Prizmatix

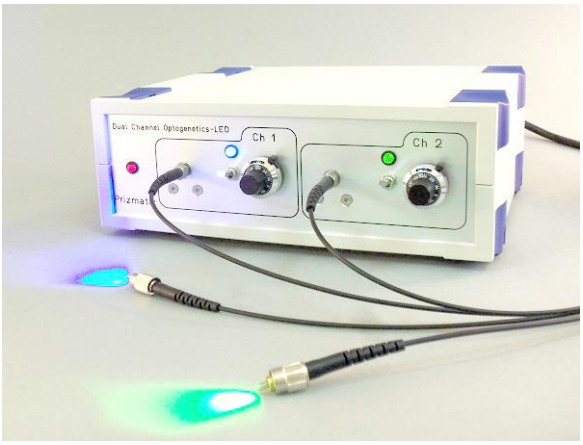
Dual-Optogenetics-LED

Fiber Coupled Dual LED for Optogenetics in Freely Moving Animals

Ver. 11

Introduction

Designed for scaling Optogenetics experiments, Dual-Optogenetics-LED light source features two independent LED channels with independent power and switching control.
The wavelengths combination can suit widely used Stimulation and Silencing opsin pairs, such as ChR / ArchT, ChR / C1V1, ChR / EnpHR3.0 be Blue / Green, Blue / Yellow and Blue / Red and other wavelengths upon request.
Each channel of the Dual-Optogenetics-LED based system enables bilateral activation / inhibition for significant cost saving and without compromising power at implant tip.

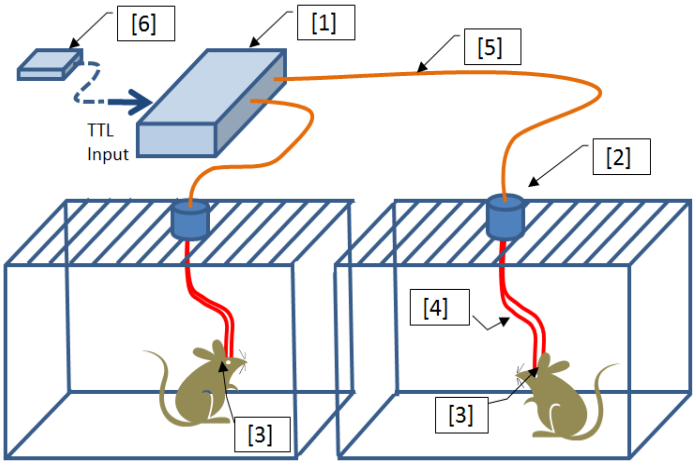


Key Features

- High power density (at Blue >380 mW/mm^2) at implant tip following Rotary Joint and all connections
- Precisely adjustable power by 10-turns potentiometer for each channel
- Isolated (optocoupler) TTL external modulation inputs
- Analog input (0-5V) for power controls
- Instant warm up time

Prizmatix Optogenetics Toolbox for Experiments with Freely Moving Animals:

Prizmatix offers a wide range of standard and customized items comprising the Optogenetics Toolbox for experiments with free-moving animals. Key components include:
[1] Optogenetics-LED-Dual-Blue
[2] Extremely low friction Rotary-Joint
[3] Fiber Optic Cannulae
[4] Single or Dual Fiber for bilateral activation
[5] Fiber patch cord
[6] Optional Pulser module with Windows software
For more information on items 2-6 please see:
https://www.prizmatix.com/optogenetics/Prizmatix-in-vivo-Optogenetics-Toolbox.htm



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Optical Specifications:

Following are the typical data for most common LED wavelengths:

Wavelength	nm	Blue	Green	Orange-Red
Peak wavelength range	nm	450-460	515-525	620-630
Spectrum half width	nm	27	40	22
Optical Power from 200um NA0.66 fiber (1m)	mW	>23	>9	>17
Optical Power from 250um NA0.66 fiber (1m)	mW	>34	>13	>28
Optical Power from 500um NA0.63 fiber (1m)	mW	>125	>50	>90
Optical Power from 1000um NA0.63 fiber (1m)	mW	>550	>230	>300

Optical power and irradiance data for full Optogenetics system including Dual-Optogenetics-LED, fiber patch cord, Rotary Joint, Single fiber and fiber optic cannula (implant):				
Optical Power from 200um cannula	mW	>12	>5.5	>8
Optical Power from 250um cannula	mW	>20	>8.5	>12
Optical Power from 500µm cannula	mW	>80	>32	>50
Irradiance from 200µm cannula	mW/mm^2	>380	>170	>250

Idea!

Prizmatix's unique large emitter LEDs enable bilateral stimulation with a single low cost light source and simple one channel rotary joint. Using a simple Y-shaped fiber bundle at the rotary joint will double the amount of light delivered to the brain, each branch, delivering virtually the same power as a single fiber. This results in significant cost saving in setting up bilateral brain activation and silencing systems, compared to alternative light sources.

Electrical Specifications:

Digital modulation inputs		Optically isolated TTL
Connector for TTL inputs		BNC
Digital modulation frequency	Hz	DC-30000
Rise / Fall time (10% - 90%)	µs	<3 / <10
Connector for Analog input		BNC
Analog input voltage range	V	0-5
Analog modulation frequency	Hz	DC-100
Input Voltage	V	12
Max Input current	A	5
Power Adaptor Input		85-264 VAC, 47-63Hz, 1.5A

General Specifications

Operation temperature range	°C	10 - 35
Storage temperature range	°C	-10 - 55
Operating relative humidity (Non-condensing)	%	<90
Dimensions (L x W x H)	mm	197 x 240 x 80
Weight	g	1200
Power adaptor dimensions (L x W x H)	mm	167 x 67 x 35
Power adaptor weight	g	620
Power adaptor safety		
Fan noise	dBA	28.4

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