

## User Note - Digital Delay Generator for ICCD Applications



### Intensified charge-coupled device

ICCD's, intensified charge-coupled device, amplifies and gates light for fast time-resolved measurements of transient phenomenon. Typical applications often involve lasers to ablate, illuminate, and initiate events in fields such as laser-induced fluorescence, laser-induced breakdown spectroscopy, fluid dynamics and combustion research. In some cases, even multiple lasers and multiple ICCD's are used when examining several windows in a single event.

A single Digital Delay/Pulse Generator can trigger flash lamps, switch lasers and delay/gate ICCD's. The Digital Delay/Pulse Generator provides multiple synchronized pulses for triggering, delaying and gating devices.

Of particular importance to ICCD users is that BNC's 505 and 575 provides adjustable widths with each channel. Older designs required combining channels to obtain widths – thus doubling the number of channels to obtain both delay and width control. To illustrate with a single BNC 4-channel unit, one could create a burst of flash lamp pulses, Q-switch the laser and delay and gate two ICCD's with timing resolution of 250 ps – all with one 4-channel Model 575. Coarser timing with a lower cost is available with the Model 505

**When setting with and delay procedures follow the steps below:**

#### Setting Pulse Timing Parameters

Pulses are defined by a delay, from their sync or start pulse to the active edge, and a width.

**Width:** Sets the width of the active portion of the pulse.

**Delay:** Sets the delay from the sync source to the start of the pulse.

*NOTE: If  $Wid + Dly + 75ns$  (hardware reset time)  $> T_0$  Period, the correct pulsewidth will be generated but at a slower rate.*

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