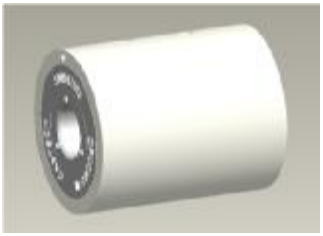
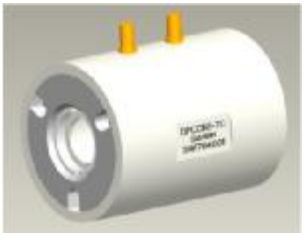
# Pockels Cells

## DPCC·DPCS/KD*P Pockels Cells



DPCCNS-W

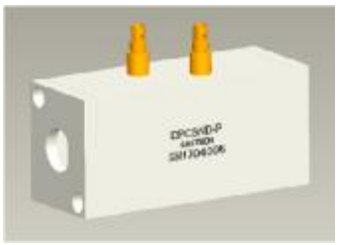


DPCCNS-TC

DPCCNS-T

DPCCNS-TB

DPCSNS-P



DPCSND-P

## Features

- KD*P-based Pockels cells
- Low absorption loss
- Good temperature stability
- High extinction ratio
- Capacitance value is small, fast switching speed
- High Damage Threshold
- Compact Structure

## Applications

- Q-switching of the laser cavity
- Cavity dumping
- Refenerative amplifiers
- Medical and aesthetic laser systems

Pockels cells are used to change the po-larization state of light passing through it when a voltage is applied to the electrodes of electro-optic crystals such as KD*P. When used in conjunction with polarizer, Pockels cells can be used as fast optical switches.

We offer different kinds of KD*P Pockels cells.The DPCC series are cylindrical and the DPCS series are cubic.For DPCC series,the electrode connection can be optional among wires ,thread and pin.And also, it's available with integrated,pre-adjusted Brewster polarizer such as DPCC8S-TB and with ceramic to control the aperture such as DPCC8S-TC.And for the DPCS series,switching voltage can be halved such as DPCS8D-P.

All series Pockels cells have AR coated windows for improved lifetime and protection in less user friendly environment.

## Encoding information

**DPCX N S/D - W/T/P B/C**

- B/C — B-with Brester polarizer, C- with ceramic aperture
- W/T/P — Connection: W-wire, T-thread, P-pin
- S/D — Quantity of crystals: S-single, D-double
- N — Clear aperture: Φ N
- DPCX — DPC series: C-cylindrical, S-cubic

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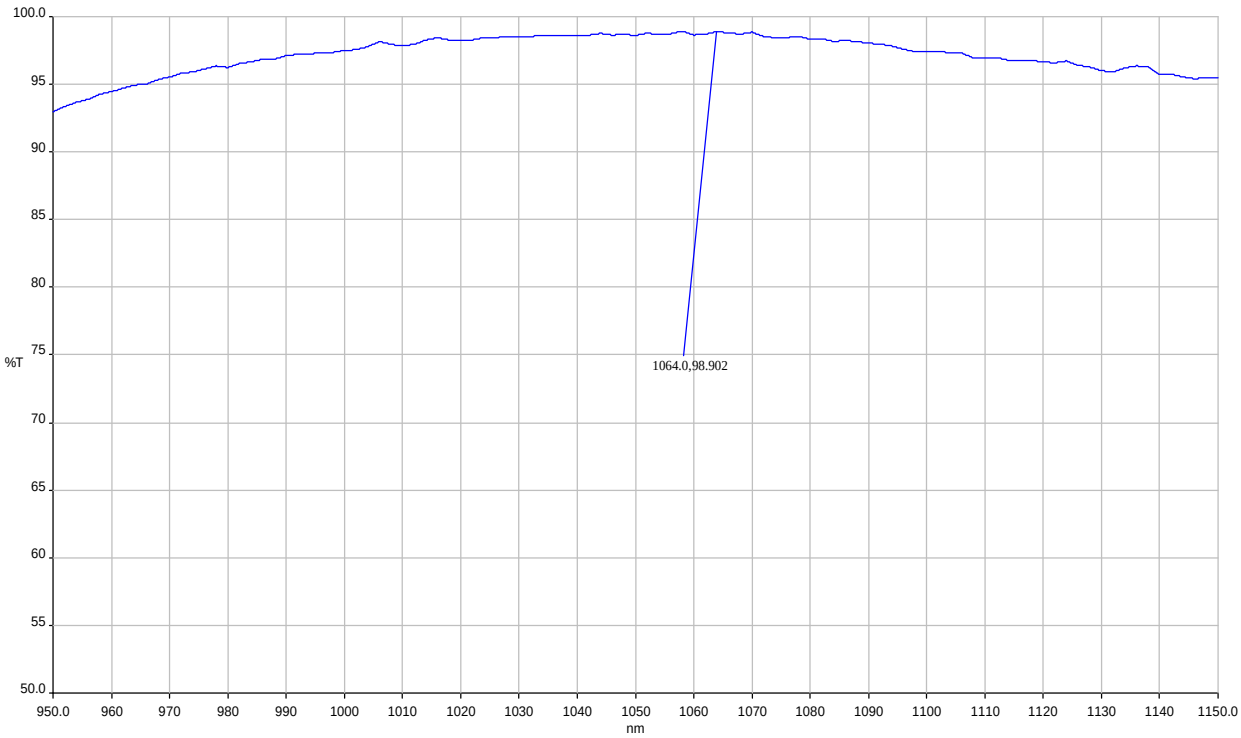
# Pockels Cells

