Kentech Instruments Ltd.

GOI-1
Picosecond Gated Optical Image Intensifier

Single Channel GOI

Applications Plasma Diagnostics, time dependent interferometry, etc.

Summary

- Solid sate drive electronics
- 18 mm diameter input and output format
- Minimum exposure time <100ps typically ~80ps
- Four operational modes
- Computer control
- Trigger delay adjustment over 50ns range
- Cathodes available through visible and near infra red.
- Electronics in 19 inch rack mount up to 3 metres from optical head
- Custom configurations available

The GOI-1 is a turnkey system comprised of solid-state electronics, an18mm image intensifier ready to be fitted with the users readout equipment and input optics. This latest model feature high spatial resolution at the fastest gate times. High-speed pulsers deliver typical minimum exposures of 80ps FWHM. The design of the electronics allows performance with very low jitter and a small trigger delay. The design of the system allows easy alteration of gate times and easy upgrades to accommodate additional GOI heads with very low channel to channel jitter. With 80ps gate widths, users may extract the most relevant information from their experiments and also have better spatial resolution. Users can precisely control the trigger delay from 0 to 50ns via a computer controlled passive delay line which introduces no further jitter.

The camera may be operated in four different modes: DC on, slow gate, medium gate, and fast gate. The DC mode allows easy focusing and set-up.

The standard offerings for the input window include: glass, fiber optic, or quartz for an extended blue response. Users can select from S20, S25, or S1 photocathodes, providing a solution to demands for imaging in the visible and NIR.

See www.kentech.co.uk

Kentech Instruments Ltd., Isis Building, Howbery Park, Wallingford, Oxfordshire, OX10 8BA, U.K.
Tel: +44 (0) 1491 82 1601 email info@kentech.co.uk

Kentech Instruments Ltd.

GOI-1
Picosecond Gated Optical Image Intensifier

SPECIFICATIONS

Number of channels	1 x 18mm wafer micorchannel plate Gen-II tube.
Tube sensitivity	Tubes can be selected with S1, S20 S25 type response.
Input window	Quartz as standard with S20, others on glass.
Optical output	P43 phosphor on fibre optic window
Gate modes	Fast, Medium, Slow and DC [cathode on for 5 seconds from software trigger]
Optical gate widths	Fast mode nominally: <100, 100, 120 ps Medium mode: 250, 500, 1000, 2000, 3000, 4000, 5000 ps Slow mode: 100ns to 1ms
Trigger delay	~54 ns in fast mode. ~65 ns in medium mode ~104ns in slow mode
Jitter	<20ps Standard Deviation, typically ~4ps.
Gate time trigger delay range	~50 ns in ~25ps steps.
Gain control	MCP voltage (typically 260 to 900 volts) is mapped to linear gain settings 0 through 1000
Maximum repetition rate	100Hz.
External trigger requirements	5 volts into 50Ω rising in < 5ns for optimum jitter. or 500 volts into 50Ω with <1ns rise [used when synchronising several channels]

Controls

Control	RS232 serial port or Ethernet port. [USB to special order].
Commands	Simple structured text commands formatted for easy parsing.

Power

Switches AC power in the pulser.	
Input power range	100 to 240 VAC 50 to 60Hz at <100 watts.

Indicators

Power	Shows that AC power is applied and the unit is switched on.
Triggered	Illuminates when the unit is triggered.
Mode	1 of 4 LEDs will be illuminated.
Overload	Illuminates if too much current is drawn from the the high voltage power supply

Dimensions (control unit)

width	19 inch rack mount, 482 mm over handles,
depth	500mm into 19 inch rack, 540 mm over handles, plus rear cover adding 45 mm.
height	128.5 mm (3U)
weight	7.5 kg

Dimensions (Optical head)

height	132mm
width	102mm
depth	~35.5mm
umbilical	dimameter nominally 20mm, length 3 metres.

Connectors

Power inlet	IEC
Trigger input	BNC
Head	Combination of 1 x Lemo, 2 x SMA and 1 x GES HV connectors

