

Prizmatix

Dual-Optogenetics-LED

Fiber Coupled Dual LED for Optogenetics in Freely Moving Animals

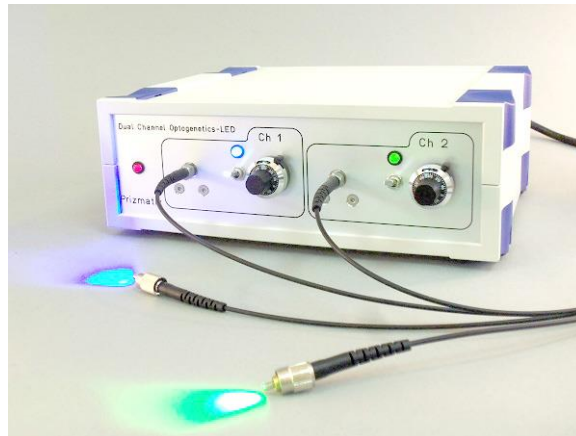
Ver. 09

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 >350 mW/mm²) 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

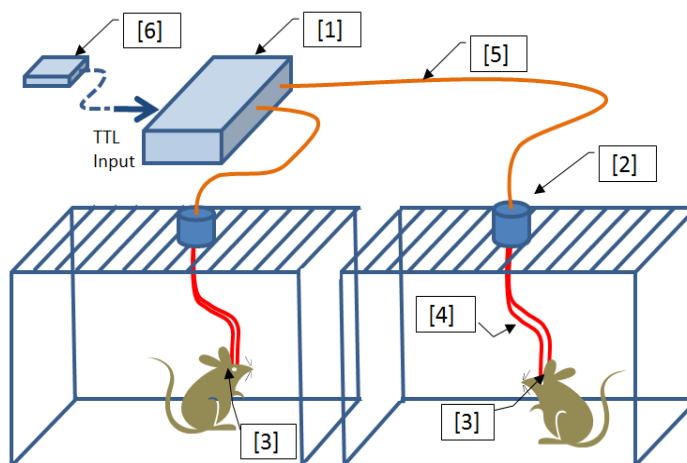
Prizmatix Optogenetics Toolbox for Experiments with Freely Moving Animals:

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:

<http://www.prizmatix.com/optogenetics/Optogenetics-LED-Light-Sources-and-Fiber-Optics.htm>



Optical Specifications:

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Following are the typical data for most common LED wavelengths:

Wavelength	nm	460	520	625
Peak wavelength range	nm	450-465	±7	±7
Spectrum half width	nm	27	40	25
Optical Power from 200um NA0.66 fiber (1m)	mW	>16	>7	>5
Optical Power from 250um NA0.66 fiber (1m)	mW	>25	>10	>8
Optical Power from 500um NA0.63 fiber (1m)	mW	>140	>40	>30
Optical Power from 1000um NA0.63 fiber (1m)	mW	>600	>160	>120

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	>11	>4	>4.5
Optical Power from 250um cannula	mW	>17	>6	>7
Optical Power from 500µm cannula	mW	>64	>20	>25
Irradiance from 200µm cannula	mW/mm ²	>350	>120	>140

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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