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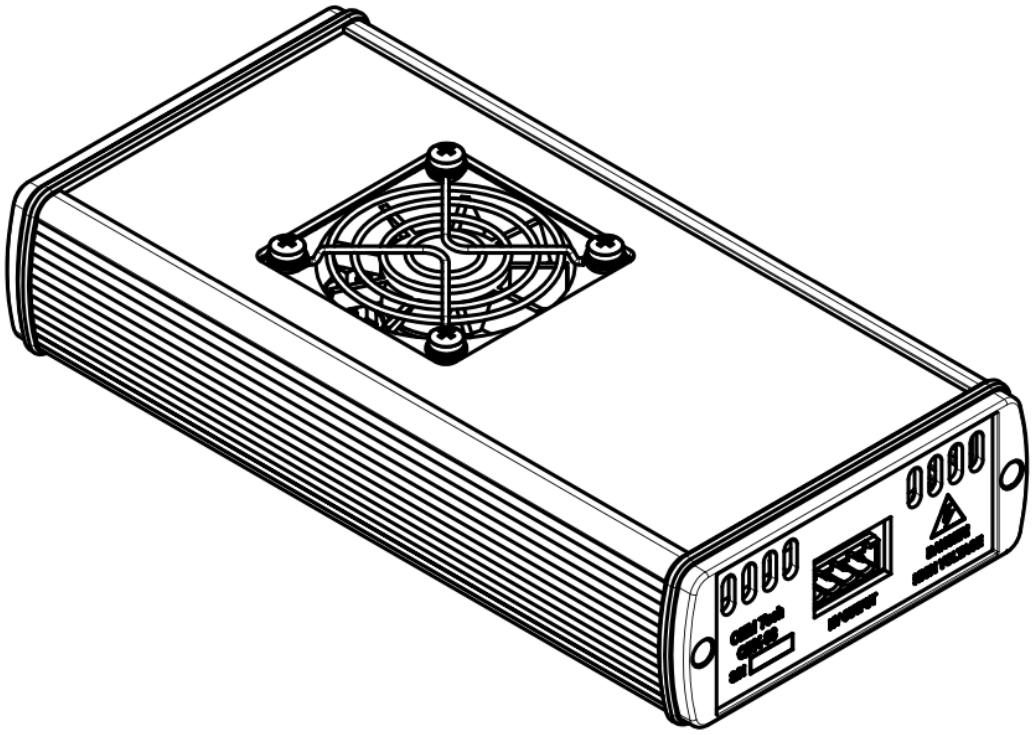
QBX-08 Pockels cell driver

User manual



Warning! This equipment produces high voltages that can be very dangerous.
Please read user manual before starting operations.

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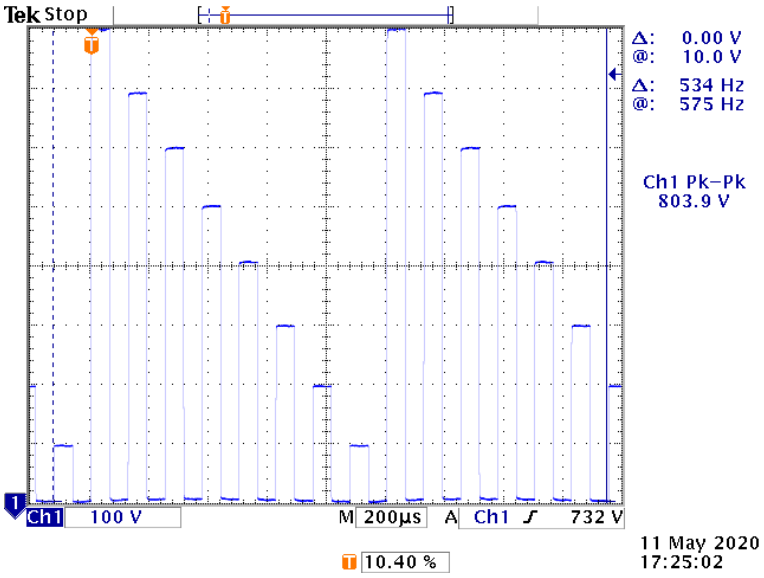
Overview

QBX-08 is a dedicated Pockels cell drivers designed for applications where voltage on the Pockels cell should be continuously adjustable. Driver is built as an unipolar voltage amplifier, maximum output voltage is 800V (other voltages both smaller and higher up to 1600V are available on request), amplification factor is 100:1.

