



PCB-driver-MCA

- Multi-Channel Pulse Driver For Mid-IR LEDs
- Fixed Pulse Mode Operation
- 0.4 A and 0.5 kHz each Channel
- Operating Voltage: 12 VDC
- Dimension: 105 x 70 x 15 mm



Description

PCB-driver-MCA driver is designed as power supply of arrays comprising of Mid-IR LEDs. It provides **pulse mode operation** - LED current amplitude and pulse duration are preset by factory according to your request. The driver combines LED driver, photodiode signal processing and amplification and synchronization of LED and photodiode signals on one board.

Features

- **Pulse mode operation** (for maximum peak optical power)
- LED current amplitude and pulse duration **are preset by factory** according to your request.
- **Ability to work with PD models without a built-in preamplifier** (enabling an on-board preamplifier) *.
- Built-in **8-channel synchronous detector**, which provides **synchronization of LED signals** with a **photodiode preamplifier** and further signal amplification.

* You should choose the photodiode model (with or without a built-in preamplifier) to work with that driver **beforehand**, since the driver is able to operate with only one photodiode type and should be tuned in advance accordingly.

Main Characteristics

Parameter	Symbol	Min.	Values Typ.	Max.	Unit
Input Voltage (stabilized)	V_{SUPPLY}		12.0		V
Voltage Tolerance		-5		+5	%
Power Consumption	P				W
Input Current	I_{SUPPLY}			0.25	A
Synchronization Output Voltage	V_S		11 (-4 V for inverted photodiode signal)		V
Board Dimensions			105 x 70 x 15		mm



Fixed Parameters

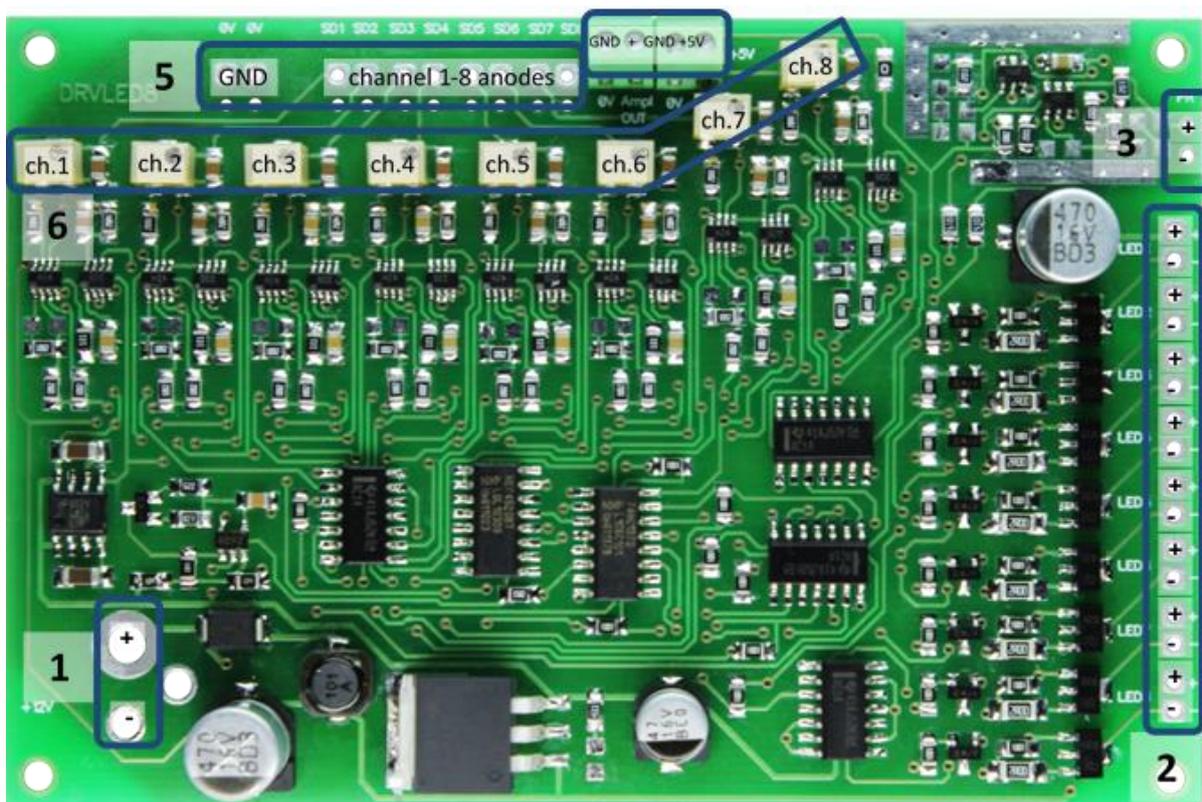
Parameter	Symbol	Pulse Mode	Unit
Pulse Duration	t_p	20 *	μs
Repetition Rate, per Channel	f	0.5	kHz
Repetition Rate, 8 Channels	f	4	kHz
Output Current Amplitude	I_{out}	0.4 *	A

