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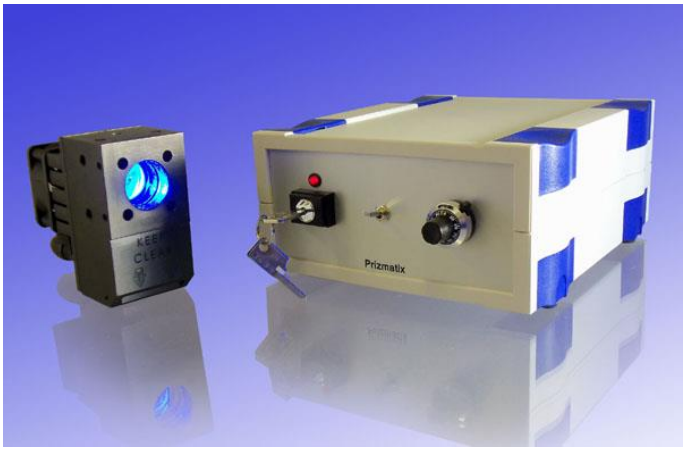
UHP-T-LED-460

Ultra High Power Blue LED Light Source

Ver. 01

Introduction



The Ultra High Power LED provides almost X10 increase of power in comparison with similar High power LED devices. The Ultra High Power LED (**> 50 Watt**) is an effective replacement of lasers and lamps in many power demanding applications, such as optogenetics, fluorescence microscopy, machine vision, chemical reaction activation and numerous others.

Fluorescence microscopy applications will benefit from highly homogenous and flat field illumination. The 460 nm LED will supply the needs of such power hungry methods as Photostimulation of Channelrhodopsin (ChR1, ChR2), FISH and FRAP.

This new member of the modular OptiBlocks family provides **>3.3 Watt of collimated** LED power on its output and can be used with a full range of other optical OptiBlocks such as Fiber Coupler, Liquid Light Guide coupler, Beam Combiner, Filter Wheel, Beam Switcher and others.

Key Features

- Single chip ultra-high brightness blue LED
- Optically isolated TTL input for external triggering (no shutter needed)
- Computer control via USB and LabView software or Analog input (optional)
- Stable precisely adjustable power
- Long life (no lamp or laser tube replacement required)
- Rapid warm up time
- Compatible with Prizmatix modular Microscope-LED Light Source products family – see below for details

Applications

- Optogenetics: Photostimulation of Channelrhodopsin ChR1, ChR2
- Excitation of GFP, Quantum Dots, di-8-ANEPPS, Auramine
- Photo activation (PA)
- Fluorescence recovery after photo bleach (FRAP)
- Fluorescence in-situ hybridization (FISH)
- Whole body imaging of small animals in-vivo

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- Inspection and machine vision and OEM

Optical Specifications

Wavelength	nm	460
Wavelength range	nm	5
Spectrum FWHM (full width at half max.)	nm	~26
Collimated optical power output *	Watt	>3.3

* Above values are for CW operation mode.

Benchtop LED Current Controller Specifications

- Constant current or chopping modes
- Precise LED current setting by 10-turn dial
- Opto-isolated fast TTL external trigger input
- Analog Input 0-5V for power control (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	<2
Input voltage	V	12
Max input current	A	6.5
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
LED head dimensions		See drawing below
LED head weight	g	350
Controller dimensions (L x W x H)	mm	197 x 174 x 80
Controller weight	g	400
Power adaptor dimensions (L x W x H)	mm	175 x 72 x 35
Power adaptor weight	g	650
Power Adaptor Safety		
Head fan noise	dBA	38