## Specifications

| Product | DPCCNS -W | DPCCNS -PC/TC | DPCCNS -PB/TB | DPCCNS -P/T | DPCSNS -P | DPCSND -P |
|---|---|---|---|---|---|---|
| Clearn aperture Φ(mm) | 8,10 | 8,10,12 | 8,10 | 8,10,12 | 8 | 8 |
| Contrast ratio | >1000:1 | >1000:1 | 500:1 | >1000:1 | >1000:1 | 500:1 |
| Optical transmission | >97% | >97% | >97% | >97% | >97% | 96% |
| DC quarter-wave voltage(@1064nm),kV | <4.0 | <4.0 | <4.0 | >97% | <4.0 | <2.0 |
| Capacitance,pF | <6 | <6 | <6 | <6 | <6 | <8 |

All crystals are coated AR/AR@1064 nm. Other antireflection coatings are available under request.
Damage threshold >10J/cm2 for 5 ns pulses,10Hz at 1064 nm.

## Typical Transmission Curve

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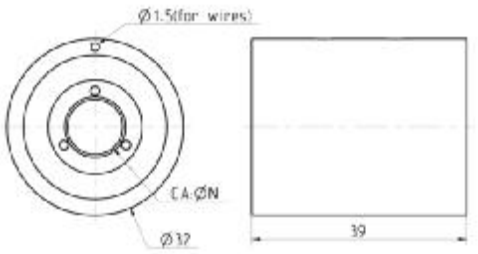
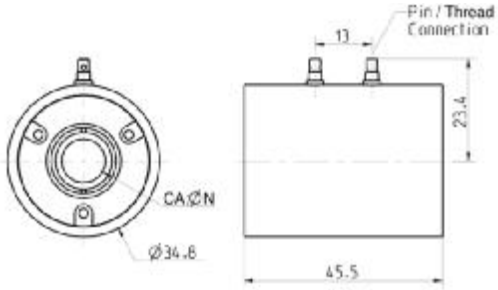
# Pockels Cells

