IMPACT SERIES

KD*P Pockels Cell – 99% Deuteration

PRODUCT DATASHEET

From the world leader in nonlinear materials and electro-optic devices comes the ideal Pockels cell for OEM applications, the Impact KD*P cell. Once again, we set the industry standard, and at an exceptional value.

We employ the finest strain-free, highly deuterated KD*P available, grown in our own crystal growth facility. Ceramic apertures ensure robust performance in demanding applications

The Impact offers high damage threshold solgel and dielectric AR coatings for a variety of laser wavelengths. Superior for high-voltage applications, the standard pin-type connectors provide quick connection for simplified system design and assembly. Conventional threaded connectors are available as an option, if needed.

The standard configuration employs a broadband, high laser damage threshold solgel AR coating for improved durability and performance.

All units are supplied with a QA inspection report and suggested alignment procedures.



Key Features

- Highest purity KD*P, 99%
- 99% KD*P grown by G&H in the USA, see figure 2
- Low loss KD*P crystal 0.4%@1064 nm
- Intrinsic contrast ratio > 4000:1
- Voltage contrast ratio >3500:1
- < λ/10 transmitted wavefront distortion
- LIDT >10 J/cm^2 (1064 nm, 10 ns, 10 Hz)
- Premium UV-grade fused silica windows
- Ceramic aperture eliminating outgassing
- Nitrogen backfilled ensuring long lifetime