Performance

원우시스템즈 WONWOO SYSTEMS
Tel (02) 3289-1290 Fax (02) 3289-1293
서울시 동작구 신대방1가길 38 (신대방 719 동작상떼빌) 106동 209호
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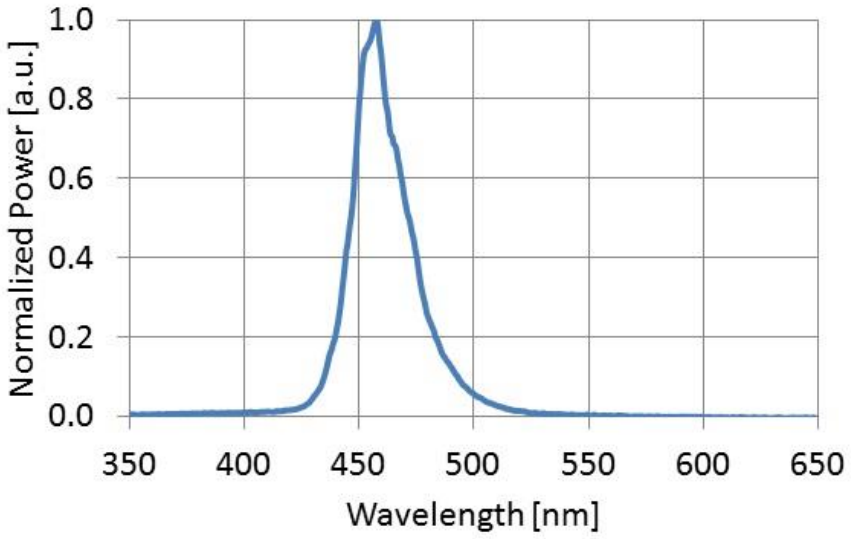
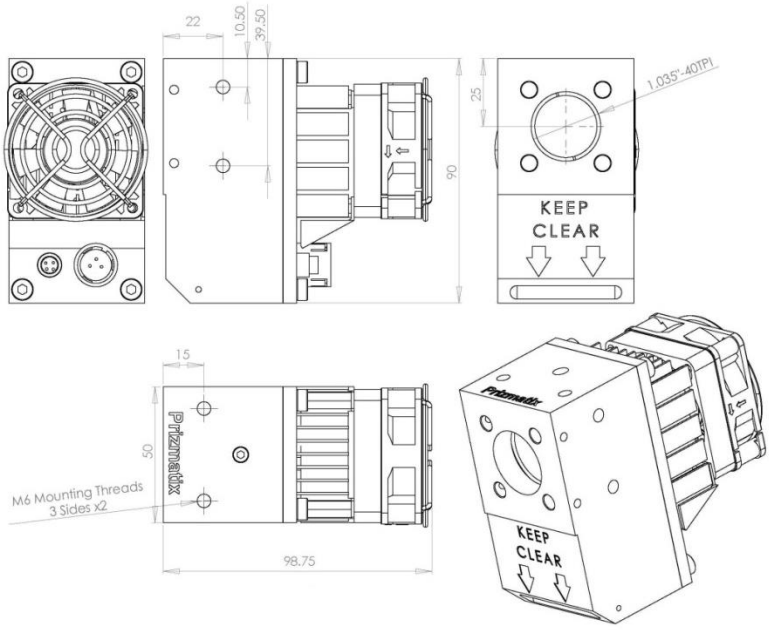


- UHP-T-LED-460 spectrum

Mechanical Drawings



* Specifications subject to changes without notice

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Tel (02) 3289-1290 Fax (02) 3289-1293
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UHP-T-EP

Ultra-High Power LED Light Source

Ver. 03

Introduction

The Ultra High Power LED provides more than X10 increase of power in comparison with similar High power LED devices. The Ultra High Power LED (**> 50 Watt**) is an effective replacement of lasers and lamps in many power demanding applications, such as fluorescence microscopy, Optogenetics in-vitro, patterned illumination, confocal microscopy, chemical reaction activation and numerous others. Fluorescence microscopy applications will benefit from highly homogenous and flat field illumination. The shielded UHP-T-EP LED head contain the high current driver, while the LED controller box contains control functions. This arrangement eliminating much of RFI / EMI interference common in high current light sources. The controller features Optically Isolated TTL and Analog Inputs. These features make this product especially suited for electrophysiology rig applications. UHP-T-EP can be used with a full range of other optical OptiBlocks such as Fiber Coupler, Liquid Light Guide coupler, Beam Combiner, Filter Wheel, Beam Switcher and others See Optional Accessories section below.

Key Features

- Single ultra-high brightness LED chip provide highly homogeneous illumination over whole field of view.
- Shielded LED head with high current driver, low RFI/EMI.
- Optically isolated TTL input for external triggering (no shutter needed) or strobe operation
- Optically isolated Analog input (0-5V) for LED power control by external device like D/A interface
- Computer control via USB by Windows software, LabView VI or uManager (optional).
- Long life (no lamp or laser tube replacement required)
- Compatible with Prizmatix modular Microscope-LED Light Source products family – see below for details.
- Special low optical noise model available for detection of small signals (option).
- Stable precisely adjustable power

