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Electrooptical Modulators

Pockels Cell Drivers

PDU
PDL
PDR
PDM
PDS

Product Reference

Rev.03.2025

IPOptica
InPut Optica Technology, LLC.

PDU/PDL/PDR/PDM/PDS

Pockels Cell Drivers

IPOptica's Pockels Cell Drivers are precision-engineered to deliver universal compatibility and peak performance across electro-optic crystal technologies, including BBO, KDP, RTP, and other third-party Pockels Cells. Designed for high-power ultrafast laser systems demanding sub-nanosecond temporal precision (±0.2 ns) and ultra-stable high-voltage operation (±0.03% ripple), this advanced driver series enables critical functionalities in modern photonics.

FEATURES

- High pulse repetition rate up to 2.5 MHz
- Ultra-fast rise/fall time < 4.5ns
- Long HV pulse duration up to DC
- Reliable design with random switching on/off sequence
- Custom available on request

APPLICATIONS

- Regenerative amplification systems
- Cavity dumping in kW-level ultrafast oscillators
- Pulse picking and optical switch
- CW beam chopping
- Dynamic polarization control for nonlinear optics

GENERAL SPECIFICATIONS

MODEL	Pockels Cells Drivers						
	PDU-200-0500	PDL-100-0500	PDR-052-0500	PDR-038-1000	PDR-028-1000	PDM-052-0003	PDS-045-0001
Max. Operation High Voltage	20 kV	10 kV	5.2 kV	3.8 kV	2.8 kV	5.2 kV	4.5kV
Max. Repetition Rate	4 kHz*	4 kHz*	500 kHz	1 MHz	1 MHz	3kHz	1kHz
HV Pulse Rise Time (8pF)	< 14 ns	< 8 ns	< 7 ns	< 6 ns	< 5 ns	<6ns	<8ns
HV Pulse Fall Time (8pF)	< 14 ns	< 8 ns	< 7 ns	< 6 ns	< 5 ns	<6ns	N/A
HV Pulse Duration	150 ns - DC		20 - 10,000 ns				30ns ~ 1ms
Output Polarity	Positive						
Cooling	Water					I	

* Up to 250k Hz will be available on request.

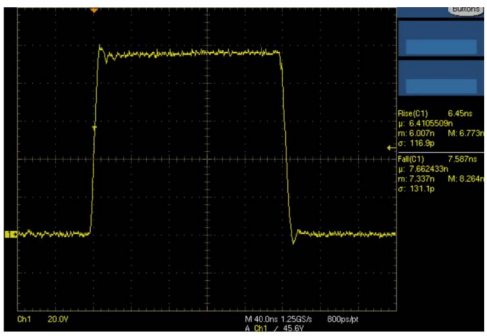

Fig 1 Output pulse shape
3.6kV 6PF capacitive load

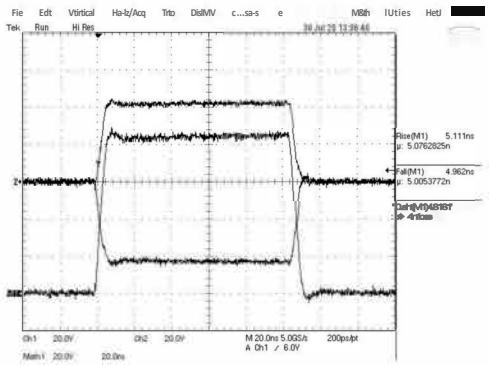

Fig 2 Output pulse shape
4.8kV 6PF capacitive load
CH1: positive output, CH2: negative output
M1=CH1 - CH2

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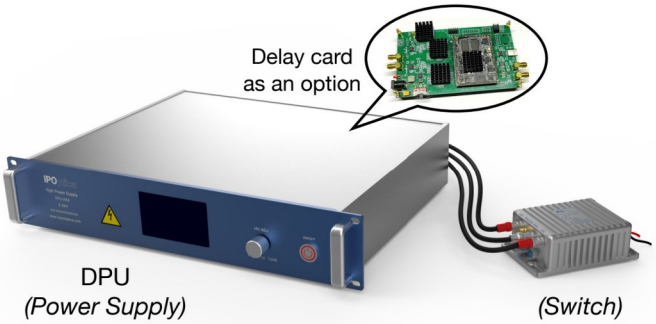

IPOptica's **PDU** Series High-Precision Systems engineered for industrial-scale photonics applications, the PDU Series integrates 2,000W direct-grid power conversion with programmable delay modules (on request), enabling simultaneous precision in high-voltage actuation (20kV) or ultrafast timing (2.5MHz+) for complex Pockels Cells applications. This unified platform directly interfaces with 110-240V AC mains.