Options

- Threaded HV connectors

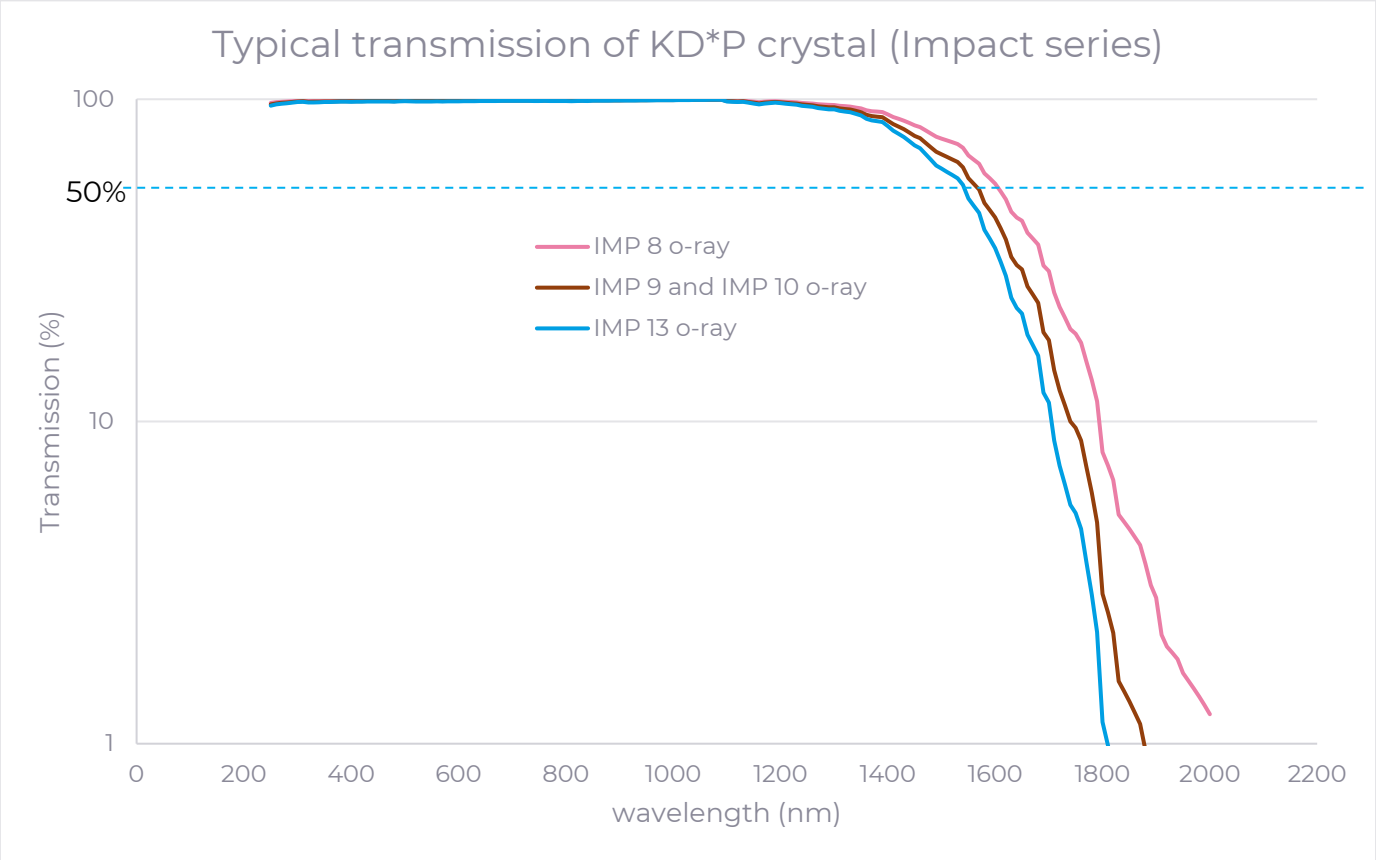
Applications

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

Performance Data

Impact Series: Typical Specifications 99% KD*P	Impact 8	Impact 9	Impact 10	Impact 13
PHYSICAL				
Hard aperture diameter	8 mm	9.25 mm	10 mm	13 mm
Single pass insertion loss @ 1064 nm	<1.0%, see figure 1			
Intrinsic contrast ratio (ICR) @ 1064 nm	>4000:1, see figure 3			
Voltage contrast ratio (VCR) @ 1064 nm (parallel polarizers)	>3500:1, see figure 4			
Single pass distortion @ 1064 nm	<λ/10			
ELECTRICAL				
Capacitance (DC)	6 pF			
DC quarter wave voltage @ 1064 nm	3.5 kV			
10-90% rise time (theoretical) into 50 Ω line	0.8 ns	0.9 ns	1.1 ns	1.1 ns
Modulation frequency	<1 kHz			
Duty cycle (recommended)	<5%			
LASER DAMAGE THRESHOLD (LIDT)				
1064 nm, 10 ns, 10 Hz, 1 mm beam	>10 J/cm^2			
ENVIRONMENTAL CONDITIONS				
Operating conditions				
Temperature range	+15 C to +35 C			
Humidity	<85% RH (non-condensing)			
Storage conditions				
Temperature range	-50 C to +85 C			
Humidity	Non-condensing			

Typical transmission spectra of Impact Pockels cell series (99% deuterated KD*P)



