

PEGASUS SERIES

Lithium Niobate (LiNbO_3) Pockels Cell

PRELIMINARY PRODUCT DATASHEET

From the leader in nonlinear materials and electro-optic devices comes the Pegasus series of Pockels cells. Ideal for applications in the near- to mid-IR, these high damage threshold devices are capable of fast switching rates in excess of 1MHz.

Pegasus Pockels cells use exceptionally high quality Lithium Niobate crystals (LiNbO_3) crystals that are grown and fabricated by G&H, insuring high extinction ratio, high transmission, low switching voltage, and excellent temperature stability.

Thanks to our vertical integration, we have full end-to-end quality control from crystal growth and polishing to our extensive range of in-house AR coatings.

The unique capabilities of Pegasus make it a higher performance alternative to RTP based Pockel cells for Q-switching high energy mid-IR lasers such as, Er:YAG 2.94 μm , Er,Cr:YSGG 2.79 μm , Ho:YAG 2.10 μm and Tm:YAG 2.01 μm . Pegasus is the ideal Pockels Cell choice for commercial applications in, for example, aesthetic and ophthalmic surgery and military applications, including target designation and range finding.



Key Features

- LiNbO_3 crystal grown by G&H in the USA
- Fast switching rates >1MHz
- Highest quality LiNbO_3 , with high transmission > 99%
- Intrinsic contrast ratio > 1000:1 @ 1064 nm
- Voltage contrast ratio >1000:1 @ 1064nm
- $< \lambda/10$ transmitted wavefront distortion @ 1064 nm
- $\text{LIDT} > 7 \text{ J/cm}^2$ @ 1064 nm, 10nsec, 1mm dia.

Options

- Threaded HV adapter available

Applications

- Q switching
- Pulse picking/slicing
- Attenuation
- Power control

Preliminary Performance Data

PEGASUS Series: Typical performance LiNbO ₃	PEGASUS 3	PEGASUS 5	PEGASUS 7	PEGASUS 9
PHYSICAL				
Hard aperture diameter	3 mm	5 mm	7 mm	9 mm
Wavelength range (operational wavelength will be determined by AR coating selected)	700 to 3500nm†			
Single pass insertion loss @ 1064 nm	< 1.0%			
Intrinsic contrast ratio (ICR) @ 1064 nm	> 1000:1			
Voltage contrast ratio (VCR) @ 1064 nm (parallel polarizers)	> 1000:1			
Single pass distortion @ 1064 nm	< λ/10			
ELECTRICAL				
Capacitance (DC)	6 pF			
DC quarter wave voltage at 1064 nm	1.18 kV	1.78 kV	1.18 kV	1.48 kV
10-90% rise time (theoretical) into 50 Ω line	0.7 ns			
Modulation frequency	1 MHz			
Duty cycle (recommended)	< 10%			
LASER DAMAGE THRESHOLD (LIDT)				
1064 nm, 10 ns, 10 Hz, 1 mm beam	>7 J/cm²			
ENVIRONMENTAL CONDITIONS				
Operating conditions				
Temperature range	-25 °C to +70 °C			
Humidity	<85% RH (non-condensing)			
Storage conditions				
Temperature range	-55 °C to + 85 °C			
Humidity	non-condensing			

[†]There is a narrow absorption band centred around 2850 nm

The Intrinsic Contrast Ratio (ICR) and Voltage Contrast Ratio (VCR) may be scaled with the following approximations:

$$\text{ICR}[\lambda_1] = \text{ICR}_{1064\text{nm}} * [\lambda_1/1064\text{nm}]^2 \quad \text{VCR}(\lambda_1) = \text{VCR}_{1064\text{nm}} * [\lambda_1/1064\text{nm}]$$

PEGASUS: DIMENSIONS (inches [mm])		
MODEL	DIM 'A'	DIM 'B'
PEGASUS 3	0.118 [3.0mm]	1.735 [44.1mm]
PEGASUS 5	0.197 [5.0mm]	1.735 [44.1mm]
PEGASUS 7	0.276 [7.0mm]	2.135 [54.2mm]
PEGASUS 8	0.315 [8.0mm]	2.135 [54.2mm]
PEGASUS 9	0.354 [9.0mm]	2.135 [54.2mm]

