

LPG-405

Pulsed laser for time-resolved detector diagnostics



The LPG can test both the time response of high speed photomultipliers and gating speed of image intensifiers.

The lens control allows the beam to be de-focussed and spread across the detector area and a variable width control for pulse widths between 40 ps to 800 ps. The LPG is also available with a 650 nm laser or a 350 nm UV LED, with other wavelengths available on request.

Product Parameters	Minimum	Maximum
Wavelength λ	395 nm	415 nm
Linewidth $\Delta\lambda$	3 nm	3 nm
Laser Class	Class 1	Class 1
Pulse Energy	15 pJ	60 pJ
Repetition Rate	0 Hz "Single Shot"	300 kHz Self-limited
Trigger Input	+3.2 V High Ω Input	+5.5 V High Ω Input
Power Supply	+9 V	+15 V
Supply Current @ +12 V	85 mA (No Trigger)	110 mA
Synch Pulse Output Impedance	50 Ω	50 Ω

Key Attributes

- > Specifically designed for time-resolved diagnostics of high speed optical detectors
- > Simple to use with only a trigger input and synch output connector
- > A lens control allows the beam to be de-focussed and spread across the detector area
- > A variable width control allows pulse widths from 45 ps up to 800 ps

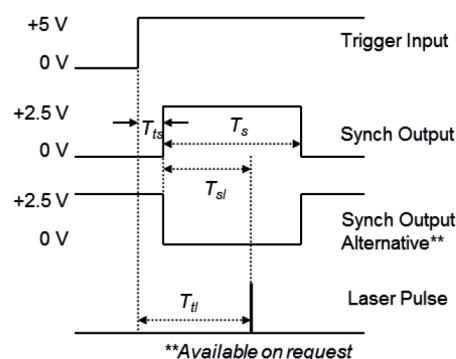
Applications

- > Time response of high speed photomultipliers
- > Gating measurement of image intensifiers

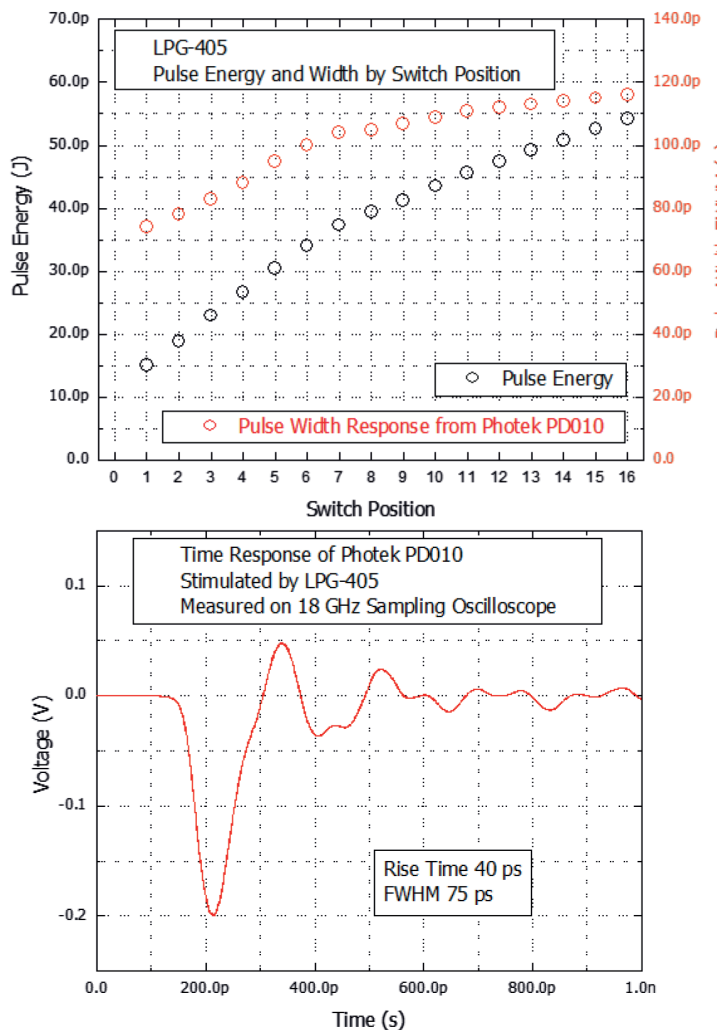
Typical Timing Parameters

- > **Trigger :** Laser Delay T_{tl}^* 46 ns
Synch Delay T_{ts} 14 ns
- > **Synch :** Laser Delay T_{sl} 32 ns
Pulse Width T_s 90 ns
- > **Jitter :** T_{tl} Jitter 3 ps r.m.s
 T_{sl} Jitter 2 ps r.m.s

