HIGHLAND TECHNOLOGY

T560 digital delay and pulse generator

Features

- Four TTL-level delay outputs, individually programmable for delay and pulse width
- 10 picosecond delay and width resolution, 10 second range
- 21 nanosecond insertion delay, 16 MHz max trigger rate
- Low jitter, highly accurate DSP phaselock system provides crystal-clock delay accuracy with zero indeterminancy from external trigger
- Internal crystal oscillator timebase with external lock capability
- DDS synthesizer for internal trigger rates
- External universal power supply or 12-volt DC power
- RS-232 serial interface standard; Ethernet optional
- OEM packaged or board-only custom versions available

The T560 series is a family of small digital delay generators, intended for use in embedded OEM applications. The T560-1 is the standard, packaged version, usable in many OEM applications and as the evaluation unit for custom versions. It uses the technology developed for the Highland model V851 (VME module) and P400 (benchtop) digital delay generators, with basic TTL/CMOS input and output levels and advanced logic.

The T560 accepts an internal or external trigger and generates four precise output pulses, each user programmable in time delay and width. It is ideal for laser sequencing, radar/lidar simulation, or sequential event triggering. It is easily mounted within systems enclosures, allowing short cable runs and reliable, unattended operation.

Because of its low 20 nanosecond insertion delay, the T560 is ideal for timing and gating lasers, Q-switches, ICCDs, and other electro-optical devices, and for applying picosecond-resolution time trims to nuclear, radar, and sonar cabling and instrumentation.

The T750 4-channel high-voltage driver is available to extend T560 outputs to as high as 100 volts.

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Specifications : T560 digital delay and pulse generator

FUNCTION	4-channel digital delay and pulse generator
GATE FUNCTION	Programmable as level sensitive enable input, edge triggered burst enable input, or divisor enabled output
GATE INPUT	Programmable termination, 50Ω or 500Ω to +2.5 V Logic low -0.3 V min, +0.7 V max Logic high +2 V min, +5 V max
GATE OUTPUT	Logic low +0.1 V typical, +0.4 V max @ 50 mA Logic high +5 V typical, +4 V min @ 50 mA
TRIGGER SOURCES	Internal DDS: 0 to 16 MHz, 0.02 Hz resolution Internal clock: 80 MHz Remote command or External signal
TRIGGER DIVISOR	1 to 2^{32}-1, 125 MHz max input
EXTERNAL TRIGGER INPUT	Programmable termination, 50Ω or 10 kΩ to ground Programmable trigger level (+0.25 to +3.3 volts) and slope
CHANNEL OUTPUTS A, B, C, D	Four pulse outputs, 5 V, 50Ω source impedance, each programmable for delay, width, polarity
DELAY RANGE	0 to 10 seconds, 10 ps resolution
WIDTH RANGE	2 ns to 10 seconds, 10 ps resolution
INSERTION DELAY	21 ns ± 400 ps, external trigger to any output
DIFFERENTIAL NONLINEARITY	< 200 ps
JITTER	< 35 ps typical (50 ps max) RMS, external trigger to any output or between any outputs Add clock jitter for delays > 500 µs
TRIGGER RATE	0 to 16 MHz, limited to 1/(delay+width+60 ns) max
RISETIME	750 ps max
FALLTIME	750 ps max
CLOCK	Internal 10 MHz VCXO, 1 ppm initial accuracy, < 2 ppm/year drift Added jitter below 10 ns per second of delay TC below 0.2 PPM/°C Connector provides clock in/out Locks to external source Clock jitter and delay errors are zero relative to external source Optional higher-performance OCXO
TIMING ACCURACY	± 400 ps ± 7.5 ps/°C ± clock accuracy
BURST	Programmable to fire N times out of each M triggers where N and M are 1 to 2^{32}-1
OPERATING TEMPERATURE	0 to 50°C, non-condensing
STORAGE TEMPERATURE	-20 to 80°C
CALIBRATION INTERVAL	One year
POWER	+ 12 ± 0.25 volts, 0.3 amps max; 0.4 amps max with Ethernet Universal AC adapter supplied
COMMUNICATIONS	RS-232 standard, 38.4 kbaud Optional 10/100 Ethernet
CONNECTORS	7 SMB for trigger, gate, clock, outputs 2.5 mm stereo jack for RS-232 0.25" power connector Optional RJ45 for Ethernet
INDICATORS	LEDs indicate shot, communications
PACKAGING	4.75" (L) x 4.0" (W) x 1.25" (H) extruded aluminum enclosure
CONFORMANCE	OEM product has no UL/FCC/CE compliance requirements Designed to meet UL/FCC/CE requirements

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