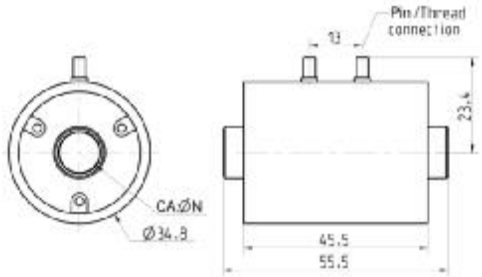
## Dimensions



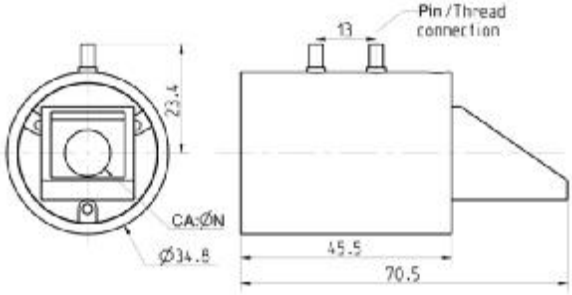

DPCCNS-W



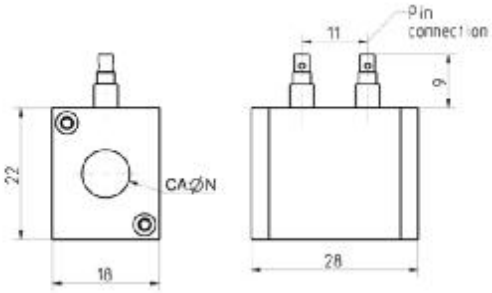

DPCCNS-PC/TC



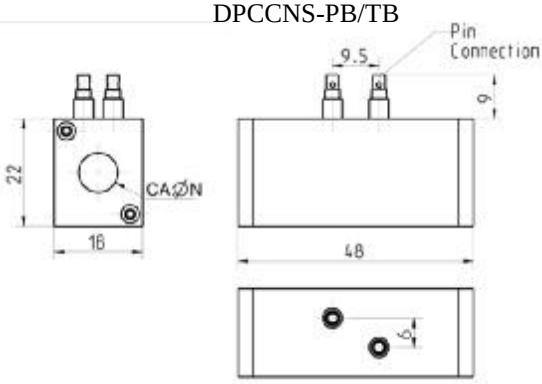

DPCCNS-T/P




DPCCNS-PB/TB




DPCSNS-P



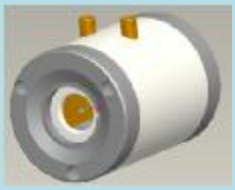

DPCSNS-P

All dimensions in mm.

## Related Products

PCD-L series Pockels Cell Drive
- for Q-Switching
- for Flashlamp Pumped Lasers

BPC series Pockels Cell
- for high repetition rate applications
- low piezoelectric coupling coefficients



# Pockels Cells Driver Series

## PCD – L SERIES Low Repetition Pockels Cells Driver

| Model | PCD-L10P-4-A | PCD-L10N-4-A |
|---|---|---|
| Maximum high voltage pulse amplitude | 4 kV [1] | 4 kV [1] |
| Polarity | Positive | Negative |
| HV pulse rise time | <10 ns [3] | <10us [3] |
| HV pulse fall time | <10us [3] | <10 ns[3] |
| Maximum HV pulse repetition rate | 10 Hz [2] | 10 Hz[2] |
| Trigger mode | External | |
| Input-Output delay time | 70.0 to 300us | |
| External triggering pulse duration requirement | >100ns | |
| External triggering pulse amplitude requirement | 3.3-5V (50Ω) | |
| External triggering pulse rise & fall requirement | <10 ns | |
| Jitter | <1 ns | |
| External powering requirements: | DC 24V | |

1. *MAX: 5kV*
2. *MAX: 100Hz*
3. *Typical value*

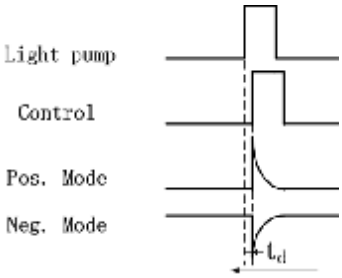



*Fig. 1. Delay time control*

PCD-L series is designed for KD*P Pockels Cells in lamp pump laser system. Using PCD-L series to adjust the delay time (*Fig. 1.* $t_d$) , the lamp pump and HV pulse trigger synchronously . The lamp pump laser system achieve the high efficiency output.

- **Fast HV rise/fall time < 10ns**
- **HV pulse amplitude up to 4 kV**
- **Pulse repetition rate up to 10Hz**
- **Delay time adjust 70 to 300 us**
- **Applied to DPC Pockels Cells series.**

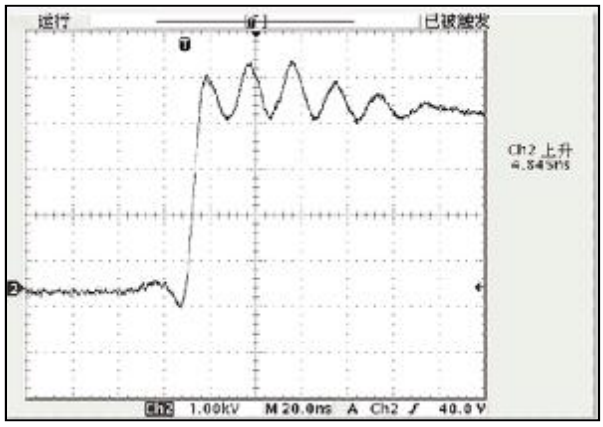



*Fig. 2. Oscilloscope of PCD-L10P-4-A*

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# Pockels Cells Driver Series

## PCD – R SERIES Routine Pockels Cells Driver

| Model | PCD-R10P-5-B | PCD-R10N-5-B |
|---|---|---|
| Maximum high voltage pulse amplitude | 5kV | 5 kV |
| Polarity | Positive | Negative |
| HV pulse rise time | <10 ns [1] | <10us [1] |
| HV pulse fall time | <10us [1] | <10 ns [1] |
| Maximum HV pulse repetition rate | 10kHz | 10kHz |
| Trigger mode | Internal | |
| HV pulse jitter | <1 ns | |
| External powering requirements: | 85～264 V AC , 47~63Hz | |

