CENTAUR SERIES

KD*P Pockels Cell – 99% Deuteration

PRODUCT DATASHEET

From the world leader in nonlinear materials and electro-optic devices comes the Centaur CQX, a dimensional drop-in replacement for the industry-standard QX series Pockels cell.

Centaur CQX Pockels cells are based on the proven design from the Impact series but with an outer diameter of 1 ⅜”/2” (34.9 mm x 50.8 mm) to allow for retrofitting. 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

Like the QX series cells, these devices provide reliable, stable performance for a diverse range of laser applications, from <300 nm to 1100 nm.

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. Superior connectors 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.

Key Features

- Dimensional drop-in replacement for QX series
- 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 wedged/ plano windows
- Ceramic aperture eliminating outgassing
- Nitrogen backfilled ensuring long lifetime
- Adhesive/epoxy-free assembly
- Test documentation with each device

Options

- Threaded HV adapter

Applications

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

Performance Data

Centaur Series: Typical Specifications 99% KD*P	~~CQX 8~~	~~CQX 9.25~~	~~CQX 12.3~~	~~CQX 15.5~~	CQX 25
PHYSICAL					
Hard aperture diameter	~~8 mm~~	~~9.25 mm~~	~~12.3 mm~~	~~15.5 mm~~	25 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	6 pF	7 pF	7 pF	7 pF
DC quarter wave voltage @ 1064 nm	3.5 kV				
10-90% rise time (theoretical) into 50 Ω line	0.8 ns	0.8 ns	1.1 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				