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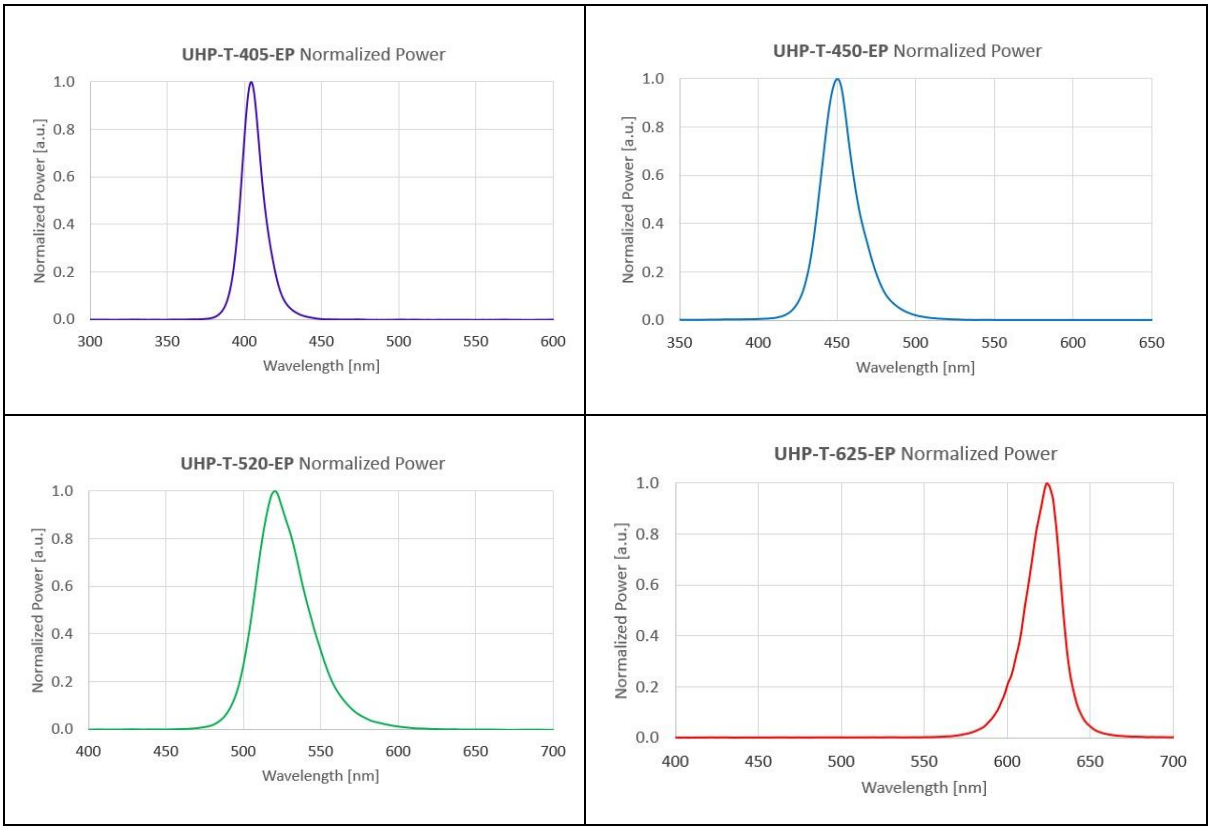
Applications

- Fluorescence microscopy in electrophysiology rig.
- *In-Vitro* Optogenetics
- Multi-wavelength systems
- Bio analysis
- OEM

Optical Specifications – Color LEDs

P/N	Peak [nm]	Centroid [nm]	FWHM [nm]	Power Collimated [mW]
UHP-T-405-EP	404	406	16	2100
UHP-T-450-EP	451	453	25	2300
UHP-T-520-EP	520	527	37	1000
UHP-T-625-EP	624	620	24	850
UHP-T-630-EP	636	632	26	1000
UHP-T-650-EP	656	652	26	1000



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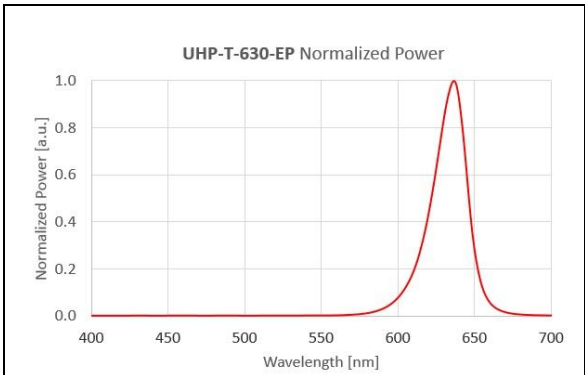

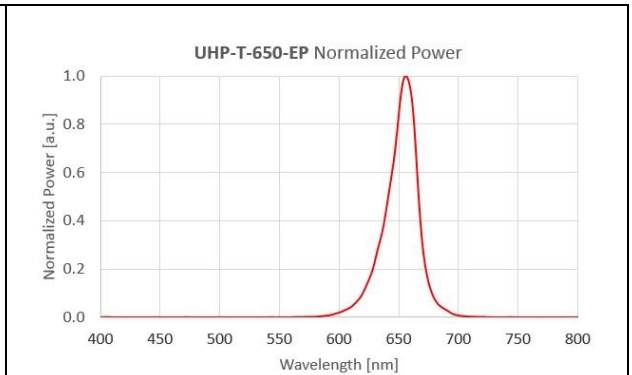

Benchtop LED Current Controller Specifications

- Constant current or chopping modes
- Precise LED current setting by 10 turn dial
- TTL external trigger input
- Analog input for external LED power control (0-5Vdc)
- Optically isolated TTL and Analog inputs
- Compact and robust enclosure

Connectors for TTL and Analog input		Optically Isolated BNC
Digital modulation frequency	Hz	DC - 10000
Rise / Fall time	µs	<10 / <3
Analog input voltage range	V	0 - 5
Analog modulation frequency	Hz	DC - ~100
Current controller supply voltage	V	12
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

