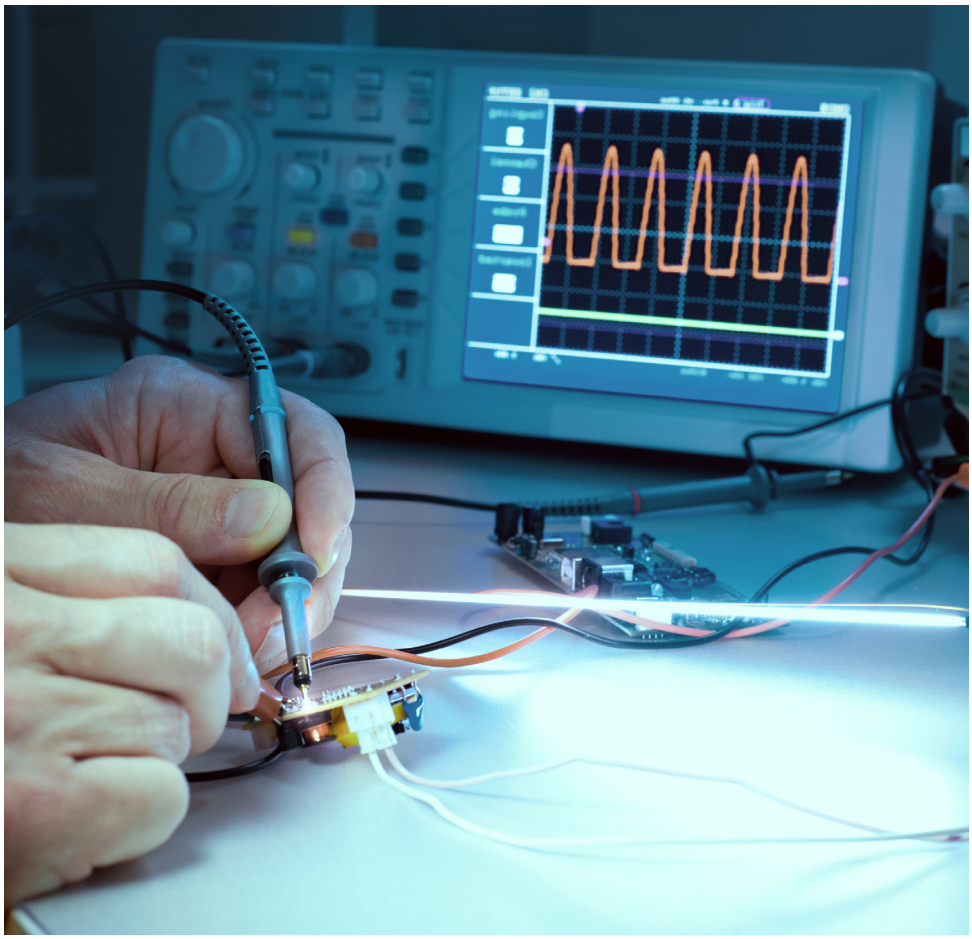
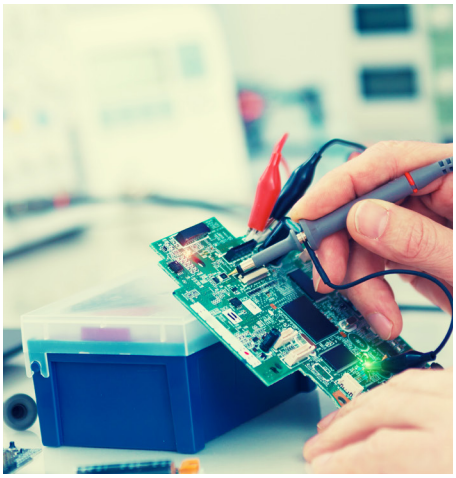
Model 588 1U Rackmount Digital Delay Generator





Features

- 250 ps Timing Resolution
- < 50 ps Channel to Channel Jitter
- 4 or 8 Independent Channel Outputs
- Free LabVIEW Driver

Applications

- Timing and Synchronizing
- Explosive Testing
- Airbag (Squibb) Testing

Model 588 Datasheet

4 or 8 channel 1U Rackmount Digital Delay

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Model 588

The Model 588 Digital Delay / Pulse Generator represents the latest in timing and synchronizing capabilities. With a unique 19” 1U form factor, the model 588 is clearly our most innovative instrument to accurately synchronize any series of events.

