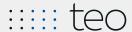


PCD-04

Pockels Cell Driver - 04

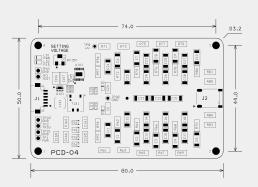
The driver is designed to control the electro-optical Q-switch (Pockels Cell) in the "switch-on" mode.

Driver provides high-voltage quasi-rectangular pulses with nanosecond rising and falling edges.



Features

- Low voltage (5 V) power supply;
- Built-in pulsed high-voltage source;
- Positive logical level trigger 3 ÷ 8 V;
- Reduced electro-magnetic noise due to bipolar HV pulse relative to common ground;
- Output pulse amplitude adjustment by built-in potentiometer or by external signal;
- Additional output signal for HV-pulse amplitude measurement;
- Compact design and light weight.



Specifications

Output voltage amplitude ¹	1700 ÷ 5800 V*
Output voltage pulse-to-pulse instability	< 1 %
Max pulse current	40 A
Optimal load capacitance	6 pF
HV pulse rise time ²	1 ÷ 2 ns
HV pulse fall time ²	1 ÷ 2 ns
HV pulse duration ³	2 ÷ 800 ns
Max HV pulse repetition rate	200 ÷ 1000 Hz **
Trigger voltage (input impedance is 50 Ohms)	3 ÷ 8 V (5 V)
Output pulse delay from trigger pulse ⁴	10 ÷ 20 ns
Jitter of output HV pulse relative to trigger	< 0.25 ns
DC supply voltage	4.5 ÷ 5.5 V (5 V)
DC supply max current	500 mA
Operating temperature range	-40 ÷ +60 °C
Dimensions	80 × 50 × 12 mm ³
Mounting hole pattern (Ø 3.2 mm)	74 × 44 mm
Weight (OEM version)	80 g

^{*} Specified by customer.

^{**} Depends on output voltage amplitude.

Output voltage amplitude, V	1700 ÷ 2600	2800 ÷ 4000	3600 ÷ 4800	4200 ÷ 5800
Max repetition rate, Hz	1000	500	200	200

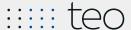
¹ is set from the built-in potentiometer or remotely.

Leading the light 1

 $^{\,2\,\,}$ depends on load capacitance and output voltage amplitude.

³ determined by an external trigger-generator.

 $^{\,\,4\,\,}$ delay depends on the trigger pulse. The higher trigger amplitude the shorter delay.



Connection Diagram

Connector J1 (input) - DF13-6P-1.25H (Hirose)

1 Pin 1 Power supply + 5 V & 500 mA max;

Pin 2 Power supply GND;

3 Pin 3 Trigger input + (3 ÷ 8) V; Input impedance 50R; Duration > 40 ns;

4 Pin 4 Trigger GND;

5 Pin 5 Output voltage measure signal;
DC voltage scale 1:10000; Note 1

6 Pin 6 Output voltage measure GND.

Connector SMA (input)

Trigger input + 5 V; Impedance 50 R; Duration > 20 ns.

Connector J2 (output) - SM02B-BHSS (JST)

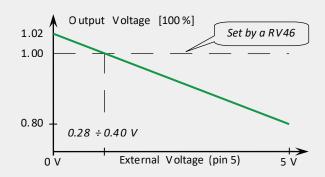
1 Pin 1 First high voltage output;

2 Pin 2 Second high voltage output.

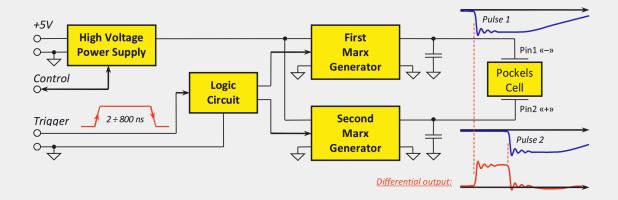
Note 1

Pin 5 and **Pin 6** can be used for setting the amplitude of the output voltage pulse from -20 % to +2 % (from value set by potentiometer RV46).

If 0 V is set on **Pin 5** from an external source, the pulse amplitude will be \sim 2 % higher than the set value. If 5 V is set on the **Pin 5**, the pulse amplitude will be lower by \sim 20 %. The input impedance of the **Pin 5** is 43 kOhms.



General schematic and output waveform of the Pockels Cell Driver - 04



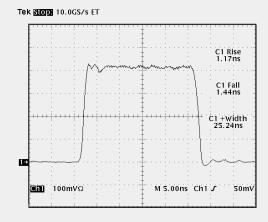
Leading the light 2



Waveforms of the transmitted light beam

HV pulse amplitude: V_{PULSE} = 3800 V

Pockels cell half wave voltage: $V_{\lambda/2} = 3800 \text{ V}$



Leading the light 3



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