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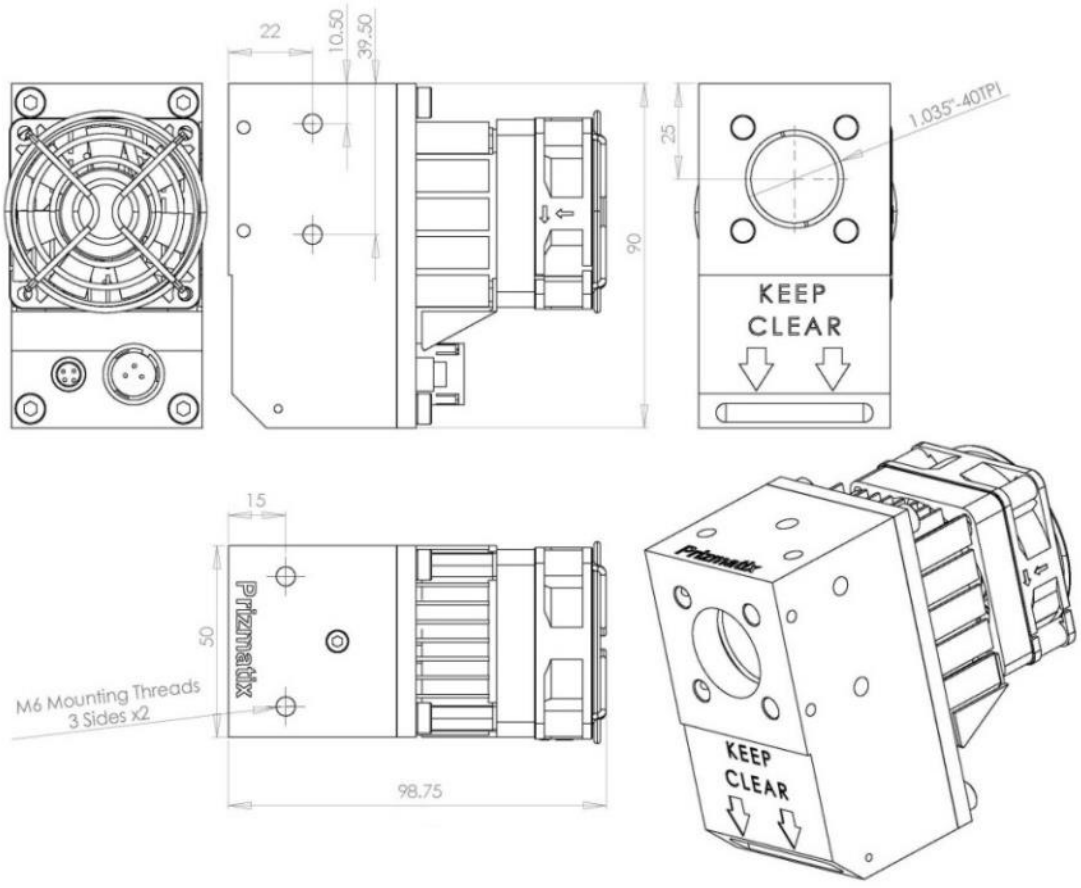
Head dimensions		See drawing below
Head weight	g	350
Controller dimensions (L x W x H)	mm	197 x 174 x 80
Controller weight	g	400
Power adaptor dimensions (L x W x H)	mm	175 x 72 x 35
Power adaptor weight	g	650
Power Adaptor Safety		
LED Head fan noise	dBA	38

Mechanical Drawings



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원우시스템즈 WONWOO SYSTEMS
Tel (02) 3289-1290 Fax (02) 3289-1293
서울시 동작구 신대방1가길 38 (신대방 719 동작상떼빌) 106동 209호
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UHP-T-LA
Ultra-High Power LED Light Source

Ver. 03

Introduction

The UHP-T-LA LED series Ultra High Power LEDs (~50 Watt) utilize dense packaged LED Array to produce powerful collimated beam (direct illumination).
LED Array technology allows to create illumination at wavelengths where single large emitter (EP, DI and MP series) technology is not available.
LED Array technology is useful in many power demanding applications such as direct microplate illumination, fluorescence, microscopy and machine vision.
The UHP-T-LA optics contains primary CPC (Compound Parabolic Concentrator) style lens followed by collimating aspheric lens to optimize illumination and provide beam adjustment.
The LED current controller supports CW or pulsed operation via TTL trigger. The LED power can be controlled by 10 turn dial or via Analog input (0-5V).
The UHP-T-LA LEDs are available in violet, blue, yellow, red and near IR wavelengths.
The product can be used in various configurations such as collimated light source, directly connected to microscope, coupled to liquid light guide or coupled to optical fiber. Multi-wavelength light source can be easily created by several UHP-T units combined by a Beam Combiner.