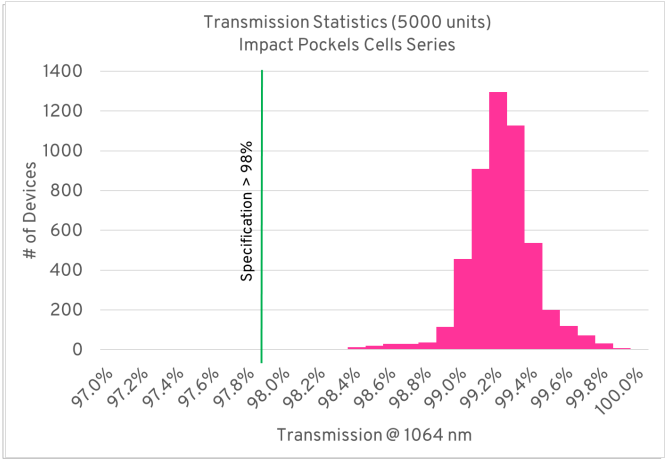


Figure 1 Single pass insertion loss

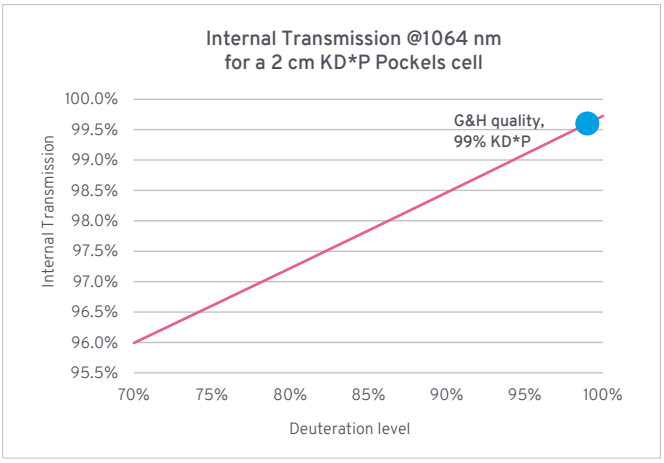


Figure 2 Internal KD*P transmission

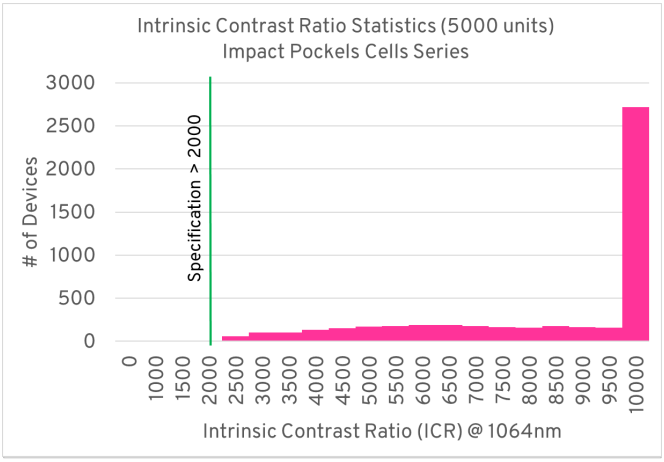


Figure 3 Intrinsic contrast ratio

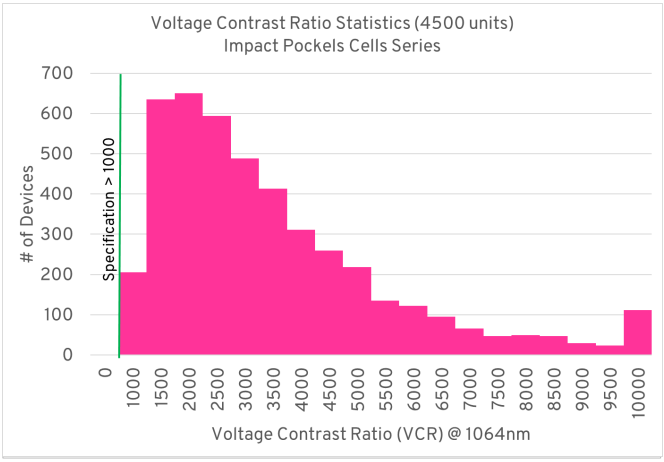
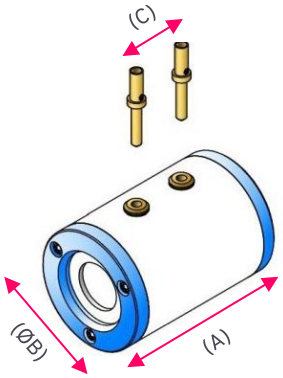
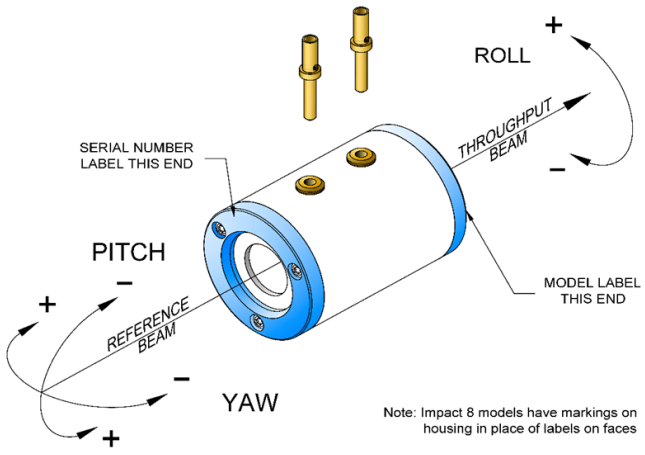


Figure 4 Voltage contrast ratio

IMPACT: DIMENSIONS (inches [mm])			
MODEL	DIM 'A'	DIM 'B'	DIM 'C'
IMPACT 8	0.989 [25.1]	0.748 [19.0]	0.394 [10.0]
IMPACT 9	1.368 [34.8]	0.998 [25.3]	0.472 [12.0]
IMPACT 10	1.456 [37.0]	0.998 [25.3]	0.472 [12.0]
IMPACT 13	1.672 [42.5]	0.998 [25.3]	0.472 [12.0]



Example of test data provided with each device



NOTES:

1: Definitions:
ICR: Intrinsic contrast ratio
VCR: Voltage dependent contrast ratio
TWE: Transmitted wavefront error/distortion
2: Inspection beam is HeNe, vertically polarized
3: Pockels cell is depicted in inspection orientation
4: Typical input polarization shown (parallel or perpendicular to electrodes
5: Pockels cell has sensitive optical surfaces: Remove from package and handle only in cleanroom environment
6: Do not attempt to clean optical surfaces: Doing so will void the warranty and/or shorten the lifetime of the cell
7: Do not attempt soldering operations on or near the cell
8: Refer to 'Pockels cell alignment' datasheet for additional information and precautions
9: Typical configuration shown: End cap and electrode may vary depending on configuration purchased

Impact Series Pockels Cell Inspection Report	
MODEL:	Impact 8
CLEAR APERTURE (mm):	8.0
SERIAL NUMBER:	XXXX
PART NUMBER:	139-IMP08-044-01-09
SHIP DATE:	1/31/2023
KD*P CRYSTAL TYPE:	Standard (Beam Normal)
KD*P CRYSTAL DEUTERATION:	99%
AR COATING:	1064
ICR[1] (@ 633 nm):	4987:1
VCR[1] (@ 633 nm):	2147:1
λ/2 VOLTAGE (@ 633 nm):	3.51
LEAKAGE CURRENT @ λ/2 V (μA):	0.02
TRANSMISSION (%):	99.03
TYPICAL CAPACITANCE (pF):	6
YAW (MINUTES):	-17.20
PITCH (MINUTES):	+6.19
ROLL (DEGREES):	-0.07
TWE[1] (@ λ=633nm):	< λ/6 TYPICAL
BEAM DEVIATION (SECONDS):	0