

# Prizmatix

## UHP-Microscope-LED-595

### Ultra High Power LED Light Source for Fluorescence Microscopy

Ver. 04

#### Introduction

The Ultra High Power (22Watt) LED 595 nm provides excellent replacement of conventional arc lamp sources in fluorescence microscopy. Many applications such as activation of a light-driven ion pump like Halorhodopsin (NpHR) in Optogenetics may benefit of this new LED light source. The UHP-Mic-LED-595 provides **>650mW** of **collimated** LED power on its output. The LED driver supports CW or fast TTL triggered operation.



#### Key Features

- Compatible with Prizmatix modular Microscope-LED Light Source products family – see below for details
- Optically isolated TTL input for external triggering (no shutter needed)
- LED spectrum can be narrowed by optional band pass filter or a filter wheel.
- Analog Input for external power control by A/D module (Optional feature)
- Computer control via USB and LabView software (Optional feature)
- Excellent for fluorescence excitation
- Stable precisely adjustable power
- Long life (no lamp or laser tube replacement required)
- Rapid warm up time

#### Applications

- Optogenetics – LED activation of Halorhodopsin (NpHR)
- Fluorescence microscopy with fluorophores Alexa Fluor 594, Texas Red, DyLight 594
- Whole body imaging of small animals in-vivo
- Photo activation (PA)
- Bio analysis
- Machine Vision

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## Optical Specifications

|                                 |    |      |
|---------------------------------|----|------|
| Wavelength                      | nm | 595  |
| Wavelength range                | nm | ±5   |
| Spectrum half width             | nm | 16   |
| Collimated optical power output | mW | >650 |


## Benchtop LED Current Controller Specifications

### Features

- Constant current or chopping modes
- TTL external trigger input
- Precise LED current setting by 10 turn dial
- Power settings by Analog input (0-5V) – optional
- Computer USB interface - optional
- Compact and robust enclosure

|                              |    |                            |
|------------------------------|----|----------------------------|
| Digital modulation input     |    | Optically isolated TTL     |
| Connector for TTL input      |    | BNC                        |
| Digital modulation frequency | Hz | DC-30000                   |
| Rise / Fall time (10% - 90%) | µs | <1.5                       |
| Input Voltage                | V  | 12                         |
| Max Input current            | A  | 5.5                        |
| Power Adaptor Input          |    | 100-240 VAC, 50-60Hz, 1.5A |

## General Specifications

|  |       |  |
|--|-------|--|
| Operation temperature range                  | °C    | 10-35  |
| Storage temperature range                    | °C    | -10-55   |
| Operating relative humidity (Non condensing) | %     | <90  |
| Head dimensions                              |       | See drawing below  |
| Head weight                                  | g     | 500  |
| Controller dimensions (LxWxH)                |       | 220mm x 165mm x 51.5mm   |
| Controller weight                            | g     | 700  |
| Power adaptor dimensions (LxWxH)             | mm    | 125 x 50 x 31.5  |
| Power adaptor weight                         | g     | 300  |
| Power Adaptor Safety                         |       |  |
| Fan noise                                    | dB(A) | 38   |

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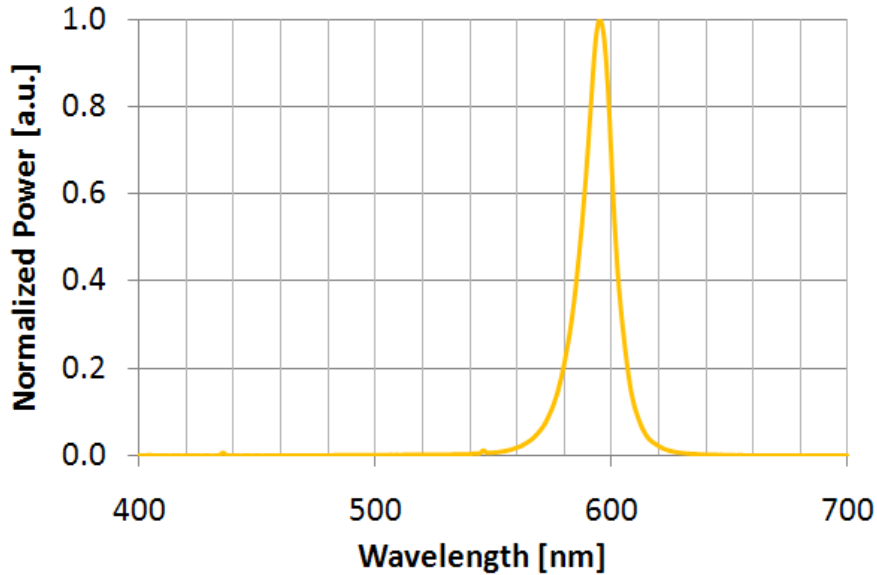
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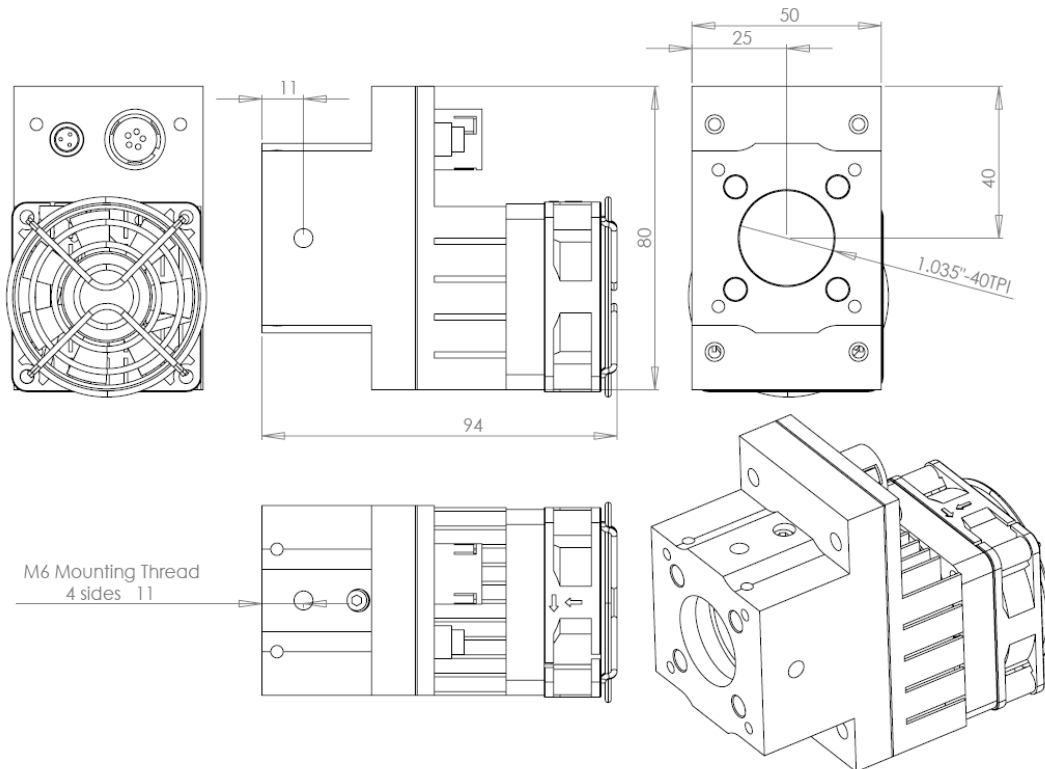
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## Performance