PDU

IPOptica's **PDL** Series Ultra-Compact Electro-Optic Drivers engineered for next-generation photonics R&D and ultrafast laser innovation, the PDL Series delivers PDU-grade performance in a radically miniaturized dimensions. This bench-top driver eliminates infrastructure dependencies through its self-contained architecture, enabling modular deployment in space-constrained laboratories, field experiments, and laser systems.

PDL

IPOptica's **PDR** Series Industrial-Grade Drivers designed for seamless integration in OEM laser systems, the PDR Series redefines space-conscious electro-optic control with its compact chassis while achieving full interoperability with industrial laser controllers. Engineered for Industry 4.0 smart manufacturing, these drivers enable plug-and-play autonomy within laser cavities or beam delivery systems through native D-USB connectivity.

PDR

IPOptica's **PDM** Series Ultra-Compact High-Voltage Drivers precision-engineered for low-frequency, high-voltage electro-optic control, the PDM Series in a palm-sized chassis. Customers can choose between manually adjustable or D-USB interface versions, which meet both testing and development needs as well as the high integration requirements of industrial lasers.

PDM

PDL – 072 – 0250

Pockels Cell **D**river

Power Supply Model
M – – Mini combined
R – – DPR
L – – DPL
U – – DPU

Max High Voltage
052 – – 5.2kV
092 – – 9.2kV
136 – – 13.6kV

Frequency
L100 – – 100Hz
0003 – – 3kHz
0250 – – 250kHz
1500 – – 1.5MHz

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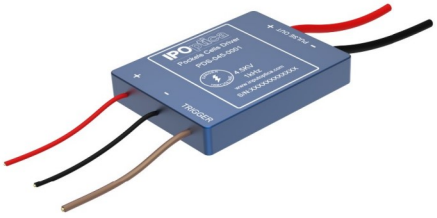


IPOptica's **PDS** line of Pockels Cells Drivers has been specifically designed to complement KDP, RTP, and DKDP based Pockels Cells to satisfy the request of pulse lasers especially Q-switching, pulse picking, and other demands.

FEATURES

Fastest rise time < 8ns

Compact design with light weight

Custom available on request

APPLICATIONS

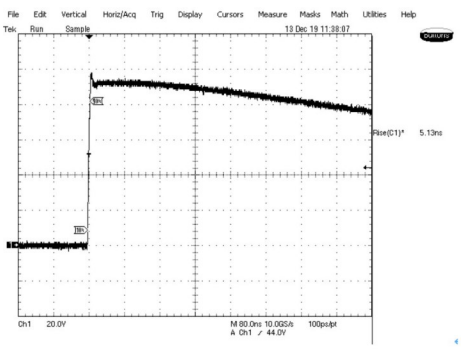
Suited for Q-Switching

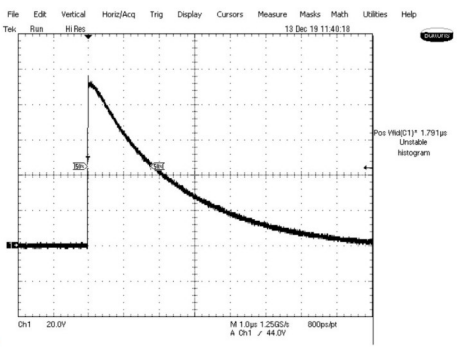
Pulse picking and optical switch

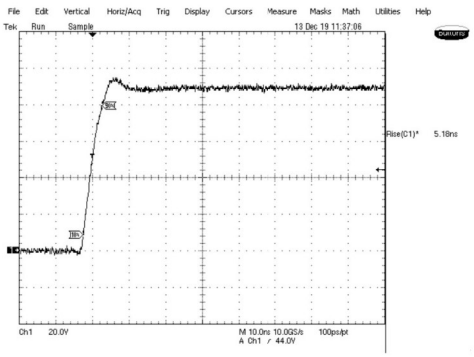
CW beam chopping

GENERAL SPECIFICATIONS

MODEL	PDS
Ouput Voltage	2 ~ 4.5 kV
Repetition Rate	1kHz
Pulse Rise Delay	< 20 ns
Pulse Rise Time	< 8 ns
Pulse Duration	30 ns ~ 1ms
Recovery Time	~9us







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