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BNC Model 7075 Digital Delay Generator Specifications

Specifications

Features

- Delays to 1 Sec in 1 ns Steps
- Outputs Sync'd to Input Trigger
- Self-triggers to 5 MHz
- Time Setting Error Indicator
- Delay Jitter Less Than 100 ps
- BCD or GPIB Programmable

Applications

- Radar Simulation
- Pulsed Laser Control
- Automatic Test Systems
- Scope Sweep Delays
- Chemical Kinetics
- Plasma Physics

The Model 7075 is a versatile instrument that provides time delays from 0 to 999.999 µs or, with Option A, 0 to 999.999999 ms. Delays are selectable in steps of 1 ns. A gate output equal to the the delay time is also provided.

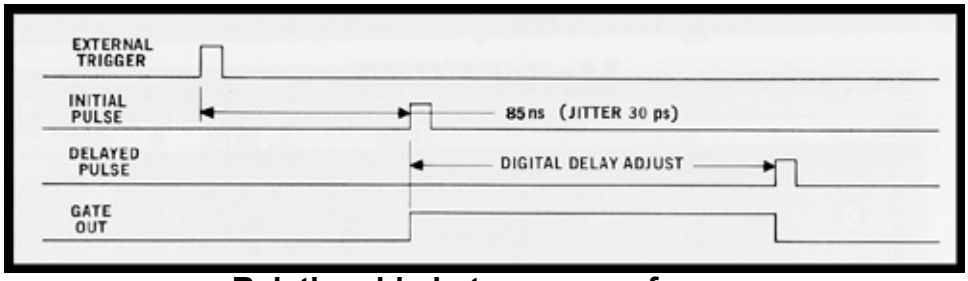
Convenient features of the 7075 include continuously variable width and amplitude controls as well as self triggering up to 5 MHz. The external trigger level control of the 7075 can be adjusted through a ±2 V threshold range and either positive or negative-going slopes can be selected to intiate a timing cycle.

An oustanding advantage of the 7075 is the elimination of the typical ±1 clock period indeterminancy between the trigger and output pulses. This is done with unique time base circuitry comprised of two oscillators, one of which is voltage controlled (a VCO) that can be stopped and restarted and therefore synchronized to random input triggers. The second oscillator, which is crystal controlled, is tracked by this VCO at a trigger-established phase, checking the latter's accuracy every microsecond. Any

possible drift of the VCO will be corrected within a one microsecond interval to the precision of the intstrument's crystal oscillator or an external clock. With Option B an external time base frequency of either 1 MHz or 10 MHz may be fed to the Model 7075.

Remote programming capability is available in two forms: BCD and GPIB. Option P2 for the IEEE-488 GPIB includes built-in, random access memory (RAM) for prestoring in the instrument up to 16 complete six- or nine-digit time settings. Each location can be addressed and the setting executed with only two ASCII characters, thereby saving up to 90% of the time that's needed to normally program and generate an output.

A unique operating feature is an error indicator that lights when the trigger period is shorter than the period of the time delay seting. Thus, it indicates when the instrument has "missed" one or more trigger pulses while a delay and gate cycle are in progress. When one of the programming options is installed, a logic-level change for an error latch signal or other external use appears at the rear connector. When Option B is supplied, this warning light also indicates if the external standard is an incorrect frequency or if the instrument is not properly locked to the standard.



Relationship between waveforms

Specifications

DELAY AND GATE SELECTION
0 to 999.999 µs in 1 ns increments. (See Option A.)
See Option A for extension up to 1 second.

ACCURACY
Delay: 1 to 9 ns, ±0.1 ns; 10 TO 99 ns, ±0.3 ns; 100 ns to full range, ±0.5 ns ± time setting x time base error.
Gate: Delay interval ±2 ns (fixed).

TIME BASE STABILITY
Aging: ±100 ps ±2 x 10^{-7} per week.
Temperature: <1 x 10^{-6}, 0-50° C.

INSERTION DELAY
Between Trigger and Initial Pulse: 85 ns (fixed).

INDETERMINANCY

None.

JITTER
Between External Trigger and Initial Pulse: 30 ps rms max.
Between Initial and Delayed Pulses: 1 to 999 ns, 50 ps rms max; 1 to 999 µs 120 ps rms max; 1 ms to 999 ms (Option A), 350 ps rms max.

TRIGGER MODES
External: Rate 0 to 5 MHz; 10 ns minimum widths; 200 mV minimum amplitude; 50 ohm nominal input impedance. Trigger level control ±2 V, continuously adjustable. Positive or negative slope selection switch.
Internal: Rate 5 Hz to 5 MHz continuously adjustable through six ranges.
Manual: Panel Pushbutton.

OUTPUTS PULSES
Initial and Delayed: Positive, +0.1 to + 5V into 50 ohm, continuously adjustable; Negative -2 V from 50 ohm; 3ns rise and fall times; 15 ns to 1 µs width, continuously adjustable.
Gate: +5 V into 50 ohm; 3 ns rise and fall times.

CLOCK MODES
Internal: Operates from internal oscillator.
External: See Option B for operation from an external frequency standard.

DIMENSIONS
Rack Mount, 19" W x 3½" H x 19¾" D (483 x 89 x 502 mm).

WEIGHT
19 lbs. net (8.6 kg); 24 lbs. shipping (11 kg).

AMBIENT
0° C to 50° C (32° F to 122 ° F).

POWER
115/230 V ±10%, 50/60 Hz, 90 W.

OPTIONS

A: Extended Range. Three additional decades extend Delay and Gate range to 999.999999 ms.

B: External Clock. Instrument may be phase locked to an external frequency standard. TTL input of 40 ns minimum width, either 1 MHz or 10 MHz.

P1: BCD Remote Programming. Time settings are remotely selectable. Coding is TTL compatible, V (High) = O, V (Low) = 1. Buffer storage provided. Data Strobe - V (Low) = Strobe. Remote/Local - V (High) = Local, V (Low) Remote. Programming Time: 1 µ max. Chassis connector, Amphenol 57-40500.

P2: GPIB Remote Programming. Time settings are remotely selectable. Complies with IEEE Std. 488-1978.

Non-pollable. Includes internal RAM for bus-storing locally up to sixteen 6- or 9-digit (Option A) settings. Programming duration is 20 µs max. (9 digits).

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