

## 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 $3 \div 8 \mathrm{~V}$;
- 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 ${ }^{1}$ | $2600 \div 3800 \mathrm{~V}$ |
| :--- | :--- |
| Output voltage pulse-to-pulse instability | $1 \%$ |
| Max pulse current | 20 A |
| Max load capacitance | 20 pF |
| HV pulse rise time ${ }^{2}$ | $1 \div 2 \mathrm{~ns}$ |
| Hold time ${ }^{3}$ | $0.5 \div 1 \mu \mathrm{~s}(0.5 \mathrm{\mu s})$ |
| HV pulse fall time | $3 \div 6 \mu \mathrm{~s}$ |
| Max HV pulse repetition rate | 4 kHz |
| Trigger voltage (input impedance is 200 Ohms) | $3 \div 8 \mathrm{~V}(5 \mathrm{~V})$ |
| Output pulse delay from trigger pulse ${ }^{4}$ | $10 \div 15 \mathrm{~ns}$ |
| Jitter of output HV pulse relative to trigger | $<0.1 \mathrm{~ns}$ |
| DC supply voltage | $4.5 \div 5.5 \mathrm{~V}(5 \mathrm{~V})$ |
| DC supply current at maximum output pulse voltage: | 220 mA |
| at a repetition rate of 1 kHz | 300 mA |
| at a repetition rate of 2 kHz |  |
| at a repetition rate of 4 kHz | 460 mA |
| Operating temperature range | $-40 \div+60^{\circ} \mathrm{C}$ |
| Dimensions | $30 \times 50 \times 8 \mathrm{~mm}{ }^{3}$ |
| Mounting hole pattern ( $\varnothing 3.2 \mathrm{~mm}$ ) | $24 \times 44 \mathrm{~mm}$ |

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## 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 + $(3 \div 8) \mathrm{V}$;
$\mathrm{R}_{\text {INPUT }}=200$ Ohms;
Rising edge < 20 ns ;
Duration $>20 \mathrm{~ns}$;

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
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 $\sim 2 \%$ higher than the set value. If 5 V is set on the Pin $\mathbf{5}$, the pulse amplitude will be lower by $\sim 20 \%$. The input impedance of the $\operatorname{Pin} 5$ 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: $\mathrm{V}_{\text {PULSE }}=3600 \mathrm{~V}$
Pockels cell half wave voltage: $V_{\lambda / 2}=3800 \mathrm{~V}$


Tek Run: 25.0GS/s
PCD-21-3800


# :::::te○ Leading the light 

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[^0]:    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.

