



Programmable Timing Generator (PTG)

The PI-MAX system's integrated Programmable Timing Generator™ (PTG) lets researchers set gate pulse widths and delays under GUI software control. The menu-driven interface of the PTG helps make PI-MAX simpler to use than previous ICCD cameras. The PTG also significantly reduces the system delay inherent in the timing generator of ICCD cameras, for easy synchronization with pulsed laser sources. Moreover, the integrated PTG means there is no need for an additional external timing generator. This feature, along with a built-in pulser that eliminates the requirement for an external high-voltage supply, makes the PI-MAX camera one of the most advanced ICCD camera in the market.

Features	Benefits
Internal oscillator* (.1-Hz to ≤ 1 -MHz repetition rate; 12.5-ns resolution)	The internal oscillator can be used to drive an external event and initiate repetitive experiments.
Burst mode* (500 kHz max)	Burst mode can be used when a short burst of very rapid gate pulses needs to be generated, as in a kinetics experiment. With a maximum repetition rate of 500 kHz, it can generate a high-voltage pulse every 2 μ s.
Anticipator* (.75- μ sec to 10- μ sec adjustment range)	The anticipator can be used with bracket pulsing to provide sufficient lead time between the main trigger and the gate pulse in order to allow for the 500 ns that the bracket pulse needs to become active. This ensures that the MCP is fully biased before the next main trigger arrives.
Pulse counter* (software can operate in pulse-counter or exposure-time priority mode)	The pulse-counting system will be very valuable to anyone wishing to compare results from multiple-pulse single-exposure data because the precise number of pulses for each exposure will be known.
Bracket Pulsing* (lead time and anticipator are programmable)	Bracket Pulsing™ gates the voltage across the multichannel plate in addition to the main photocathode gate pulse. By turning off the MCP voltage immediately before and immediately after the main photocathode gate pulse, the high 10^7 :1 on/off ratio of the intensifier in the UV can be maintained. The effects of this technique should be most noticeable when imaging in high-UV background (flames) and flash photolysis experiments.

PTG Specifications

PRE. TRIG. IN	BNC; TTL; used for bracket pulse only
EXT. TRIG. IN*	BNC; -6 V to +6 V; 50 Ω / 6 k Ω impedance; AC/DC coupling; ≤ 1 -MHz repetition rate
T ₀ (SEL. TRIG OUT)	BNC; TTL; goes high at Time 0 and remains high until last event is done
AUX. TRIG. OUT*	BNC; TTL; fast edge; programmable delay
TIMING GEN.*	DB9; gate start; gate stop; bracket pulse
Delay range*	~ 0 ns to 20 ms
Timing resolution	40 ps
Timing jitter	40-ps rms
Repetition rate	50 kHz sustained; 500 kHz burst
Gate width*	5 ns to 10 ms; 40 ps resolution
Fast gate*	< 2 ns; 5-kHz repetition rate
Bracket pulse*	5 kHz repetition rate; 500 ns lead time
Insertion delay	15 ns

* Software programmable