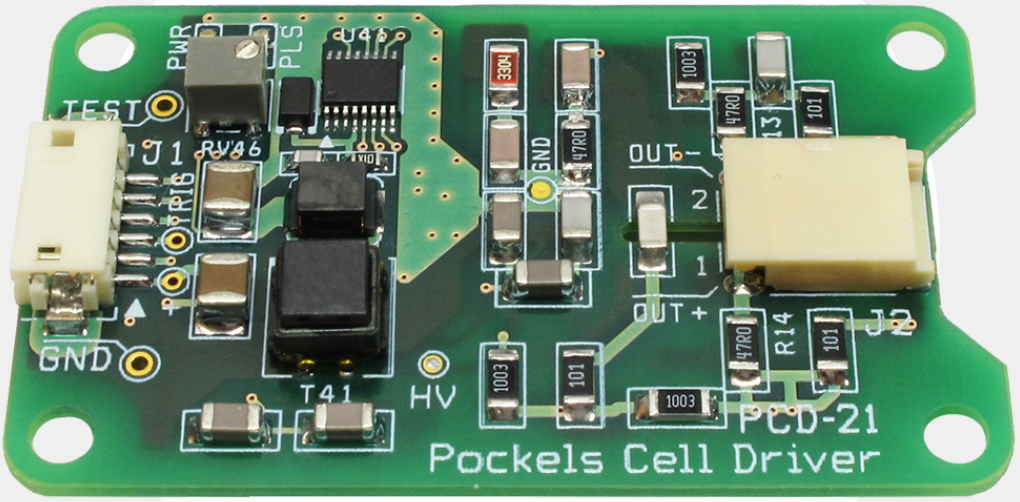
teo Leading the Light



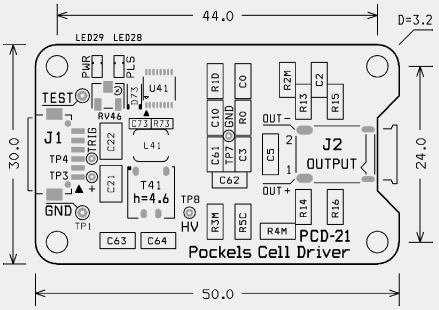
PCD-21P

Pockels Cell Driver with bell-shaped pulse

High-voltage bell-shaped pulses with nanosecond duration for controlling an electro-optical Q-switch in solid-state lasers.

Features

- Low voltage (5 V) power supply;
- Built-in pulsed high-voltage source;
- Positive logical level trigger 3 ÷ 8 V;
- Additional output signal for HV-pulse amplitude measurement;
- 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;
- Ultra-compact design and light weight.