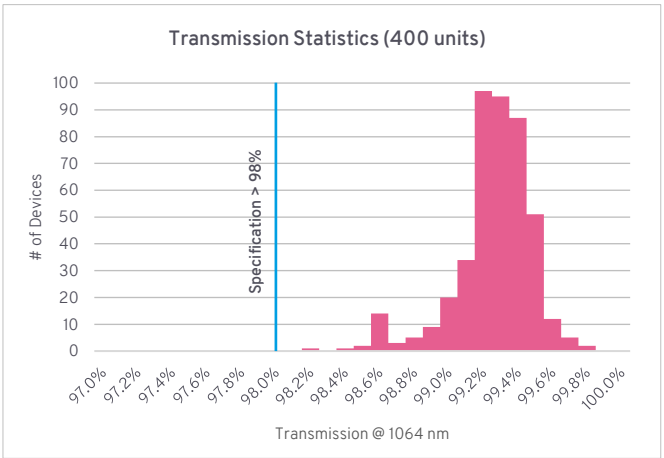


Figure 1 Single pass insertion loss

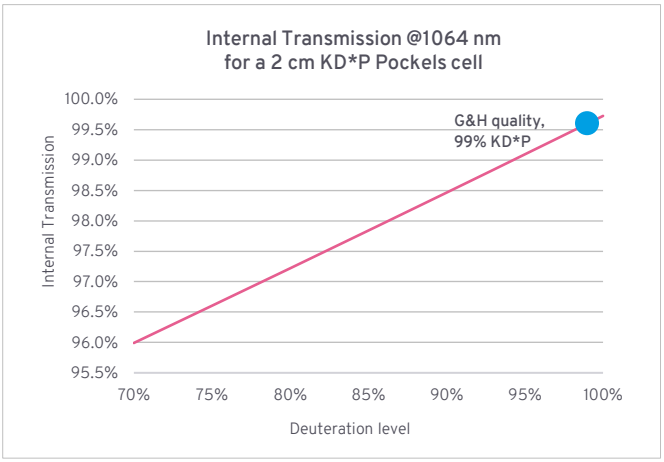


Figure 2 Internal KD*P transmission

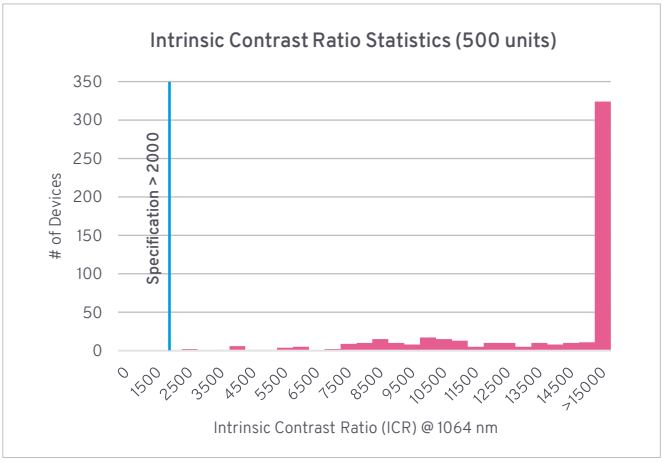


Figure 3 Intrinsic contrast ratio

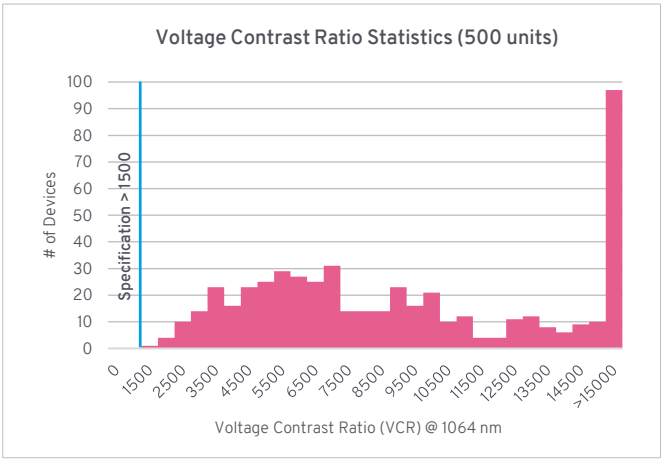
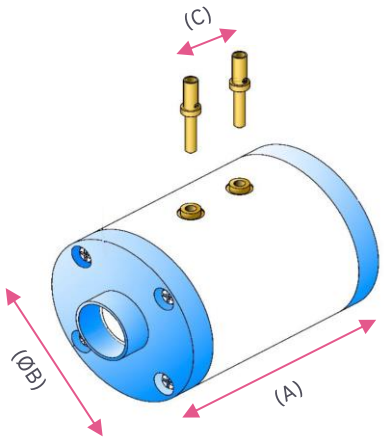
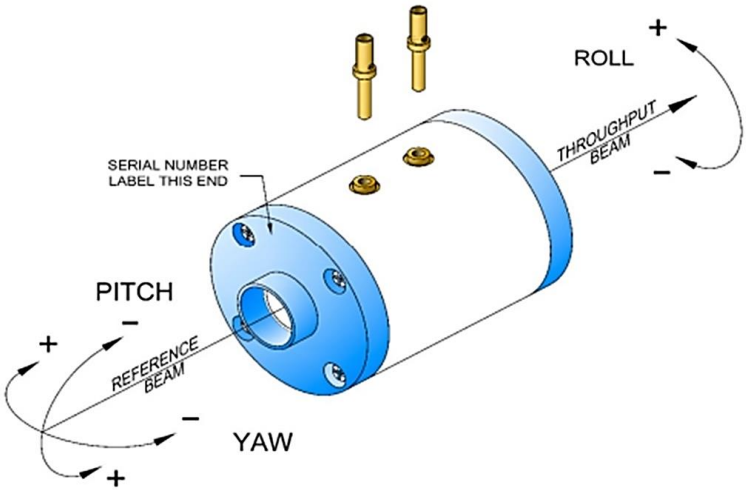


Figure 4 Voltage contrast ratio

CENTAUR: DIMENSIONS (inches [mm])			
MODEL	DIM 'A'	DIM 'B'	DIM 'C'
~~CQX 8~~	1.700 [43.2]	1.373 [34.9]	0.472 [12.0]
~~CQX 9.25~~	1.821 [46.3]	1.373 [34.9]	0.472 [12.0]
~~CQX 12.3~~	1.907 [48.4]	1.373 [34.9]	0.472 [12.0]
~~CQX 15.5~~	2.078 [52.8]	1.373 [34.9]	0.630 [16.0]
CQX 25	3.250 [82.6]	2.000 [50.8]	0.630 [16.0]



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

CQX Series Pockels Cell Inspection Report

MODEL:	CQX 12.3
CLEAR APERTURE (mm):	12.0
SERIAL NUMBER:	5668
PART NUMBER:	139-CQX1323FT-044-02-09
SHIP DATE:	6/21/2022
KD*P CRYSTAL TYPE:	Standard (Beam Normal)
KD*P CRYSTAL DEUTERATION:	99%
AR COATING (nm):	1064
ICR[1] (@ 633 nm):	6764:1
VCR[1] (@ 633 nm):	8939:1
λ/2 VOLTAGE (@ 633 nm):	3.41
LEAKAGE CURRENT @ λ/2 V (μA):	0.18
TRANSMISSION (%):	99.19
TYPICAL CAPACITANCE (pF):	6
YAW (MINUTES):	-6.16
PITCH (MINUTES):	-6.26
ROLL (DEGREES):	-0.04
TWE[1] (@ λ=633 nm):	< λ/6 TYPICAL
BEAM DEVIATION (SECONDS):	NA