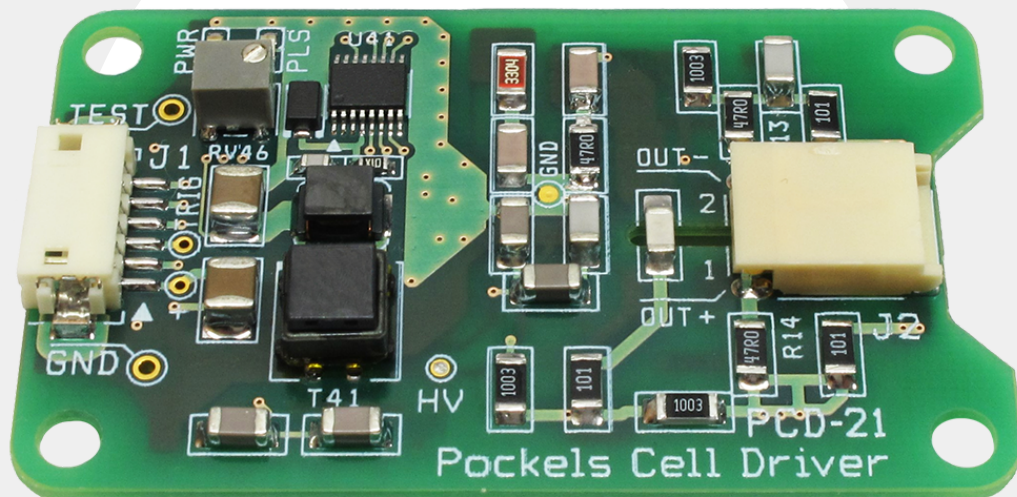




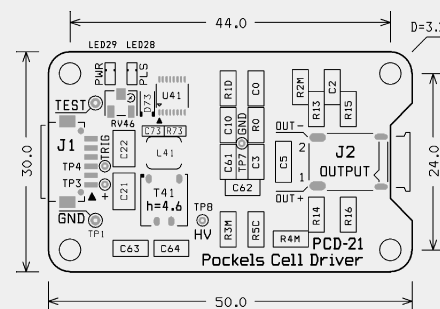
## PCD-21

Pockels Cell Driver with differential output

High-voltage trapezoidal pulses output  
with nanosecond rising edge for controlling  
an electro-optical Q-switch in solid-state lasers.

## Features

- Operating in mode with rise time less than 2 ns;
- Low voltage (5 V) power supply;
- Built-in pulsed high-voltage source;
- Output pulse amplitude adjustment by built-in potentiometer or by external signal;
- Positive logical level trigger  $3 \div 8$  V;
- Additional output signal for HV-pulse amplitude measurement;
- Ultra-compact design and light weight;
- Reduced electro-magnetic noise due to bipolar HV pulse relative to common ground.



## Specifications

|                                                    |                             |
|----------------------------------------------------|-----------------------------|
| Output voltage amplitude <sup>1</sup>              | 2600 ÷ 3800 V               |
| Output voltage pulse-to-pulse instability          | 1 %                         |
| Max pulse current                                  | 20 A                        |
| Max load capacitance                               | 20 pF                       |
| HV pulse rise time <sup>2</sup>                    | 1 ÷ 2 ns                    |
| Hold time <sup>3</sup>                             | 0.5 ÷ 1 μs (0.5 μs)         |
| HV pulse fall time                                 | 3 ÷ 6 μs                    |
| Max HV pulse repetition rate                       | 4 kHz                       |
| Trigger voltage (input impedance is 200 Ohms)      | 3 ÷ 8 V (5V)                |
| Output pulse delay from trigger pulse <sup>4</sup> | 10 ÷ 15 ns                  |
| Jitter of output HV pulse relative to trigger      | < 0.1 ns                    |
| DC supply voltage                                  | 4.5 ÷ 5.5 V (5 V)           |
| DC supply current at maximum output pulse voltage: |                             |
| at a repetition rate of 1 kHz                      | 220 mA                      |
| at a repetition rate of 2 kHz                      | 300 mA                      |
| at a repetition rate of 4 kHz                      | 460 mA                      |
| Operating temperature range                        | -40 ÷ +60 °C                |
| Dimensions                                         | 30 × 50 × 8 mm <sup>3</sup> |
| Mounting hole pattern (Ø 3.2 mm)                   | 24 × 44 mm                  |