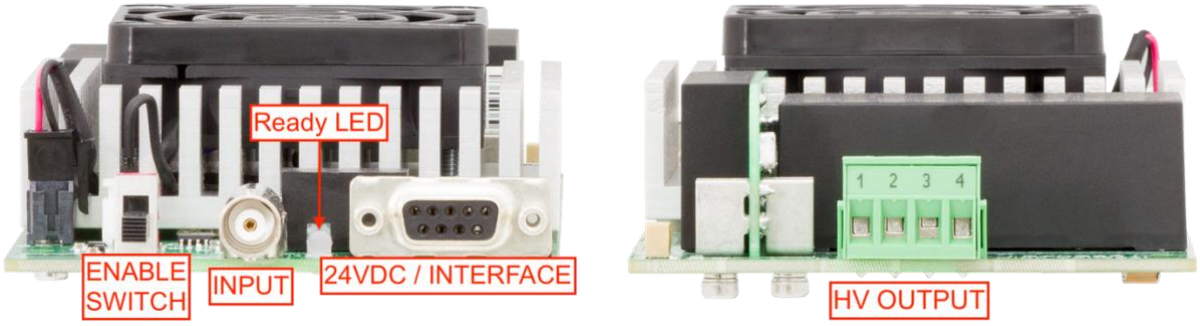
Driver is forced air cooled with integrated fan. Driver can be supplied in PCB and enclosed versions.



Appearance



Connections, signals, signal descriptions

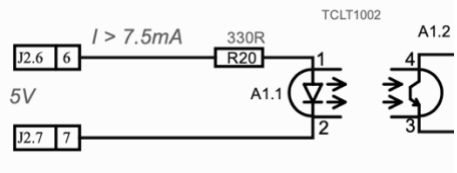
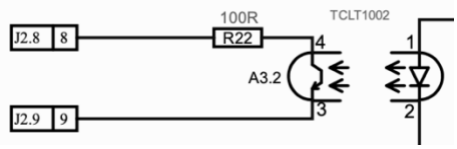


INPUT: BNC

Analog signal of 0-8V amplitude applied to this connector is amplified with 100:1 factor and delivered to the high voltage output of QBX-08 Pockels cell driver.

Input impedance is 50 Ohm.

24VDC / INTERFACE: D-SUB 9 PIN, FEMALE

PIN (color)	DESIGNATION	DESCRIPTION
1, 2 (black)	**24VDC RETURN**	+24VDC power supply to be connected here. Power consumption 1.5A max. We recommend using +24VDC power supply with isolated output and non-grounded return.
3, 4 (red)	**+24VDC**	
5	**N/C**	-
6	**Enable**	5V TTL signal to be applied here to enable the high voltage output. Enable signal could be used instead of Enable switch and they shouldn't be used at the same time.
7	**Enable return**	
8	**Ready**	Exactly as Ready LED, indicates the Pockels cell driver is enabled and ready to work.
9	**Ready return**	

ENABLE SWITCH

UPPER POSITION	**ON**	Enable switch turned to ON position enables the high voltage output. Enable switch could be used instead of Enable signal of interface and they shouldn't be used at the same time.
BOTTOM POSITION	**OFF**	

LEDs

There is a Ready LED onboard indication the driver is ON and ready to work.

HV OUTPUT: Phoenix Contact 1757268

PIN (color)	DESIGNATION	DESCRIPTION
1	**HV OUTPUT**	High voltage output (amplified INPUT) of the QBX-08 driver.
4	**GND**	
2, 3	**N/C**	-

Mating part (Phoenix Contact 1758377) is supplied together with the driver.

