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## PI•MAX

Princeton Instruments  
Programmable Timing Generator

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 (24 ns vs. 85 ns) inherent in the timing generator of ICCD cameras, allowing researchers to dispense with long optical delays. 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, allows PI•MAX to have the smallest laboratory footprint of any high-performance ICCD camera system.

### REAR PANEL I/O

### SPECIFICATIONS

PRE. TRIG. IN	BNC; TTL; used for bracket pulse only
EXT. TRIG. IN*	BNC; -6 V to + 6 V; 50 $\Omega$ / 6 k $\Omega$ impedance; AC/DC coupling; $\leq$ 1-MHz repetition rate; 100-mV hysteresis; 40-mV resolution*
T <sub>0</sub> (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.* Delay range* Timing resolution Timing jitter Repetition rate Gate width* Fast gate* Bracket pulse* Insertion delay	DB9; gate start; gate stop; bracket pulse; ~ 0 ns to 20 ms; 40 ps; 40-ps rms; 50-kHz sustained; 500-kHz burst; 5 ns to 10 ms; 40-ps resolution; 2 ns; 5-kHz repetition rate; 5-kHz repetition rate; 500-ns lead time; 15 ns

\* software programmable





# D A T A S H E E T

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## F E A T U R E S

## B E N E F I T S

Internal oscillator* (.1-Hz to $\leq 1$ -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 $\mu$ s.
Anticipator* (.75- $\mu$ sec to 10- $\mu$ 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 lets the bracket pulse start 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.
MCP Bracket Pulsing* (lead time and anticipator are programmable)	MCP 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 <sup>7</sup> :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.

\* software programmable