Key Features

- Ultra-High Power LED Array
- Optically isolated TTL input for external triggering (no shutter needed) or strobe operation
- Optically isolated Analog input (0-5V) for LED power control by external device like D/A interface
- Computer control via USB by Windows software, LabView VI or uManager (optional).
- Long life (no lamp or laser tube replacement required)
- Compatible with Prizmatix modular Microscope-LED Light Source products family – see below for details.
- Stable precisely adjustable power

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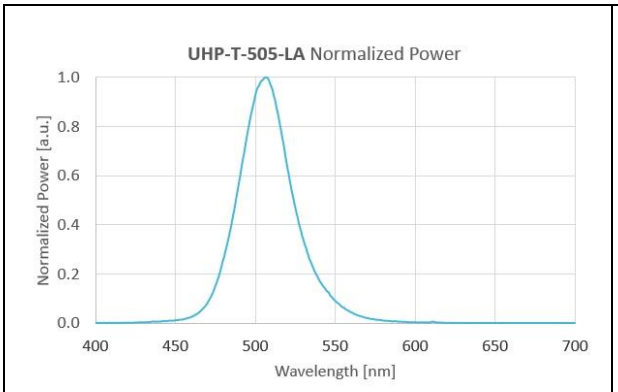
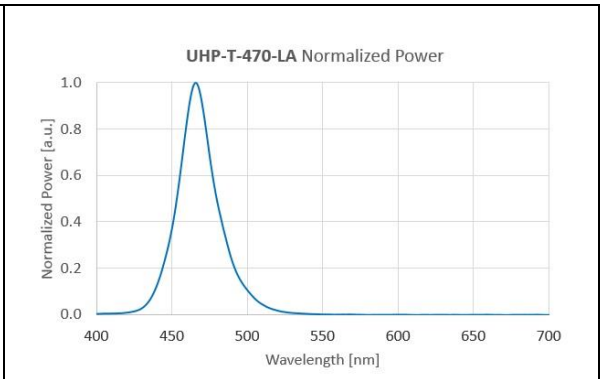
Applications

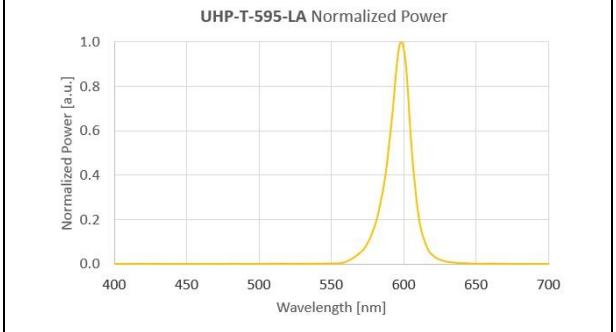
- Fluorescence microscopy
- *In-Vitro* Optogenetics
- Microplate illumination, Petri Dish illumination
- Whole body imaging of small animals
- Bio analysis
- OEM

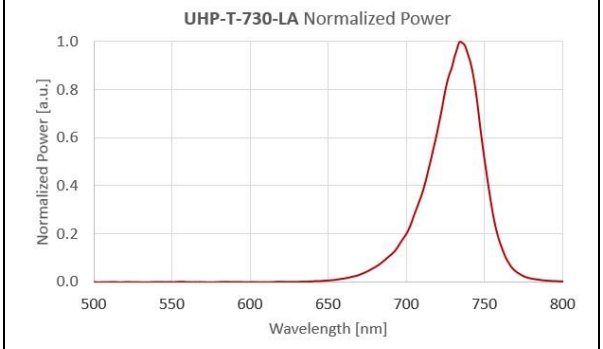
Optical Specifications – Color LEDs

P/N	Peak [nm]	Centroid [nm]	FWHM [nm]	Power Collimated [mW]
UHP-T-505-LA	506	508	37	1000
UHP-T-470-LA	467	469	27	4700
UHP-T-595-LA	598	596	17	720
UHP-T-730-LA	734	730	35	800









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Benchtop LED Current Controller Specifications

- Constant current or chopping modes
- Precise LED current setting by 10 turn dial
- TTL external trigger input
- Analog input for external LED power control (0-5Vdc)
- Optically isolated TTL and Analog inputs
- Compact and robust enclosure

Connectors for TTL and Analog input		Optically Isolated BNC
Digital modulation frequency	Hz	DC - 10000
Rise / Fall time	µs	<10 / <3
Analog input voltage range	V	0 - 5
Analog modulation frequency	Hz	DC - ~100
Current controller supply voltage	V	12
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
Head dimensions		See drawing below
Head weight	g	350
Controller dimensions (L x W x H)	mm	197 x 174 x 80
Controller weight	g	400
Power adaptor dimensions (L x W x H)	mm	175 x 72 x 35
Power adaptor weight	g	650
Power Adaptor Safety		
LED Head fan noise	dBA	38