GROUNDING AND MOUNTING

Grounding policy

By default, INPUT and HV OUTPUT circuits share a common ground.
Other circuits (24VDC, Enable, Ready) are fully isolated from each other and from INPUT / HV OUTPUT circuits.

Optionally, by the cost of reduced bandwidth, INPUT and HV OUTPUT can be isolated.

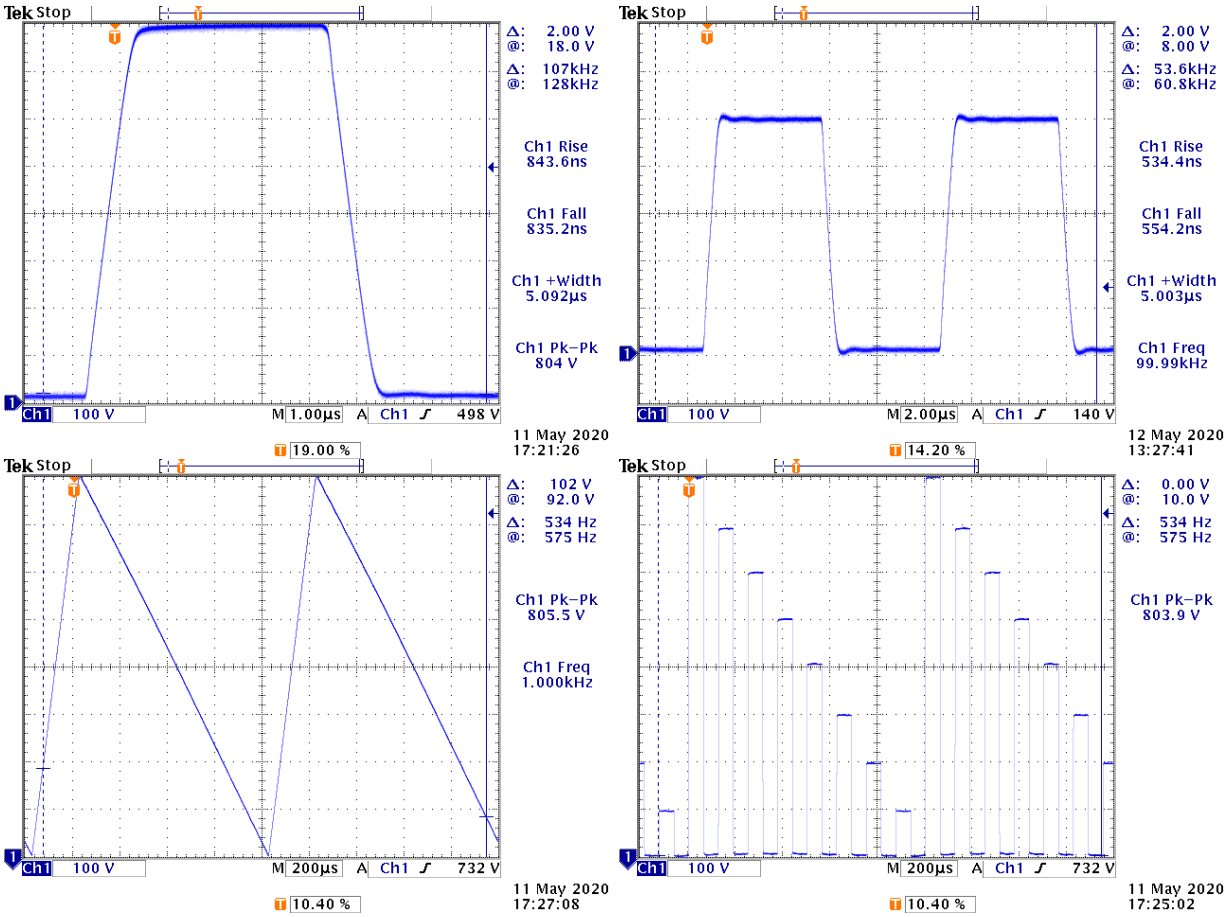
Driver is to be mounted with four M3 screws.