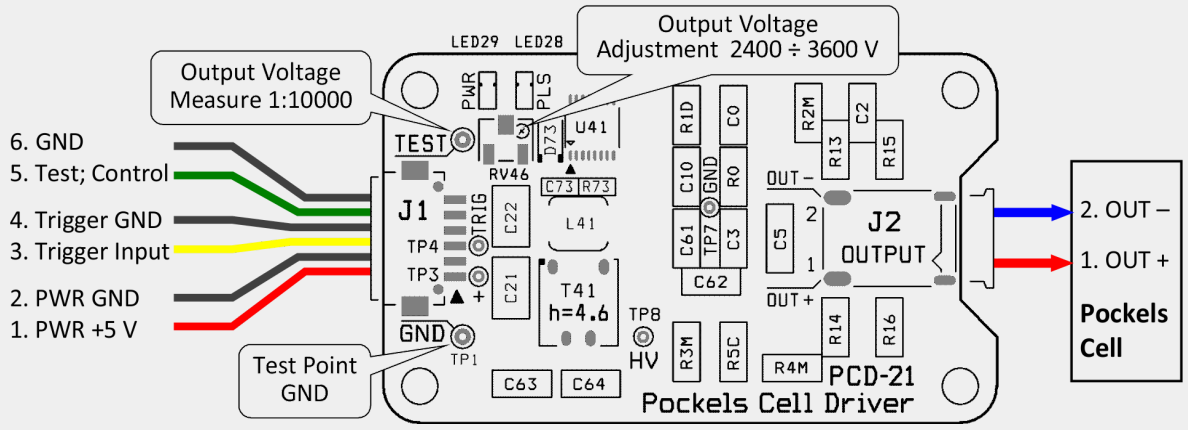


Specifications

Output voltage amplitude [1]	2400 ÷ 3600 V
Output voltage pulse-to-pulse instability	1 %
Max pulse current	20 A
Max load capacitance	20 pF
HV pulse rise time [2]	1.0 ÷ 2.0 ns
HV pulse duration (factory-set) [3]	2 ÷ 4 ns
HV pulse fall time [2]	1.2 ÷ 2.2 ns
Max HV pulse repetition rate	2 kHz
Trigger voltage (input impedance is 470 Ohms)	3 ÷ 8 V (5V)
Output pulse delay from trigger pulse [4]	10 ÷ 15 ns
HV pulse jitter	< 0.1 ns
DC supply voltage	4.5 ÷ 5.5 V (5V)
DC supply current at maximum output pulse voltage:	
at a repetition rate of 1 kHz	300 mA
at a repetition rate of 2 kHz	450 mA
Operating temperature range	–40 ÷ +60 °C
Operations without failure	> 4×10^{11}
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 capacitance and output voltage amplitude.
3 is set by manufacturer.
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 (red)** Power supply + 5 V & 500 mA;
2. **Pin 2 (black)** Power supply GND;
3. **Pin 3 (yellow)** Trigger input + (3 ÷ 8) V;
   R_{INPUT} = 470 Ohms;
   Rising edge < 20 ns;
   Duration > 20 ns;
4. **Pin 4 (black)** Trigger GND;
5. **Pin 5 (green)** Output voltage measure signal;
   DC voltage scale 1:10000; Note 1
6. **Pin 6 (black)** Output voltage measure GND.

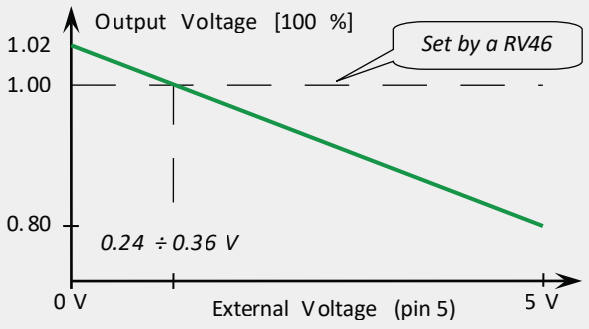
Connector J2 (output) – SM02B-BHSS (JST)

1. **Pin 1 (HV red)** Positive high voltage output;
2. **Pin 2 (HV blue)** 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).

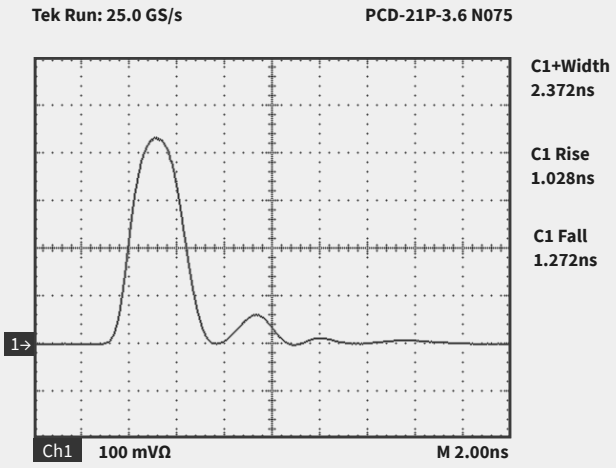
If 0 V is set on **Pin 5** from an external source, the pulse amplitude will be ~ 2 % higher than the set value. If 5 V is set on the **Pin 5**, the pulse amplitude will be lower by ~ 20 %. The input impedance of the **Pin 5** is 45 kOhms.

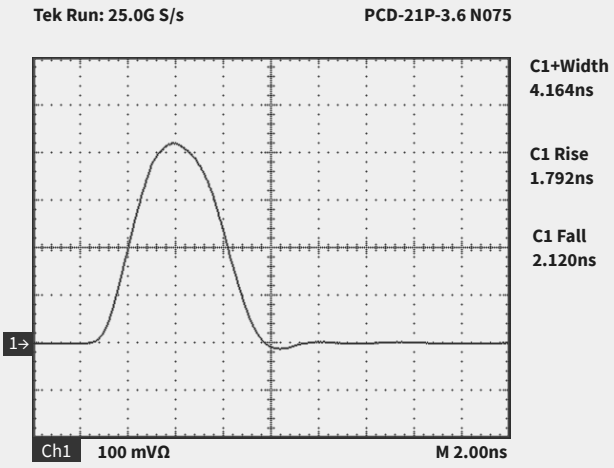


Waveforms of the transmitted light beam

Pulse voltage: V_{PULSE}= 3600 V;

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





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