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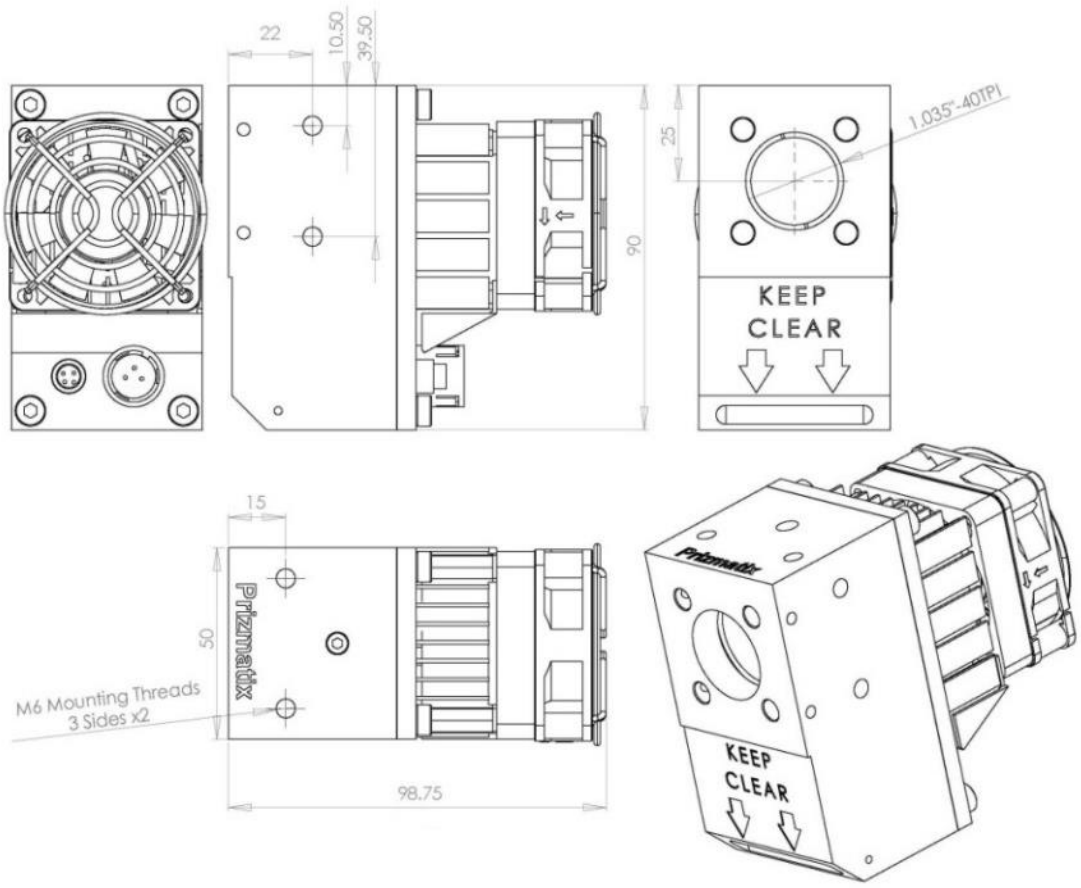
Mechanical Drawings



* Specifications subject to changes without notice

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UHP-T-LED-White-High-CRI

Ultra High Power LED Light Source for Fluorescence Microscopy

Ver. 09

Introduction

The Ultra High Power White LED (~48 Watt) is an effective replacement of Mercury and Xenon lamps in many power demanding applications, such as fluorescence microscopy and machine vision.
This new member of the modular OptiBlocks family provides **>2.3 Watt of *collimated*** White High CRI LED power on its output. The LED driver supports CW or pulsed operation via TTL trigger.
The product can be used in various configurations such as collimated white light source, coupled to liquid light guide or coupled to optical fiber.

Key Features

- Compatible with Prizmatix modular Microscope-LED Light Source products family – see below for details
- Single chip Ultra High Brightness White LED
- Optically isolated TTL input for external triggering (no shutter needed) or strobe operation
- Analog input (0-5V) for LED power control by external device like D/A interface
- LED spectrum can be narrowed by band pass filters or a filter wheel.
- Computer control via USB and LabView software (optional)
- Excellent for fluorescence excitation
- Stable precisely adjustable power
- Long life (no lamp or laser tube replacement required)
- Rapid warm up time

Applications

- Fluorescence microscopy
- Whole body imaging of small animals in-vivo
- Bio analysis
- Machine Vision
- OEM