- UHP-Microscope-LED-595 spectrum

## Mechanical Drawings



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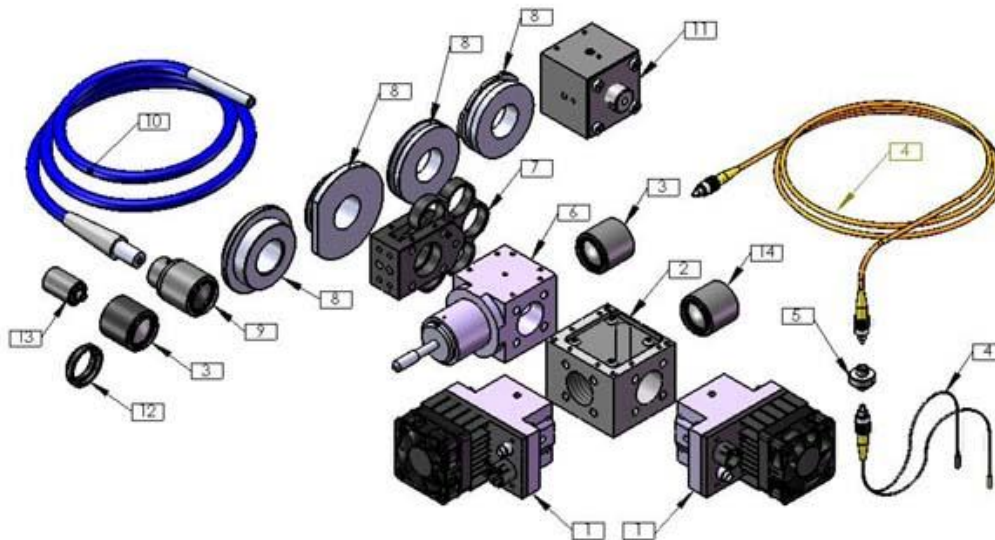
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## Optional Accessories

For full details on optional accessories please see:

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



### Beam Combiner [2]:

Multiple LED beams can be combined into one output beam. For example UV LED can be combined with White LED to create Mercury lamp like configuration. For more details please see: <http://www.youtube.com/watch?v=iv7dlwLHaUE>

### Filter Wheel [7]:

The UHP-Mic-LED can be equipped with a 6 positions filter wheel at the beam output. This accessory is especially useful for UHP-Mic-LED-White light source.

Please see <http://www.prizmatix.com/Optics/filter-wheel.htm> for more details.

### Fiber Coupler Adaptor [3]:

The UHP-Mic-LED can be easily changed from direct microscope coupling to fiber coupled LED configuration by means of Fiber Coupler Adaptor (SMA, CF or ST connector). Please see video clip <http://www.youtube.com/watch?v=iv7dlwLHaUE> for more details.

### Liquid Light Guide Adaptor [9]:

The Microscope-LED can be easily changed from direct microscope coupling to Liquid Light Guide coupled LED configuration by means of LLGA adaptor. Please see video clip

<http://www.youtube.com/watch?v=iv7dlwLHaUE> for more details.

### Fiber Optics Collimator [13]:

The output from optical fiber is divergent according to fiber NA. In order to reduce the divergence angle a collimator module can be used. Prizmatix collimator was especially designed to fit thick core high NA Polymer Optical Fibers. See more details at:

<http://www.prizmatix.com/Optics/collimator.htm>

### Fiber Bundles [4]:

To combine outputs of multiple LEDs a Y-shaped fiber bundle with two or more input branches can be used. Prizmatix can help to configure and build custom fiber bundles for specific applications. See more details at: <http://www.prizmatix.com/dev/Custom-Fiber-Optic-Assemblies.htm>

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