL 50 Ω Output Impedance	
TTL/CMOS Mode	
Output Level	4.0 V typ into 50 Ω
Rise Time	<3 ns (2ns typical)
Slew Rate	0.5 V/ns
Jitter - Channel to Channel	< 50 ps RMS
Adjustable Mode	
Output Level	2 V to 20 VDC into 1 kΩ or 1 V to 10 VDC into 50 Ω
Amplitude Resolution	10 mV
Current	200 mA typical, 400 mA (short pulses)
Rise Time (10% - 90%)	15 ns (typical) @ 20V into Hi-Z (25 ns typ @ 10V into 50 Ω)
Slew Rate	> 0.1V/ns
Overshoot	< 1 V + 10% of pulse amplitude

Option AT35 - 35V Adjustable Output	
TTL/CMOS Mode	
Output Level	4.0 V typ into Hi-Z
Rise Time	<3 ns (2ns typical)
Slew Rate	0.5 V/ns
Jitter - Channel to Channel	50 ps RMS
Adjustable Mode	
Output Amplitude	5 V – 35 V into 50Ω load at 200 Hz
Resolution	10 mV
Rise Time (10% - 90%)	< 30 ns
Accuracy	500 mV
Max. Frequency (Internal & External)	4 kHz

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Option TZ35 - TTL 50 Ω Output Impedance + 35V Adjustable Output	
TTL/CMOS Mode	
Output Level	4.0 V typ into 50 Ω
Rise Time	<3 ns (2ns typical)
Slew Rate	0.5 V/ns
Jitter - Channel to Channel	< 50 ps RMS
Adjustable Mode	
Output Amplitude	5 V – 35 V into 50Ω load at 200 Hz
Resolution	10 mV
Rise Time (10% - 90%)	< 30 ns
Accuracy	500 mV
Max. Frequency (Internal & External)	4 kHz

Option AT45 - 45V High and Low Impedance	
Amplitude	4V - 45V
Resolution	20 mV
Accuracy	+/-1.5%
Rise Time (10%-90%)	< 2ns into 50 Ω (typ) < 9ns into Hi-Z (typ)
Fall Time (90%-10%)	< 9ns into 50 Ω (typ) < 9ns into Hi-Z (typ)
Frequency (Internal & External)	DC – 100 kHz
Overshoot	< 35% Typical for Fast Rise Time
Polarity	High Impedace Mode: Active High or Active Low Low Impedance (50 Ω) Mode: Active High Only
Pulse Width Range	High Impedance Mode: 10 ns to DC Low Impedance (50Ω) Mode: 10 ns to 10 seconds
Max Current	35 mA (Hi-Z @10 ms width) 900 mA (50 Ω @ 10 ms width)
* Due to the power consumption and heat restrictions, a maximum of four AT45 channels can be installed on a single unit ** Deletes TTL and ADJUSTABLE mode selection and replaced by LOW and HIGH Impedance selection	

Option L82 or Option L130 - Optical Outputs	
Wavelength	820nm or 1300nm
Maximum Signal Rate	5 MBd
Maximum Link Dist.	1.5 km
Connector Type	ST

Option IL82 or Option IL130 - Optical Inputs	
Wavelength	820nm or 1300nm
Maximum Signal Rate	5 MBd
Maximum Link Dist.	1.5 km
Connector Type	ST
Insertion Delay	< 300 ns
Jitter	< 1.4 ns RMS
DT15 - Dual Trigger. Enable Gate Input to act as second trigger	
COM - Extended Communications – Adds Ethernet & GPIB	

Model 577 Pulse / Digital Delay Generator

MODEL 577

EU - Replace North American Cord with European Cord	
MEMORY and CONNECTIVITY	
Memory Storage	16 Memory Location
USB	USB 2.0 Standard
RS-232	DE-9F Connector using RS-232 Communications Standard
External Clock In	10 MHz – 100 MHz user selectable in discrete values
External Clock Out	To or Ref out (10 to 100 MHz) user selectable in discrete values
PHYSICAL and ENVIRONMENTAL	
Dimensions	10.5” x 8.25” x 5.5” [267 x 210 x 140mm]
Weight	8 lbs [3.6 kg]
Power	100 - 240 VAC 50/60 Hz <3 A
Fuse	3.15 A, 250 V Time-lag (Qty 2)
Operating Temp	32 - 104°F [0 - 40°C]
Transportation & Storage Temp	-40 - 158°F [-40 - 70°C]