

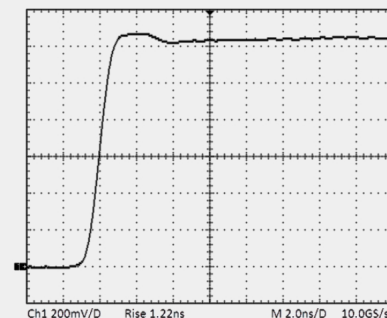
PCD-11

Pockels Cell Driver with unipolar output

Trapezoidal high-voltage pulses with nanosecond rising edge and flat shelf for the control of electro-optical Q-switches (Pockels cells) in a solid-state laser.

Features

- Unipolar high-voltage pulse in «Switch-on» operational mode;
- Low-voltage DC supply required (5 V);
- Built-in pulsed HV-source;
- Low jitter;
- Positive logical level trigger (5 V);
- Adjustment of a high-voltage pulse either directly on the board (through built-in potentiometer) or remotely;
- Low-jitter < 100 ps;
- Highly reliable topology;
- Ultra-compact size – can be used for actively Q-switched, hand-held Q-switched laser heads.



Waveforms of the transmitted light beam

Specifications

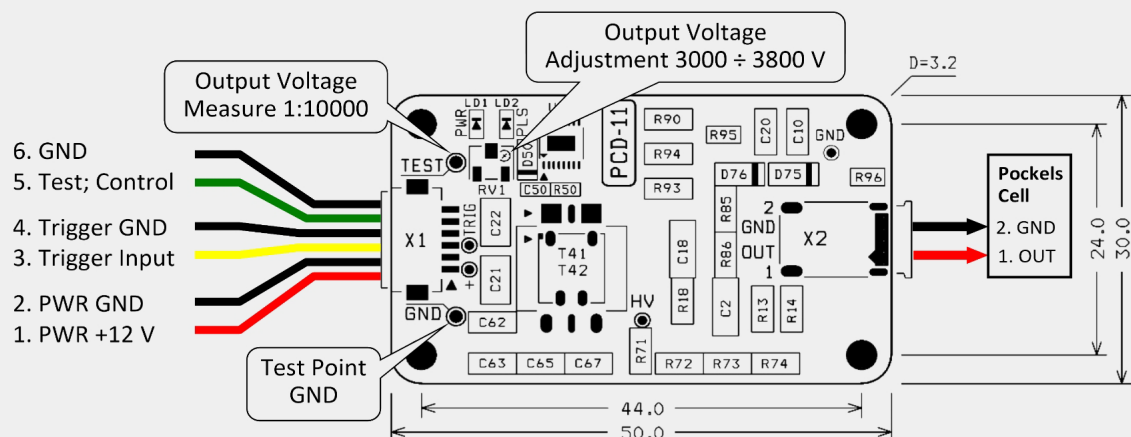
High-voltage amplitude ¹	3000 ÷ 3800 V
Output pulse-to-pulse instability	< 1 %
Rise time ²	1 ÷ 2 ns
Hold time (shelf)	1 ÷ 1.5 μs
Decay time	2 ÷ 5 μs
Max repetition rate (frequency)	2 kHz
Trigger voltage (input impedance is 200 Ω)	3 ÷ 8 V (5 V)
Output pulse delay from trigger pulse ³	10 ÷ 15 ns
Timing jitter of the output pulse vs. trigger	< 0.1 ns
Max pulse current	20 A
Max load capacitance	10 pF
DC supply voltage	4.5 ÷ 8 V (5 V)
Max supply current	500 mA
Working temperature range	–40 ÷ +60 °C
Dimensions	30 × 50 × 8 mm ³
Mounting hole pattern (Ø 3.2 mm)	24 × 44 mm

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

² depends on load inductance and HV amplitude.

³ delay depends on the HV pulse amplitude. The higher HV pulse amplitude the shorter delay.
delay depends on the trigger pulse. The higher trigger amplitude the shorter delay.

Connection Diagram



Connector X1 (input):

- | | | | |
|------------------|---------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------------------------------------|
| 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;
DC voltage scale 1:10000; <small>Note 1</small> |
| 3 Pin 3 (yellow) | Trigger input + 5 V (3 ÷ 8) V;
$R_{\text{INPUT}} = 200 \Omega$; Rising edge < 20 ns;
Duration > 20 ns; | 6 Pin 6 (black) | Output voltage measure GND. |

Connector X2 (output):

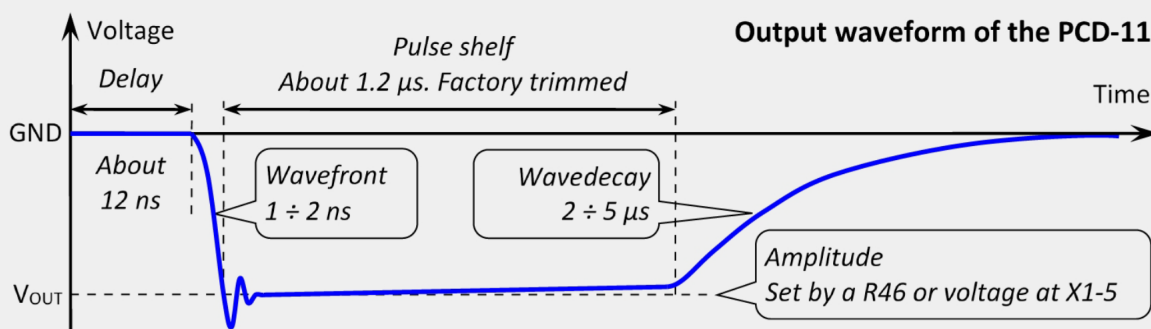
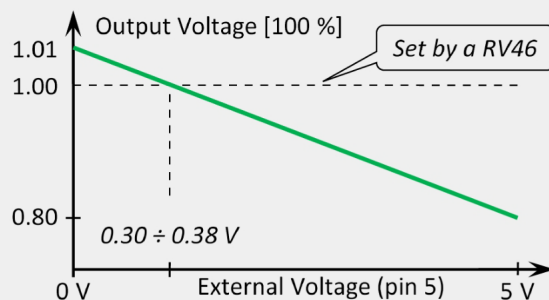
- | | | | |
|--------------------|--------------------------------------|--------------------|------|
| 1 Pin 1 (HV black) | Negative high voltage output signal; | 2 Pin 2 (HV black) | GND. |
|--------------------|--------------------------------------|--------------------|------|

Note 1

Pin 5 and **Pin 6** can be used for setting the amplitude of the output voltage pulse from -20 % to +1 % (from value set by potentiometer RV46).

If 0 V is set on **Pin 5** from an external source, the pulse amplitude will be ~ 1 % 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 75 k Ω .





Leading the Light

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