* Can be reduced down to a minimum of 29 ns. This will also reduce T_{sl} to 15 ns.

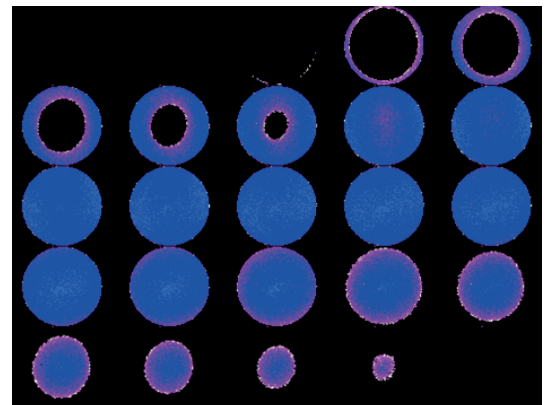


**Available on request



Gating Measurement

The true optical gating of an image intensifier is observed by synchronising the LPG-405 laser pulse with the gate unit, then adjusting the relative delay and stepping the laser through the gate pulse.



This result shows a LPG-405 laser pulse being stepped through a 4 ns gate window generated by a Photek GM200-3N gate unit on a Photek MCP118 image intensifier. Each step represents an extra 200 ps delay on the laser pulse.

Mechanical

Height	54 mm (excluding mount post)
Width	61 mm
Length	149 mm (approx)
Weight	260g
Mounting Post Length (mm)	30, 40, 50, 60*, 80, 100, 120, 150, 200, 250, 300
Mounting Post Diameter	12 mm*, 20 mm
Trigger Input Connector	SMA
Power Supply Connector	SMB
Synch Output Connector	SMA

* Standard Issue

LPG-650

Pulsed laser for time-resolved detector diagnostics



The LPG can test both the time response of high speed photomultipliers and gating speed of image intensifiers.

The lens control allows the beam to be de-focussed and spread across the detector area and a variable width control for pulse widths between 40 ps to 800 ps. The LPG is also available with a 405 nm laser or a 350 nm UV LED, with other wavelengths available on request.

Product Parameters	Minimum	Maximum
Wavelength λ	645 nm	660 nm
Linewidth $\Delta\lambda$	3 nm	3 nm
Laser Class	Class 1	Class 1
Pulse Energy	8 pJ	100 pJ
Repetition Rate	0 Hz "Single Shot"	300 kHz Self-limited
Trigger Input	+3.2 V High Ω Input	+5.5 V High Ω Input
Power Supply	+9 V	+15 V
Supply Current @ +12 V	85 mA (No Trigger)	125 mA
Synch Pulse Output Impedance	50 Ω	50 Ω

Key Attributes

- > Specifically designed for time-resolved diagnostics of high speed optical detectors
- > Simple to use with only a trigger input and synch output connector
- > A lens control allows the beam to be de-focussed and spread across the detector area
- > A variable width control allows pulse widths from 45 ps up to 800 ps

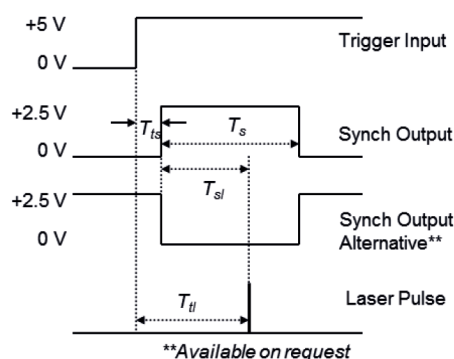
Applications

- > Time response of high speed photomultipliers
- > Gating measurement of image intensifiers