* Pulse duration and current values in the table are default, but can be preadjusted by factory.

Adjustable Parameters

Parameter	Symbol	Pulse Mode	Unit
Output Signal Gain		1x – 10x	

Driver Layout



1. Power input terminal block
2. LED connection contacts
3. Photodiode connection contacts
4. Photodiode preamplifier connection terminal blocks
5. Synchronous detector signal output contacts
6. Output signal gain adjustment potentiometers.



Operating Mode Description

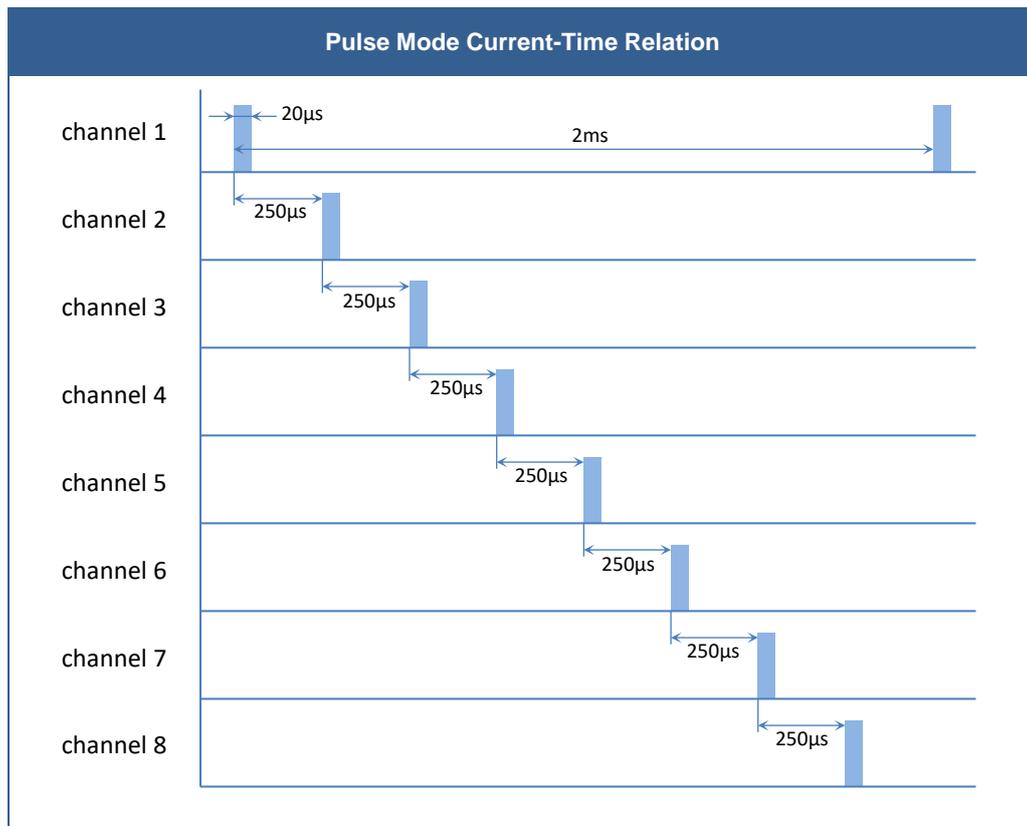
PCB-driver-MCA driver works in a pulse mode. This mode provides LED maximum peak optical power.