The 588’s eight independent outputs, dual trigger/ gate inputs and external clock reference input make it ideal for laser system timing applications. The system can directly phase lock to an external timebase up to 100 MHz in frequency and as low as 20 mV in amplitude. This allows synching directly to a laser photodiode signal and provides complete system timing relative to the laser timing with low jitter. The 588 also provides a clock output that is capable of driving a 50 Ω load and can be used to provide a master timebase to other delay generators or equipment.

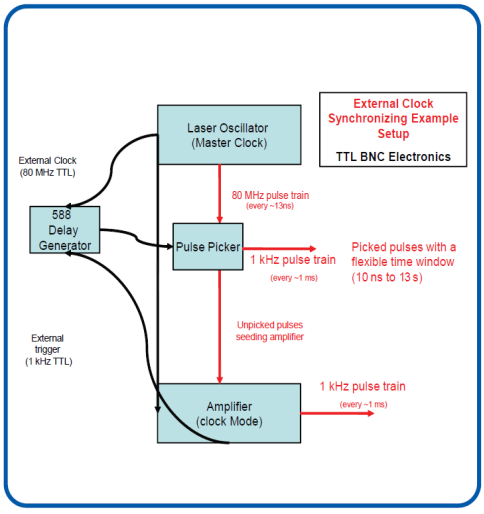
The core technology in precision timing of the 588 offers 250 ps Delay & Width resolution & 50 ps internal jitter. Ethernet / USB interface, complex burst sequences, Divide-by-N, Setting Proles, Clock Divider, Pulse Picking and Negative Delays allow users great exibility in setting up an experiment or synchronizing multiple events. Complimentary NI certied LabVIEW drivers available.

Advanced Features/Options

- Clock input/output – allows master clock input from 10 MHz to 100 MHz with complete system timing relative to that signal with low jitter
- Field programmability–custom features, upgrades and fixes via fully programmable FPGA
- Settings / Programming saved on front panel power down

Channel Properties / Advanced Programming Modes

- Multiplexing - selectively combine the timing of any or all channels to one output
- Burst - Each channel can have a separate number
- Duty Cycle - N pulses on, M pulses off
- Channel Referencing - Any or all channels can reference the timing of any channel rather than T0
- Wait - The system will wait for a specified number of cycles before producing pulses



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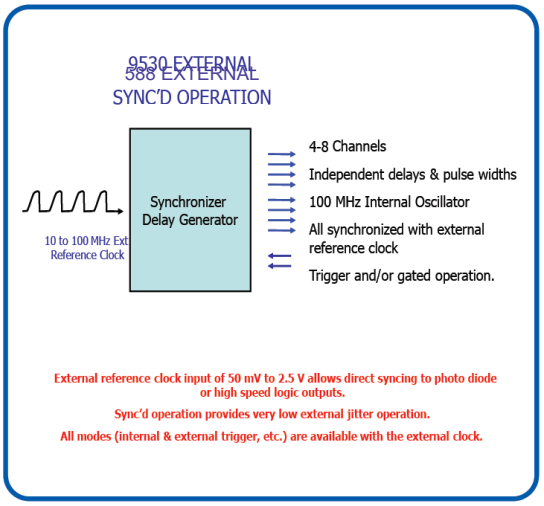
Model 588 1U Rackmount Digital Delay Generator

