HIGHLAND TECHNOLOGY

T564 advanced digital delay and pulse train generator

Features

- Four TTL-level delay outputs, individually programmable for delay and pulse width range up to 10 seconds with 10 picosecond resolution
- Low 20 nanosecond insertion delay
- Scenario generation for changing delay programs automatically
- Pulse train generation creates unlimited number of pulses from a single trigger
- Queue command programs new timings without disturbing ongoing triggers
- DSP phaselock system maintains crystal-clock accuracy and jitter for any delay length; parts per trillion drift using external 10 MHz reference
- DDS synthesizer for internal trigger rates to 16 MHz
- Programmable-level trigger input with divide/burst features and trigger GATE input
- 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 T564 extends the capabilities of Highland's original T560 digital delay generator, allowing not only a single delay program, but a scenario of more than 8000 frames to be preloaded and then executed in rapid succession. Frames can be advanced automatically as triggers are received or simply stored and recalled manually. Each trigger generates four precise pulse outputs, independently programmable with 10 picosecond resolution in both delay and width. The T564 can generate single pulses per trigger as a standard digital delay generator or, new to the T560 DDG family, pulse trains. The Queue function allows new timing settings to be installed without disturbing ongoing cycles or missing triggers.

With the same low 20 nanosecond insertion delay and 20 picosecond jitter as the T560, the T564 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. Additionally, the scenario capability allows moving target simulation in radar/sonar/lidar applications and sliding timing windows for margin testing - all with a form factor smaller than a paperback, with easy RS-232 or optional Ethernet control.

Custom versions are readily available for OEM customers.

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Specifications : T564 advanced digital delay and pulse train 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 with evaluation package
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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