Operations

1. Connect *+24VDC* power supply, waveform generator and Pockels cell
2. Turn on *+24VDC* power supply
3. Turn *ENABLE SWITCH* in *ON* position or apply *ENABLE* signal
4. Turn on waveform generator and apply desired waveform to *INPUT*

Typical output

Examples of waveforms:



Specifications

ELECTRICAL SPECIFICATION

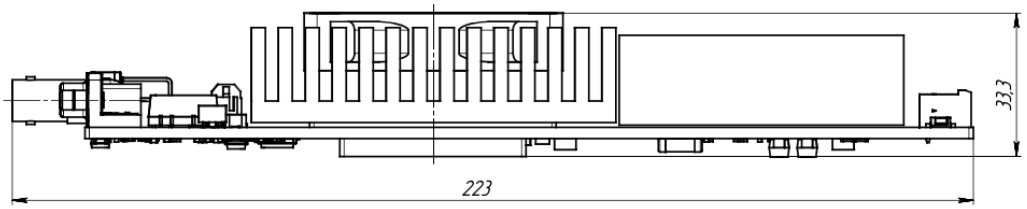
Input	
Power	24VDC, 1.5A typ.
Signal	Analog signal 0-8V, input impedance 50 Ohm
HV Output	
Output type	High voltage signal repeats the shape of low voltage input signal
Output polarity	Positive
Amplitude	0-800V (100:1 amplification)
Bandwidth (sine wave)	~1MHz for low load capacitance ~500kHz for 60pF load capacitance
Repetition rate	Up to 1MHz (at low load capacitance and low output voltages). Also limited as $f_{MAX}*C*U^2=2W$, for example: ~50kHz @ 800V and 60pF ~130kHz @ 500V and 60pF
Rise/fall time (full slope)	<500ns for low load capacitance <1us for 60pF load capacitance
Delay time	<1us
Load requirements	
Load type	Capacitive (other on request)
Load capacitance	<60pF (other on request)
Cooling	Forced air cooling with integrated fan
Environmental	
Operating temperature	+10…+40C

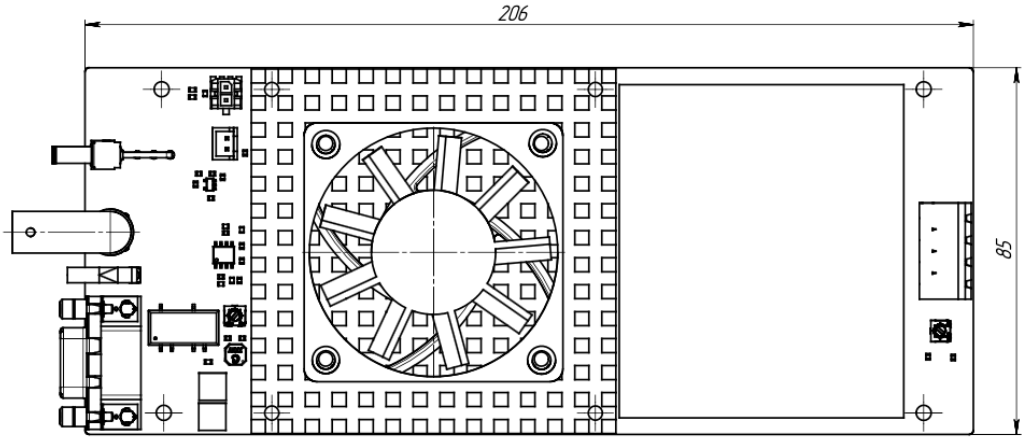
MECHANICAL SPECIFICATION

Size (LxWxH)	206x85x45 mm (see also the dimensional drawing below)
Weight	Approx. 0.6 kg

Dimensional drawings

PCB VERSION





ENCLOSED VERSION

