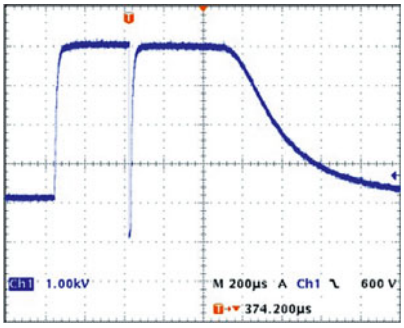
PCD-NH Q-Switch Driver

FEATURES

- Designed for driving KD*P or $LiNbO_3$ based Q-switches
- Built-in high voltage (HV) power supply
- Effective HV pulse amplitude up to 4.8 kV
- Pulse repetition rate up to 50 Hz
- Single powering voltage of 24 V

PCD-NH has been designed for Q-switching of solid-state nanosecond lasers without use of phase retardation plate. The design of driver takes into account the electro-optical properties of KD*P and $LiNbO_3$ crystals. Because of piezo-electric effect, the transient voltage needed for required polarization rotation (quarter-wave or half-wave) is higher than DC voltage. For example, for KD*P crystal, the pulsed voltage required to obtain $\lambda/4$ rotation is by approx 35 % higher than DC voltage. To cope with this effect the HV voltage is switched not to the ground (see timing diagrams for details), but to the negative voltage thus minimizing the losses in the cavity and improving laser output.

The driver is mounted into dielectric box for electrical insulation. Trigger pulse is applied trough LEMO socket.



Oscillogram of PCD-N and PCD-NH Q-switch driver operation

SPECIFICATIONS

Effective high voltage (HV) pulse amplitude (U1+U2)	4.8 kV
HV amplitude tuning range (U1+U2)	3.6 … 4.8 kV [1]
HV pulse fall time	< 15 ns
HV pulse jitter	<0.5 ns
HV pulse rise time	~100 µs
HV pulse duration	100–600 µs [2]
HV pulse repetition rate	≤ 50 Hz
HV pulse delay	40 ns
External triggering pulse duration	100-600 µs [2]
External triggering pulse amplitude	3–5 V (50 Ω)
External triggering pulse rise & fall time	< 20 ns
External powering requirements low voltage DC supply	24-28 V, max 200 mA
Size (W×H×D), mm	122×72×49

[1] *By build-in potentiometer; other tuning ranges available by request.*
[2] *Standard factory preset value, other values available by request.*

Specifications are subject to changes without advance notice.

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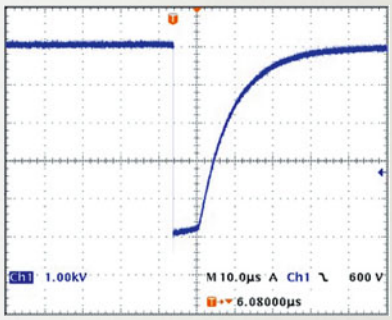
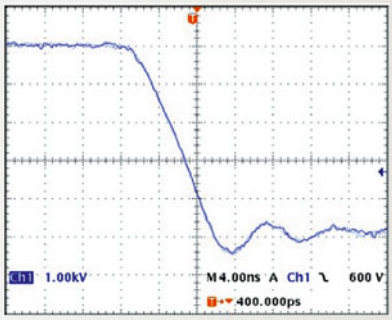
Pockels Cell DRIVERS

Ekspla is offering high-speed Pockels cell drivers for a broad range of applications where fast rise and/or fall times of HV pulse are necessary: Q-switching, cavity dumping, pulse slicing and others. Boxed stand-alone units with build-in HV power supply as well as OEM versions are available.