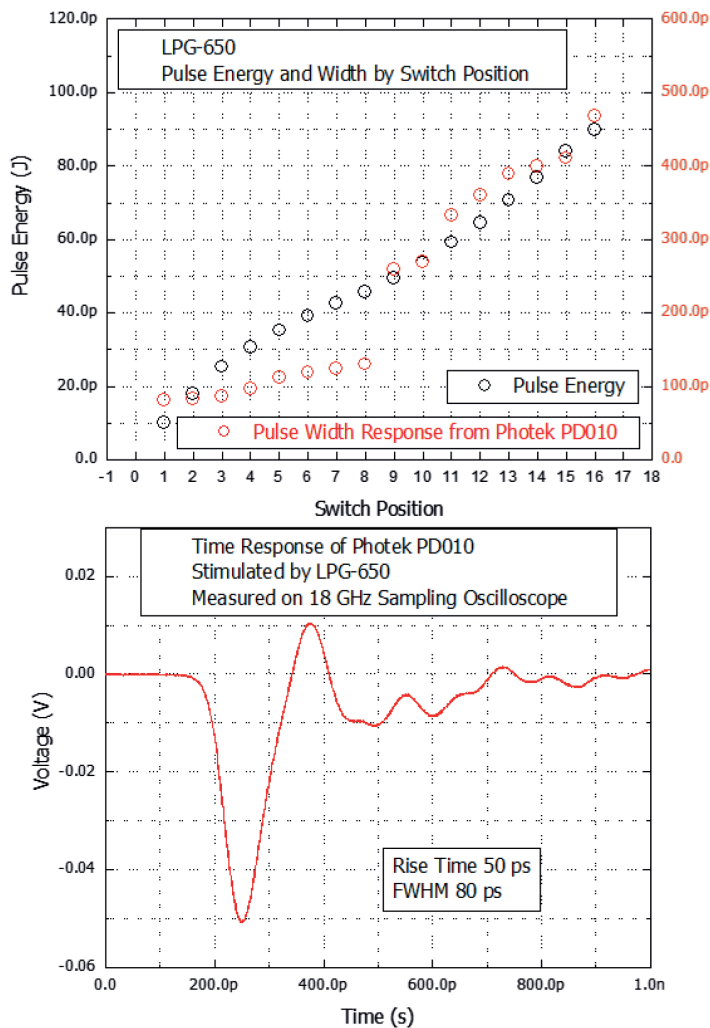
Typical Timing Parameters

- > **Trigger :** Laser Delay T_{tl}^* 46 ns
Synch Delay T_{ts} 14 ns
- > **Synch :** Laser Delay T_{sl} 32 ns
Pulse Width T_s 90 ns
- > **Jitter :** T_{tl} Jitter 3 ps r.m.s
 T_{sl} Jitter 2 ps r.m.s

* Can be reduced down to a minimum of 29 ns. This will also reduce T_{sl} to 15 ns.

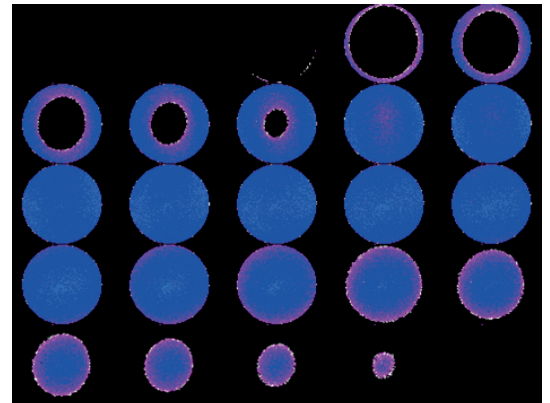


**Available on request



Gating Measurement

The true optical gating of an image intensifier is observed by synchronising the LPG-650 laser pulse with the gate unit, then adjusting the relative delay and stepping the laser through the gate pulse.



This result shows a LPG-650 laser pulse being stepped through a 4 ns gate window generated by a Photek GM200-3N gate unit on a Photek MCP118 image intensifier. Each step represents an extra 200 ps delay on the laser pulse.