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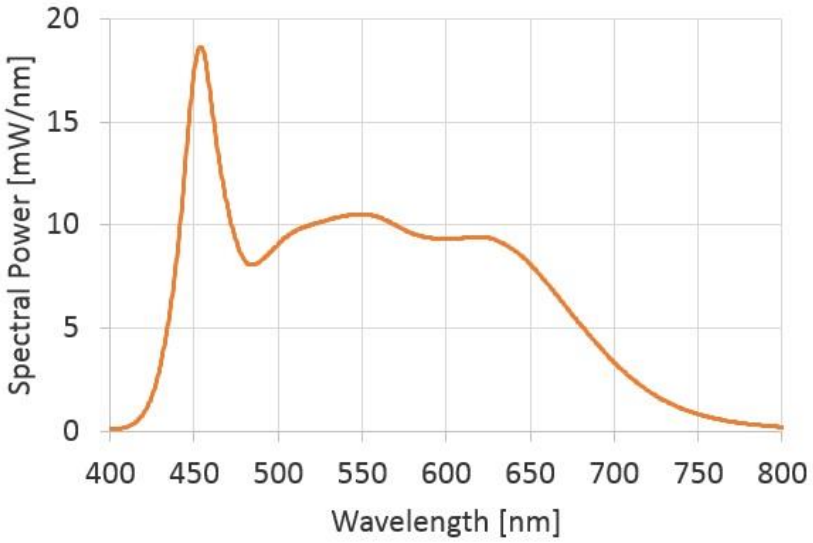
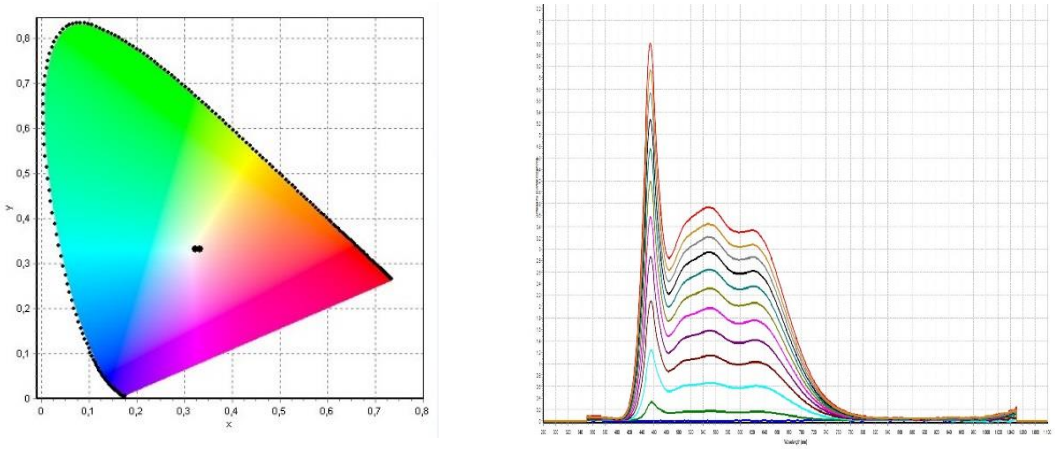
Optical Specifications*

Wavelength	nm	See Spectrum
Collimated optical power	W	>2.3
Power from 3mm core LightGuide and Collimator	W	>1
Collimated Flux output	lumen	700
Chromacity CIEx / CIEy		0.323 / 0.333
Color Temperature	K	5965
CRI Ra		96.5

* The data is for High CRI, other LED color temperature are availible upon request



UHP-T-LED-White-Hi-CRI: Spectrum



UHP-T-LED-White-Hi-CRI: CIE Chromaticity diagram (left), Output spectrum vs. current (right)

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서울시 동작구 신대방1가길 38 (신대방 719 동작상떼빌) 106동 209호
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Benchtop LED Current Controller Specifications

- Constant current or chopping modes.
- Precise LED current setting by 10 turn dial.
- TTL external trigger input.
- Analog input for external LED power control (0-5Vdc).
- Compact and robust enclosure.
- Optional: Computer control via USB, uManager, LabView or any other software capable of sending ASCII command to a COM port.

Digital and Analog inputs		Optically isolated BNCs
Digital modulation frequency	Hz	DC - 30000
Rise / Fall time	µs	<10
Analog input voltage range	V	0 - 5
Analog modulation frequency	Hz	DC - ~100
Current controller supply voltage	V	12
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
Head dimensions		See drawing below
Head weight	g	350
Controller dimensions (L x W x H)	mm	197 x 174 x 80
Controller weight	g	400
Power adaptor dimensions (L x W x H)	mm	175 x 72 x 35
Power adaptor weight	g	650
Power Adaptor Safety		
LED Head fan noise	dBA	38