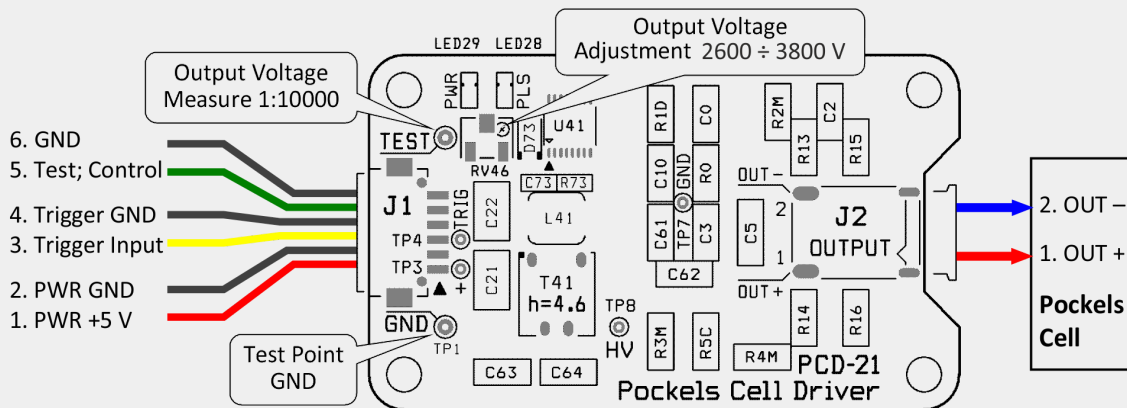
<sup>1</sup> is set from the built-in potentiometer or remotely.

<sup>2</sup> depends on load capacitance and output voltage amplitude.

<sup>3</sup> is set by manufacturer.

<sup>4</sup> 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 (red)    | Power supply + 5 V & 500 mA;                                                                                | 4. Pin 4 (black) | Trigger GND;                                                                  |
| 2. Pin 2 (black)  | Power supply GND;                                                                                           | 5. Pin 5 (green) | Output voltage measure signal;<br>DC voltage scale 1:10000; <sup>Note 1</sup> |
| 3. Pin 3 (yellow) | Trigger input + (3 ÷ 8) V;<br>$R_{INPUT} = 200 \text{ Ohms}$ ;<br>Rising edge < 20 ns;<br>Duration > 20 ns; | 6. Pin 6 (black) | Output voltage measure GND.                                                   |

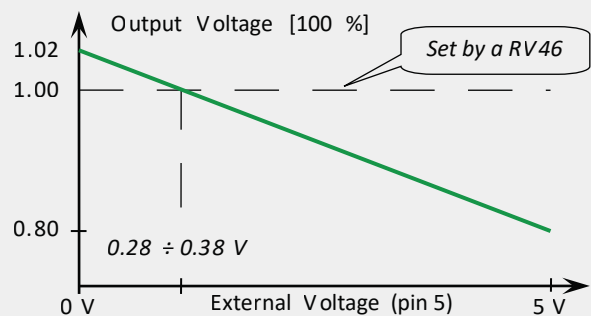
### Connector J2 (output) – SM02B-BHSS (JST)

- |          |                               |          |                               |
|----------|-------------------------------|----------|-------------------------------|
| 1. Pin 1 | Positive high voltage output; | 2. Pin 2 | Negative high voltage output. |
|----------|-------------------------------|----------|-------------------------------|