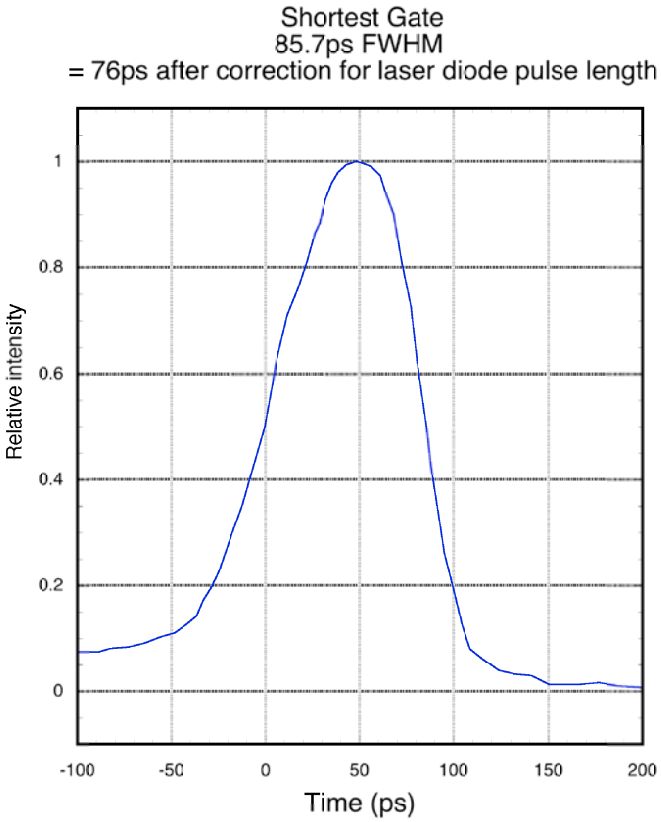
Environmental issues

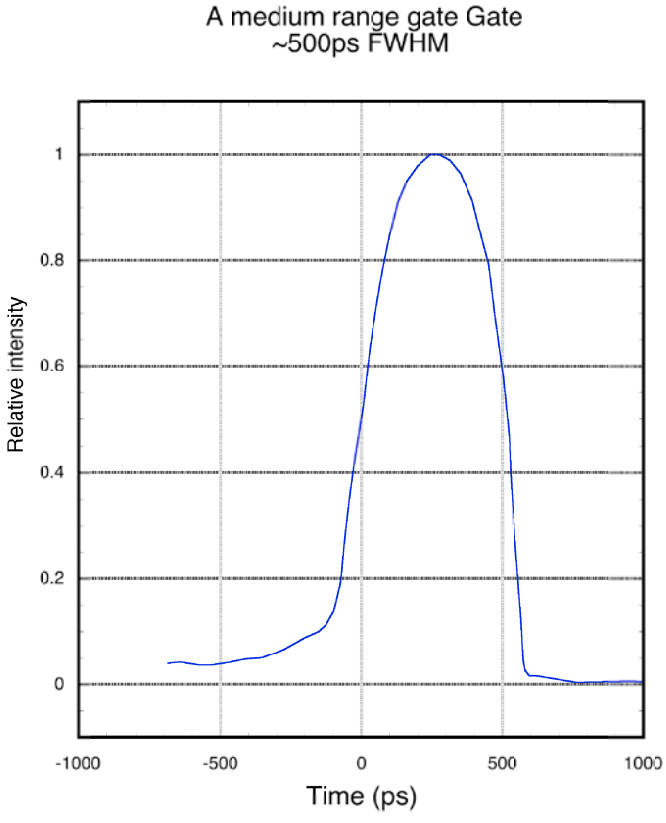
Storage	The unit should be stored in an environment within the following parameters:
Temperature	between 10° C and 40° C
Humidity	< 60% non-condensing
Pressure	40 to 120 kPa
Gas type	Air or nitrogen
Use	The unit should be used in an environment within the following parameters:
Temperature	between 10° C and 30° C
Humidity	< 60% on condensing
Pressure	80 to 120 kPa
Gas type	Air or nitrogen

See www.kentech.co.uk

Kentech Instruments Ltd., Isis Building, Howbery Park, Wallingford, Oxfordshire, OX10 8BA, U.K.
Tel: +44 (0) 1491 82 1601 email info@kentech.co.uk

GOI-1
Picosecond Gated Optical Image Intensifier

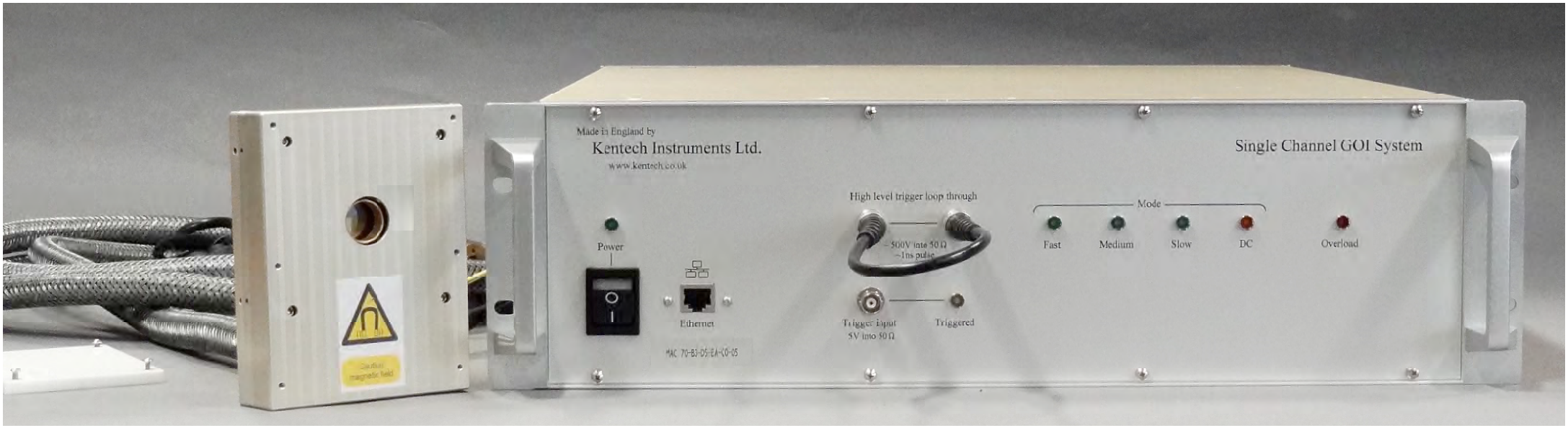




Typical gate profiles with 830nm
Laser diode source

See www.kentech.co.uk

Kentech Instruments Ltd., Isis Building, Howbery Park, Wallingford, Oxfordshire, OX10 8BA, U.K.
Tel: +44 (0) 1491 82 1601 email info@kentech.co.uk


Made in England by
Kentech Instruments Ltd.
www.kentech.co.uk
Single Channel GOI System
Power
Ethernet
MAC 70-B3-D5-EA-C0-05
High level trigger loop through
~500V into 50 Ω
~1ns pulse
Trigger input
5V into 50 Ω
Triggered
Mode
Fast
Medium
Slow
DC
Overload