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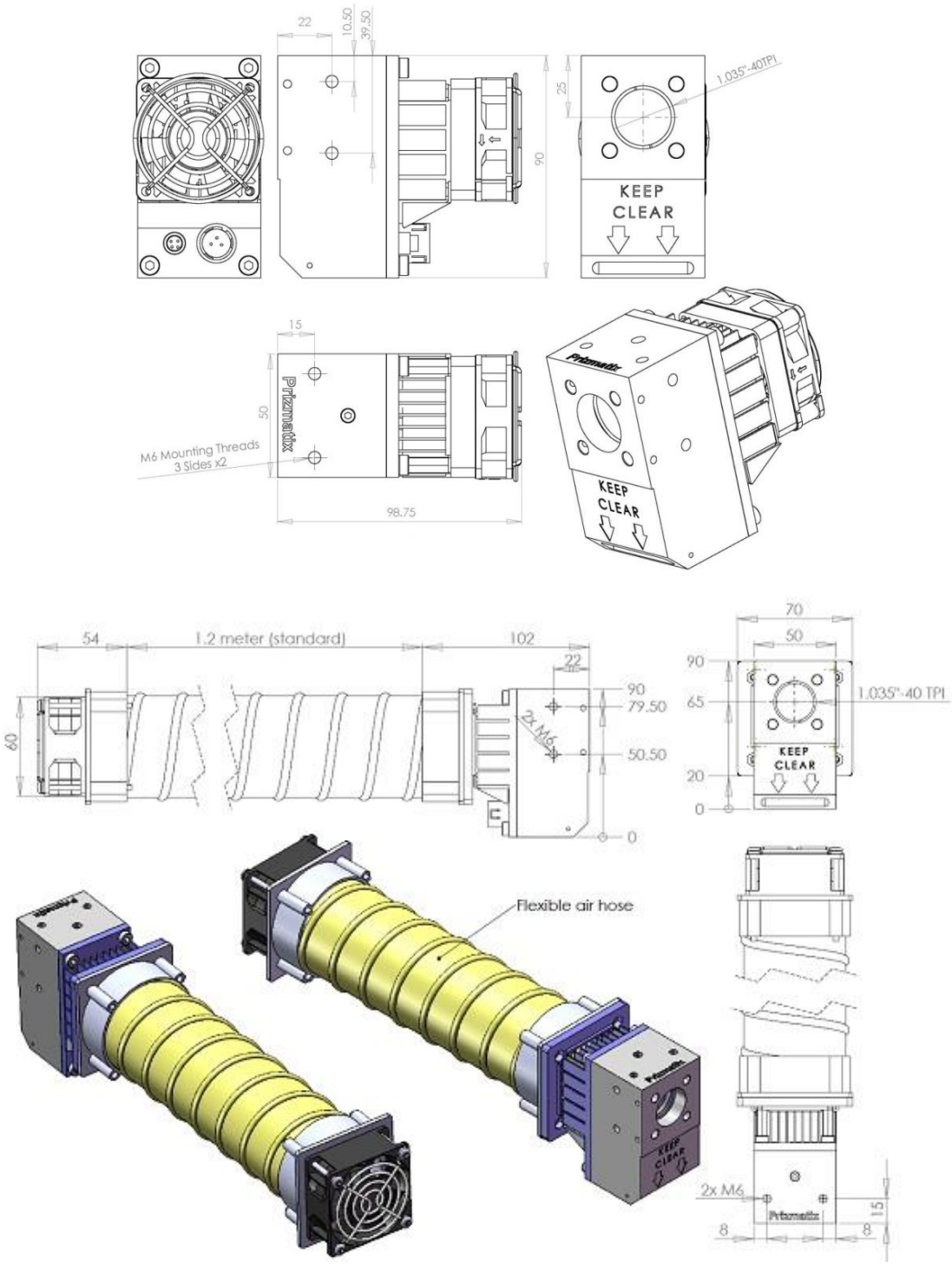
Mechanical Drawings



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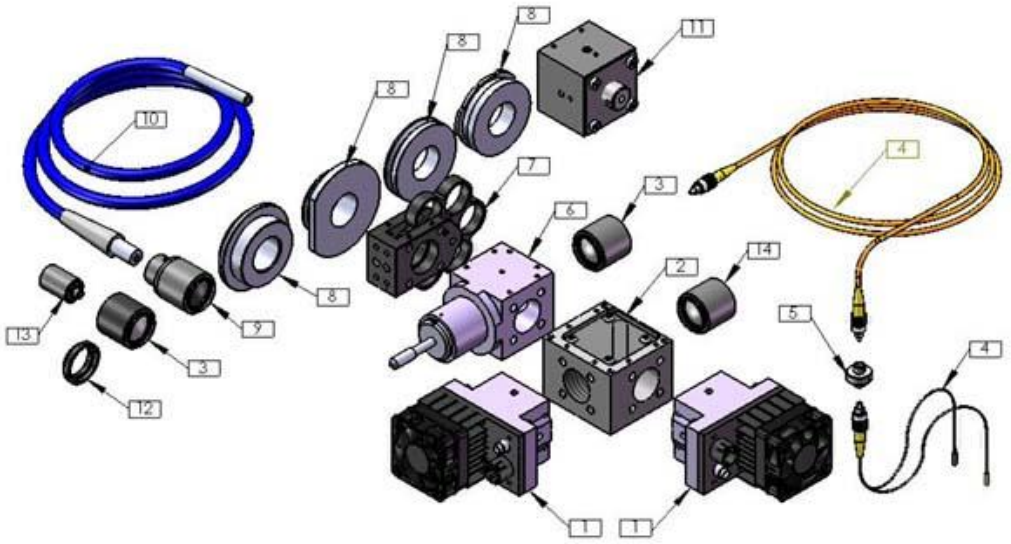
Optional Accessories

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 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 Gide coupled LED configuration by means of LLGA Adapto. 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