LED current value is 0.4 A per channel (by default).

Pulse duration value of every channel is 20 μs (by default) *.

Frequency of each channel is 500 Hz; 8-channel frequency is 4 kHz, this corresponds to photodiode reading frequency.

Every channel lights up sequentially; this enables scanning of a certain spectral range covered by a multi-element LED array.

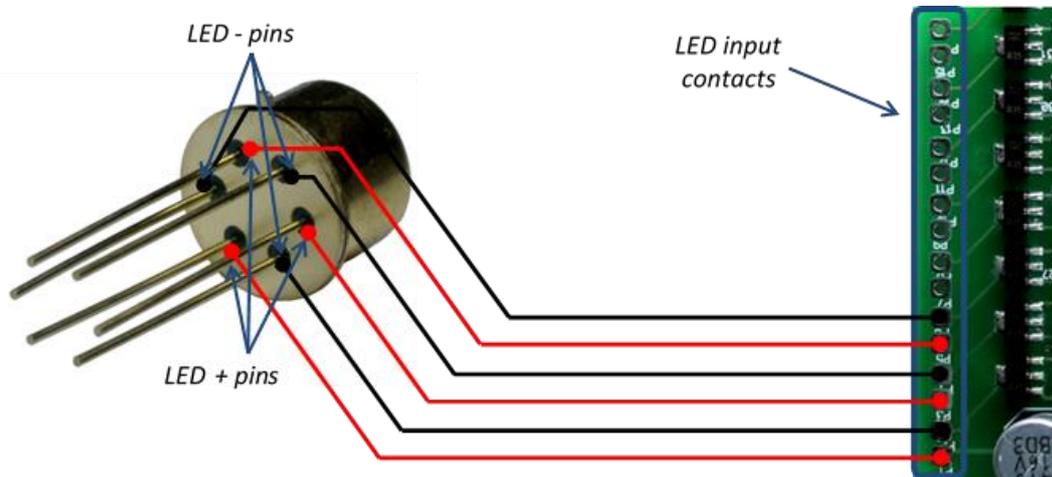


* Pulse duration and current values can be readjusted by factory.



Operating Instruction

- Carefully and securely connect (via soldering) cathode/anode pins of the LED array with LED driving contacts (2).

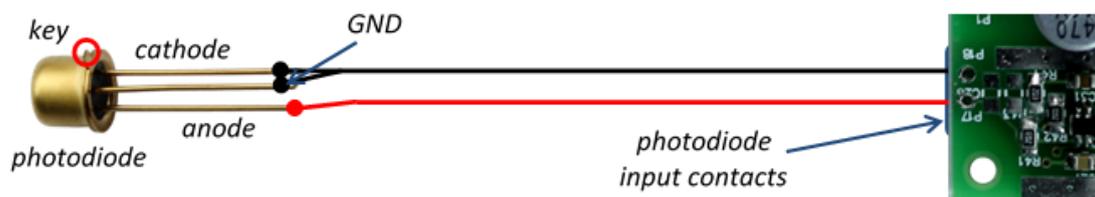


Note! Picture above is for illustration only. Pay your attention to LED electrodes configuration appropriate to your LED array referring to the technical report for the array. Also observe the polarity of each element of the array: "P1", "P3", "P5", "P7", "P9", "P11", "P13", "P15" contacts should be connected to the anodes of LEDs. Improper connection may cause LED damage.

Note! LED matrix case must be electrically isolated from the ground.