Oscillogram of Q-switching pulse of PCD-N and PCD-NH Q-switch driver

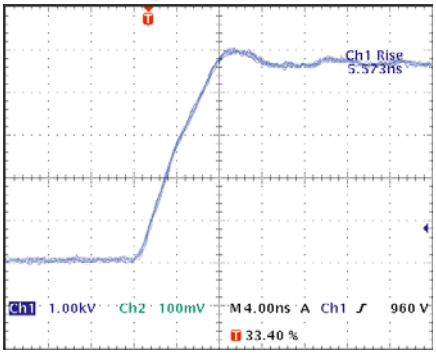


Fast edge of Q-switching pulse of PCD-N and PCD-NH Q-switch driver in detail

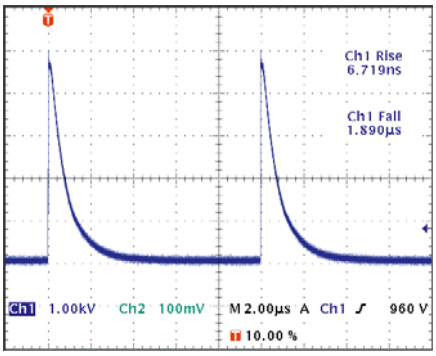
High repetition rate Pockels cell driver PCD-PHR

FEATURES

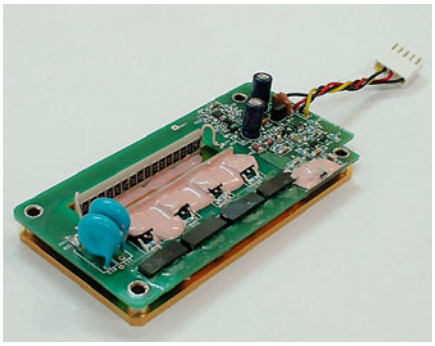
- Pulse repetition rate up to 100 kHz
- Fast HV rise time <7 ns for 2.4 kV pulse.
- HV pulse amplitude up to 2.4 kV



Fast edge of HV pulse in detail



Oscillogram of PCD-PHR driver operation



PCD-P has been designed for use in mode-locked lasers for cavity dumping or for cavity Q-switching of solid-state nanosecond lasers. Fast HV (less than 7 ns) edge ensures excellent pre- and post-pulse contrast.

Ability to operate at high pulse repetition rates makes this driver perfect fit for most of diode-pumped nanosecond lasers. For pulse repetition rates up to 10 kHz heatsink is not required. For high repetition rates the driver should be attached to the heatsink with thermal resistance of at least 0.4 °C/W for room temperature (25 °C) operation.

The driver is mounted into dielectric box providing electrical insulation. Trigger pulse is applied trough LEMO socket. Low voltage power supply is required to internal triggering circuit, while tuning of HV power supply voltage

OEM version of the driver is available by request.

SPECIFICATIONS

Maximum high voltage (HV) pulse amplitude	4.0 kV
Polarity	Positive or negative
HV pulse rise time	< 7 ns
HV pulse fall time	~2 µs [1]
HV pulse duration	120 ns [1]
Maximum HV repetition rate	100 kHz
HV pulse jitter	< 0.5 ns
External triggering pulse duration	100...1000 ns
External triggering pulse amplitude	3-5 V (50 W)
External triggering pulse rise time	< 10 ns
HV pulse delay	35–40 ns
External powering requirements: high voltage supply low voltage DC supply	 0–4.0 kV, 7 mA max [2] 5–24 V, 500 mA max [2]
Operating temperature	0–35 [3] °C
Size	104 × 52 × 25 mm

[1] *Typical value.*
[2] *Test conditions :PRR= 100 kHz, C= 2 pF, U= 4 kV.*
[3] *Heatsink temperature should be bellow 35 °C at 100 kHz pulse repetition rate.*

Specifications are subject to changes without advance notice.

Requests for custom-made version are welcome !

Custom Pockels cells drivers

Whether you require a custom design or production quantities for a scientific and/or industrial applications, our team of highly skilled engineers would welcome the opportunity to discuss your requirements.

Please contact us by email sales@ekspla.com.

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