

HVR-DRIVE™ POCKELS CELL DRIVER

Pockels Cell Driver for Laser Pulse Selection

PRODUCT DATASHEET

The HVR-Drive™ from Gooch & Housego is designed to switch Pockels cells used for pulse management in high repetition rate ultrafast laser regenerative amplifiers.

The HVR-Drive™ can drive Pockels cells at $1/4 \lambda$ or $1/2 \lambda$ up to 7.5 kV and up to 200 kHz. The driver produces a top-hat waveform with fast rising and falling edges.

Heat load and space requirements are at a minimum due to the use of external power supplies and control electronics.

The HVR-Drive™ measures 136.5x178x70 mm (5.375x7.0x2.8") with the standard heat sink for convection cooling. It can also be air-cooled or water-cooled for higher repetition rates.

G&H can supply the driver in different form factors for high volume applications. On/Off trigger inputs can be standard TTL signals or optional optical trigger inputs can be supplied.

We can work with you to customize the driver for your specific application. Options such as remote monitoring, remote shutdown and over-temperature indicators can be supplied.



Key Features

- 0-200 kHz repetition rate pulses
- 1.0-7.5 kV output voltage
- 10-15 ns rise and fall times
- 250 ns-3 μ s pulse widths
- Bipolar balanced output

Key Benefits

- Compact footprint
- Reduced heat load
- Easy integration
- Flexible design

Applications

- Metal cutting
- Welding
- Glass cutting
- Sapphire cutting
- Spectroscopy

Specifications

Parameter	Conditions	Min	Max	Units
POWER REQUIREMENTS				
Low voltage supply		15.0	18.0	VDC
Low voltage supply	200 kHz rep rate		300	mA
2 x high voltage supplies	For 7.5kV out, external ± 1875 VDC required ¹		100	mA
TRIGGER				
On/Off trigger voltage	Normally 5 V, TTL	4	15	V
Trigger to output delay	5 V trigger		60	ns
Pulse width	(subject to 20% duty cycle maximum)	250	3000	ns
Jitter, trigger to output	2 ns trigger rise time		50	ps
OUTPUT PULSE				
Repetition rate	7.5 kV, 10 pF, water cooled ²		100	kHz
	6.0 kV, 10 pF, water cooled		150	kHz
	5.0 kV, 10 pF, water cooled		200	kHz
Duty cycle	Ratio of pulse width to period (1/frequency)		20	%
Pulse amplitude		1.0	7.5	kV
Rise/fall times		10	15	ns
ENVIRONMENTAL				
Operating ambient		0	50	°C

NOTES

Two external high voltage power supplies are required; one positive output, one negative output. For example, to achieve 6 kV output you will need ± 1500 VDC input.

- High voltage current requirements are determined by the pulse width and repetition rate. Rise and fall times vary with output voltage; higher voltages produce longer rise and fall times.
- Convection cooled, the maximum rep rate is 25 kHz @ 7.5 kV, 37.5 kHz @ 6 kV and 50 kHz @ 5 kV. Water cooled, chiller set to 24 °C, flow rate to 1.5 gal/minute (6 liter/min) nominal.

CAUTIONS

Do not connect the outputs to ground or damage to the driver will occur.
The low voltage supply must be on before applying the high voltage inputs.
The On/Off triggers must not overlap or damage to the driver will occur.

For further information

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HVR-DRIVE™