Model 588

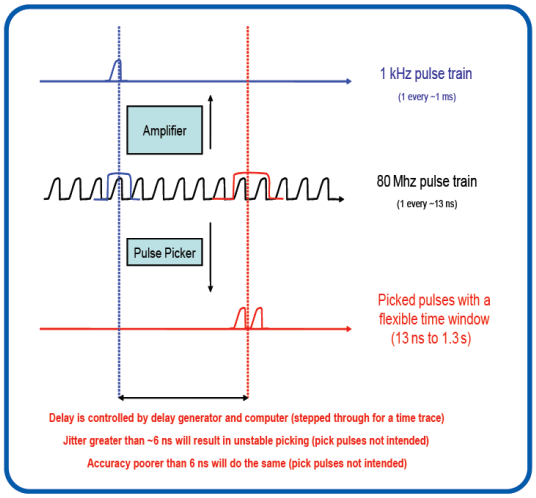
Model 588 Specifications

I/O CONFIGURATION	
Models/Outputs	588-4C - 4 independent channel outputs 588-8C - 8 independent channel outputs
Inputs	2 inputs - 1 trig input / 1 gate input
Memory	24 conguration storage slots
INTERNAL RATE GENERATOR	
Rate	0.0002 Hz to 10.000 MHz
Resolution	10 ns
Accuracy	1 ns + .0001 x period
Jitter	50 ps RMS
Settling	1 period
Burst Mode	1 to 9,999,999 pulses
Timebase	100 MHz, low jitter PLL
Oscillator	50 MHz, 25 ppm
System Output Modes	single shot, burst, duty cycle, continuous
Pulse Control Modes	internal rate generator, external trigger, external gate

PROGRAMMABLE TIMING GENERATOR	
Channel Output Modes	single shot, burst, duty cycle, normal
Control Modes	internally triggered,externally triggered and external gate each channel may be independently set to any of the modes
Output Multiplexer	any/all channels may be multiplexed to any/all outputs
Delayed Output	0 to 9,999,999 pulses
Timebase	same as internal rate generator
DELAY	
Range	0 - 1000 s
Accuracy	1 ns + .0001 x setpoint
Resolution	250 ps



- Independent Channel Enable/Disable
- Delayed Channel Enable - allows flashlamp/ diodes to be red, stabilizing the laser before the Q-switch or shutter is enabled.
- Single shot or Burst mode laser pulse bursts, controlling either just the Q-switch or entire laser.
- Duty cycle mode allows firing laser at an optimal rate, but picking pulses out at the user required rate.
- Output multiplexer allows the timing of any combination of channels to be output on any of the output ports, providing very complex pulse trains.



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MODULE SPECIFICATIONS

TTL/ADJUSTABLE CHANNEL OUTPUTS	
Output Impedance	50 Ω
TTL/CMOS MODES	
Output Level	4.0 V typ into 1 kΩ
Rise Time	3 ns typ
Slew Rate	0.5 V/ns
Jitter	50 ps RMS
ADJUSTABLE MODE	
Output Level	2.0 to 20 VDC into 1 kΩ 1.0 to 10 VDC into 50 Ω
Output Resolution	10 mV
Current	200 mA typical, 400 mA max (short pulses)
Slew Rate	> 0.1 V/ns
Overshoot	< 100 mV + 10 % of pulse amplitude
Rise Time	15 ns typ @ 20 V (High-Z) 25 ns typ @ 10 V (50 Ω) (10 % - 90 %)

TRIGGER/GATE DUAL INPUT (STANDARD)

Standard dual channel input, providing one trigger input and one gate input. May be used with the dual trigger firmware option to provide two independent trigger sources.

ELECTRICAL CHARACTERISTICS	
Threshold	0.2 to 15 VDC
Maximum Input Voltage	60 V peak
Resolution	10 mV
Input Impedance	1 MΩ + 40 pF or 50 Ω
Insertion Delay	< 180 ns
Pulse iIhibit Delay	< 120 ns
Output Inhibit Delay	< 50 ns

SYSTEM EXTERNAL TRIGGER/GATE INPUT(S)	
Function	generate individual pulses, start a burst or continuous stream
Rate	DC to 1/(200 ns + longest active pulse)
Slope	rising or falling (maximum of 5 MHz)
Behavior	used to control the internal rate
GATE INPUT	
Function	pulse inhibit or output inhibit
Polarity	active high / active low
Behavior	used to control the internal rate generator
STANDARD FEATURES & FUNCTIONS	
Communications	USB/RS232/Ethernet
External Clock In	10 MHz - 100 MHz in 1 MHz increments
External Clock Out	5 MHz - 40 MHz
Conguration Storage	T0, Rate, Chan, 2x ExtPLL, 1 ExtPLL, ½ ExtPLL, ½ Ext, 40MHz, 20MHz, 10MHz, 5MHz, and Disabled
STANDARD OUTPUT MODULES	
AT20	quad channel, TTL/CMOS & adjustable output module
OPTIONAL MODULE	
TZ50	quad channel, high current TTL/CMOS (for driving 50 Ω loads) & adjustable output module
SYSTEM OPTIONS	
I	incrementing (provides automatic high speed incrementing/decrementing of delay and/or pulsewidth for each channel)
DT15	dual trigger logic – provides additional trigger via gate input

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