Important! You should choose the photodiode model (with or without a built-in preamplifier) to work with this driver beforehand, since the driver is able to operate with only one photodiode type and should be tuned in advance accordingly. Take one of the two following steps (2a or 2b) basing on your choice.

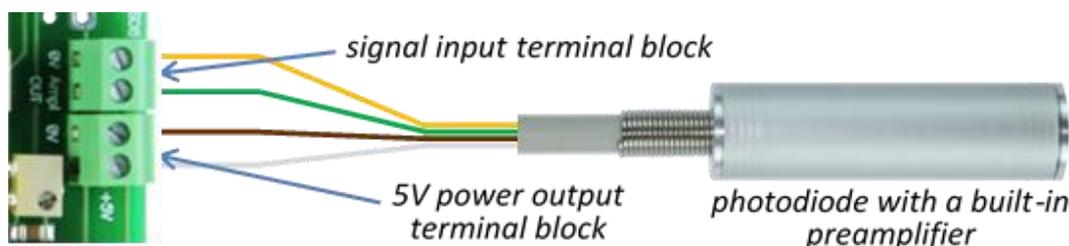
- a.) Carefully and securely connect (via soldering) a photodiode with photodiode connection contacts (3). Photodiode cathode and GND should be electrically connected.



Note! Ensure the wires' shortest possible length between a photodiode and driver board.

Note! Provide reliable screening of the wires.

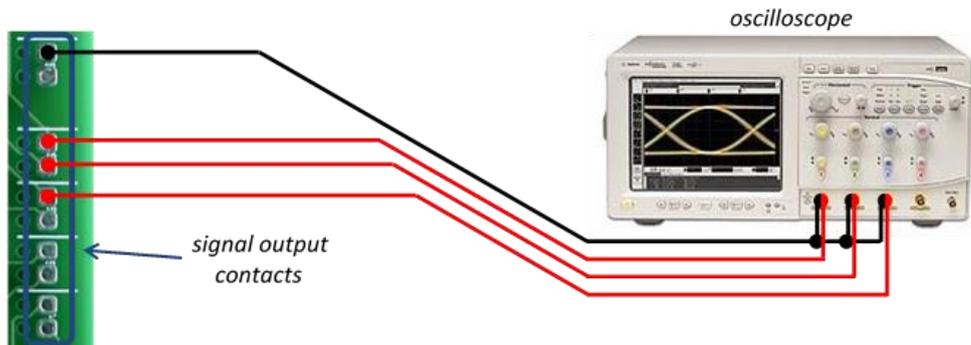
- b.) If you use Mid-IR photodiode with a built-in preamplifier (PDxx-xxRx-AMP models), then connect preamplifier cords to preamplifier input terminal blocks (4) as following:



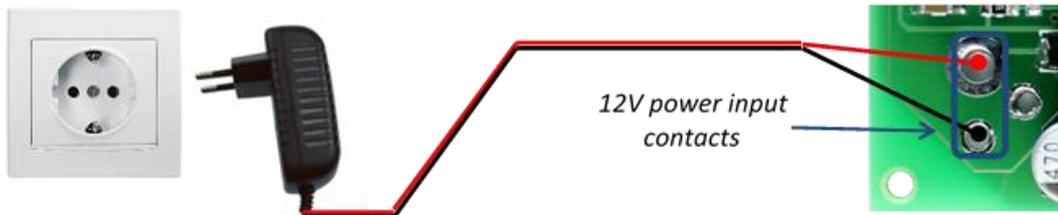
White cord – to the power output "+"; Brown cord – to the power output "0";
green cord – to the signal input "+"; Yellow cord – to the signal input "0"



3. Connect signal output contacts (5) with signal observing device (multimeter, oscilloscope or PC via ADC).



4. In case of need adjust amplification signal gain for each channel with the help of the appropriate potentiometers (6).
5. Connect a power supply to the power input (1).



Note! Please follow the requirements presented in the table on the “Technical Characteristics” page to provide driver’s faultless operation.



Driver Connections