1. *Typical value*

- **Fast HV rise/fall time < 10ns**
- **HV pulse amplitude up to 5 kV**
- **Pulse repetition rate up to 10kHz**
- **HV pulse jitter <1ns**

- **Application:**
- **DPC Pockels Cells series**
- **BPC Pockels Cells series**

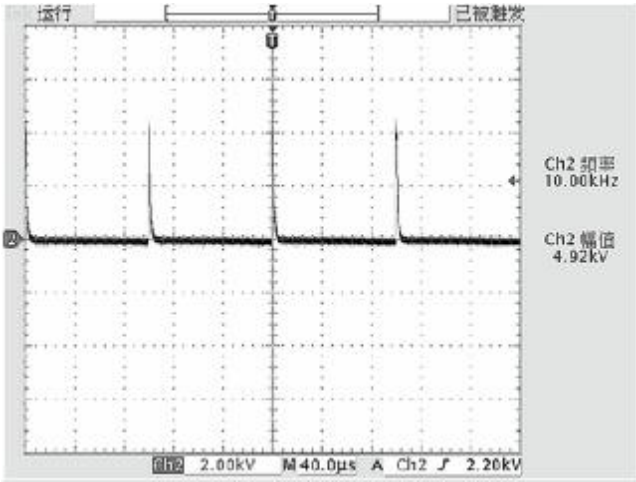


*Fig. 1. Oscillogram of* PCD-R10P-5-B

**PCD — L 10 P — 4 — A**

Trigger mode
- A —— External
- B —— Internal
- C —— Both

Max HV
- 4 —— 4kV

**Polarity**
- P —— Positive
- N —— Negative

Max Frequency

Frequency unit
- L —— Hz
- R —— kHz
- K —— 100kHz

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# Pockels Cells Driver Series

## PCD – H SERIES High Repetition Pockels Cells Driver

| Model | PCD-H1P-4-C | PCD-H1N-4-C |
|---|---|---|
| Maximum high voltage pulse amplitude | 4kV | 4 kV |
| Polarity | Positive | Negative |
| HV pulse rise time | <10 ns [1] | <10us [1] |
| HV pulse fall time | <10us [1] | <10 ns [1] |
| Maximum HV pulse repetition rate | 100kHz | 100kHz |
| Trigger mode | Internal & External | |
| HV pulse jitter | <1 ns | |
| External triggering pulse duration requirement | >100ns | |
| External triggering pulse amplitude requirement | 3.3-5V (50Ω) | |
| External triggering pulse rise & fall requirement | <10 ns | |
| External powering requirements: | 85～264 V AC , 47~63Hz | |
| Radiator | Air cooling<br>Water cooling | |

1. *Typical value*
   *Test conditions: PRR= 100 kHz, U= 4 kV*

- **Fast HV rise/fall time < 10ns**
- **Pulse repetition rate up to 100kHz**
- **HV pulse jitter <1ns**
- **Internal & External mode**
- **Applied for BPC Pockels Cells series**

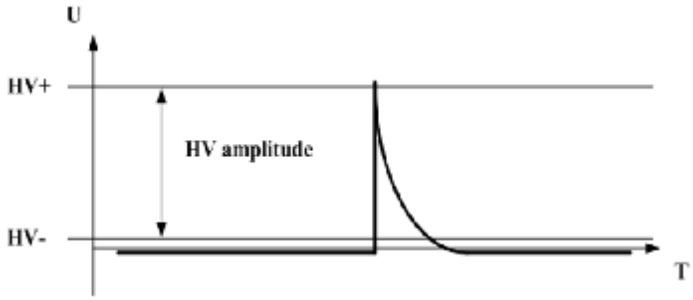


*Fig. 1. HV amplitude*

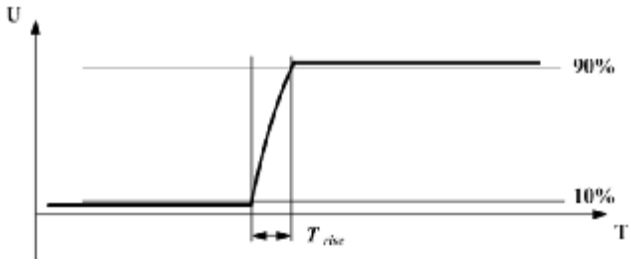


*Fig. 2. Rise time*