Mechanical

Height	54 mm (excluding mount post)
Width	61 mm
Length	149 mm (approx)
Weight	260g
Mounting Post Length (mm)	30, 40, 50, 60*, 80, 100, 120, 150, 200
Mounting Post Diameter	12 mm*, 20 mm
Trigger Input Connector	SMA
Power Supply Connector	SMB
Synch Output Connector	SMA

* Standard Issue

LPG-350

Pulsed UV LED for time-resolved detector diagnostics



The LPG can test both the time response of high speed photomultipliers and gating speed of image intensifiers.

The LPG is also available with either a 405 or 650 nm laser, with other wavelengths available on request.

Product Parameters	Minimum	Maximum
Wavelength λ	345 nm	355 nm
Linewidth $\Delta\lambda$	12 nm	12 nm
Output Pulse	10 ns	Duty cycle limited
Jitter (input pulse to output light)	< 1 ns	< 1 ns
Repetition Rate, 10 ns pulse	0 Hz "Single Shot"	1 MHz*
Repetition Rate, 10 us pulse	0 Hz "Single Shot"	4 KHz
Trigger Input	4 V, 50 Ω	5 V, 50 Ω
Power Supply	+11.5 V	+12.6 V
Supply Current @ +12 V	120 mA	500 mA
Synch Pulse Output Impedance	50 Ω	50 Ω

*Note: At 10 ns the frequency is limited to 1 MHz maximum unless the LPG is forced cooled.

Key Attributes

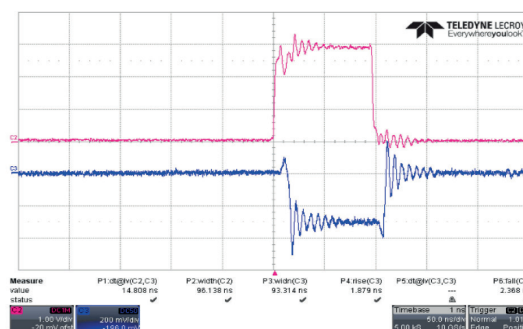
- > Specifically designed for time-resolved diagnostics of high speed optical detectors
- > Simple to use with only a trigger input and synch output connector
- > Pulse width controlled by trigger width

Applications

- > Time resolved imaging applications
- > Saturation measurements on photomultipliers

LPG-350 Pulsed Characteristics

- > **Pulsed Width Loss**
Min 2 ns
Max 6 ns
- > **Propagation Delay**
Min 14 ns
Max 16 ns
- > **O/P Pulse Rise-time**
Min 1 ns
Max 2 ns
- > **O/P Pulse Fall-time**
Min 2 ns
Max 3 ns



LPG-350 Connectors

Input Power		
SMB Socket	Centre	+12 V
	Screen	0 V
Trigger Input		
SMA Socket	Centre	TTL Pulse
	Screen	0 V
Current Monitor Output		
SMA Socket	Centre	Offset I/P
	Screen	0 V

Mechanical	
Height	33 mm (excluding mount post)
Width	58 mm
Length	115 mm
Weight	220g
Mounting Post Length (mm)	63.5 mm (with an M6 stud)
Mounting Post Diameter	12.7 mm
Trigger Input Connector	SMA
Power Supply Connector	SMB
Synch Output Connector	SMA
Min Operating Temperature	0°C
Max Operating Temperature	70°C

Important: UV Safety Glasses should be worn at all times while using this product.

Items Supplied

- 1x 722-1005 - LPG-350**
Pulsed LED 350 nm
- 1x 723-1005 - EPSU-12V ***
Universal a.c. to 12Vd.c. Power Supply
- 1x ED588**
BNC to SMA Trigger Cable - 2m
- 1x B3000 or B3001 or B3002**
UK/US/EU IEC
- 1x UMLPG-350**
LPG-350 User Manual

* EPSU-12V is not supplied if the unit is to be used with any mains powered Photek unit. An appropriate power cable will be supplied to connect the LPG-350 to the mains powered unit.