## Note 1

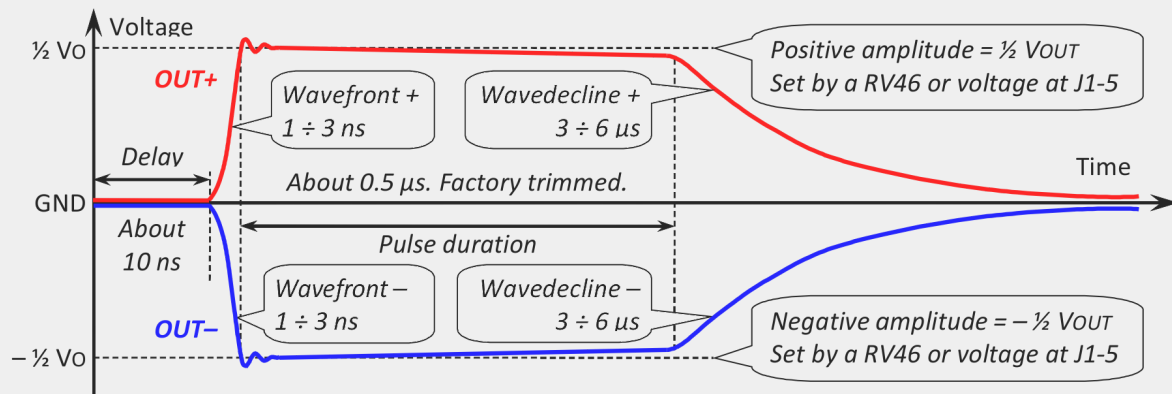
**Pin 5** and **Pin 6** can be used for setting the amplitude of the output voltage pulse from -20 % to +2 % (from value set by potentiometer RV46).

If 0 V is set on **Pin 5** from an external source, the pulse amplitude will be ~ 2 % higher than the set value. If 5 V is set on the **Pin 5**, the pulse amplitude will be lower by ~ 20 %. The input impedance of the **Pin 5** is 45 kOhms.



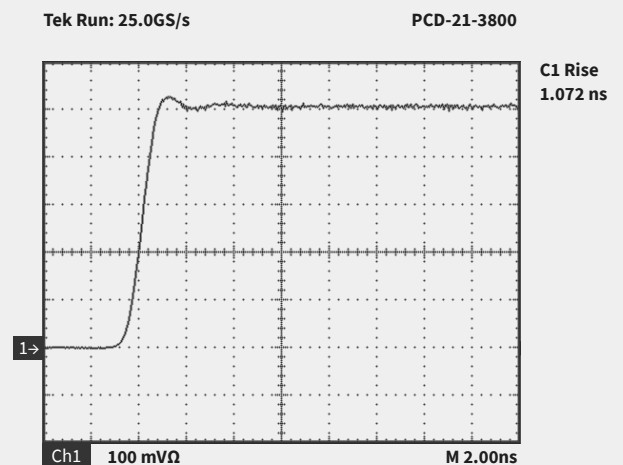
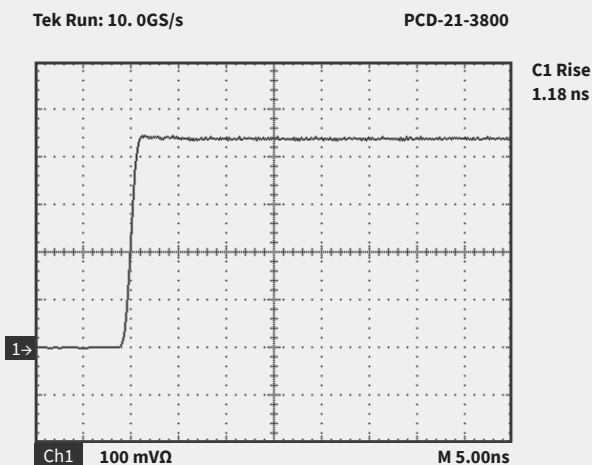
## Output waveform of the Pockels Cell Driver - 21

Pulse Output Voltage is adjusted in the range from 2600 V to 3800 V.



## Waveforms of the transmitted light beam

Pulse voltage:  $V_{PULSE} = 3600 \text{ V}$   
Pockels cell half wave voltage:  $V_{\lambda/2} = 3800 \text{ V}$





Leading the light

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