# BioLED Light Source Solutions

(Related Products: BLS-SA0x-US, BLS-PL0x-US and BLS-series LED sources)

## FEATURES

- Turn-key, complete light source solutions
- Enhanced output optical power in "IntelliPulsing" mode for Optogenetics
- Over 100 LED modules, from fiber-coupled, collimated, lightguide-coupled to microscope illuminator
- Wide range of wavelengths UV, VIS to NIR and white
- TTL triggers
- Fast time response (μs)
- Operates with or without a PC
- Powerful and user-friendly GUI

## APPLICATIONS

- Optogenetics
- Fluorescence excitation
- Biophotonics applications

**BioLED Control Module**

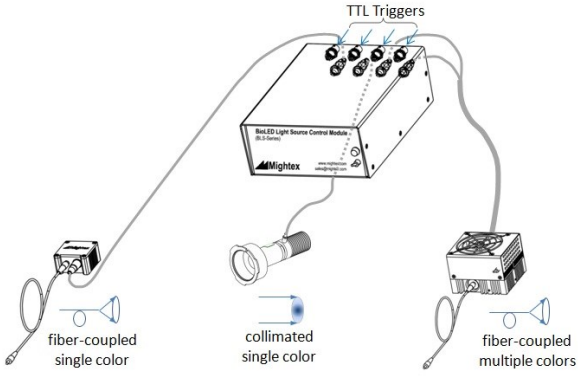
(a) Front view.

(b) Rear view.

## PRODUCT DESCRIPTION

Mightex BLS-series BioLED light sources are modularized fully-customizable turn-key solutions for optogenetics, fluorescence excitation, and other biophotonics applications. Precisely-timed and high-intensity light pulses are required in optogenetics experiments to activate channelrhodopsins (ChR2, ChR1 etc.) and halorhodopsins (NpHR) in order to excite and inhibit neurons. To meet these requirements, Mightex has developed a proprietary "IntelliPulsing" technology to allow BLS-series sources to output significantly higher power in pulse mode than what the LEDs are rated for in CW mode.

*Figure-1: A typical example of Mightex BioLED light source turn-key solution. This example shows a solution that includes a Control Module and three (3) Optical Heads: one single-color fiber-coupled LED (i.e. FCS-series), one single-color collimated LED (i.e. LCS-series) with a Nikon microscope adapter, and one multi-wavelength fiber coupled LED (i.e. WFC-series, with two colors).*




As shown in Figure-1, a typical Mightex BioLED light source consists of a Control Module and up to four (4) Optical Heads (i.e. LED modules), which can be chosen from over 100 models of LED sources and from over 30 (and a growing number of) wavelengths/colors ranging from 240nm to 940nm (see Figure-2). A product selection guide is illustrated in Figure-3. After a customer has chosen the desired optical head(s), they are programmed together with the Control Module in factory to provide a turn-key solution ready to use upon delivery. Some of these optical heads are capable of outputting more than 1W of optical power. A wide selection of illumination formats (e.g. fiber-coupled, collimated and lightguide coupled etc.) will suit the illumination needs for a broad range of applications. Below are some examples -

For *in vivo* stimulations:

- Fiber-coupled, single-fiber, single color;
- Multi-wavelength fiber coupled, single fiber, multiple colors;
- Precision spotlights.

For *in vitro* stimulations (e.g. cultured neurons and brain slices under microscopes):

- Collimator source and microscope sources, single or multiple colors;
- Lightguide-coupled;
- Wavelength-switchable source (collimated beam or lightguide coupled).

All standard Mightex LED light sources can be integrated into the BLS-series light source system. Furthermore, customers may choose optical heads with different wavelengths and formats to be integrated with the same control module. Multiple control modules can be 'stacked' in software to support more than 4 optical heads.

The control module features a linear LED driver design that eliminates light intensity ripples and oscillations often observed when low-cost buckpuck nonlinear drivers are used. Clean and highly repeatable pulses are critical to quantitative experiments. Both CW mode and pulse modes are supported. Time resolution of the control module is 20μs and light intensity can be adjusted with 0.1% increments. Each driving channel on the control module has its own TTL trigger input. Rising edge, falling edge, and follower mode are supported in the trigger mode.

The control module can be operated without being connected to a computer. Once pulse sequences are programmed and stored into the control module (by user through software), the light source can operate alone without a computer. All it needs is a TTL trigger signal to output the user-programmed pulse sequences.

Mightex BioLED light sources come with a Windows-based operation software featuring an intuitive yet powerful graphic user interface. A software development kit (SDK) is also provided for user integration into environment such as Labview and Matlab.

Mightex Systems, 2343 Brimley Road, Suite 868, Toronto, Ontario M1S 3L6, Canada
Tel: 1-416-840-4991 or 1-925-218-1885, Fax: 1-416-840-6541, Email: sales@mightex.com
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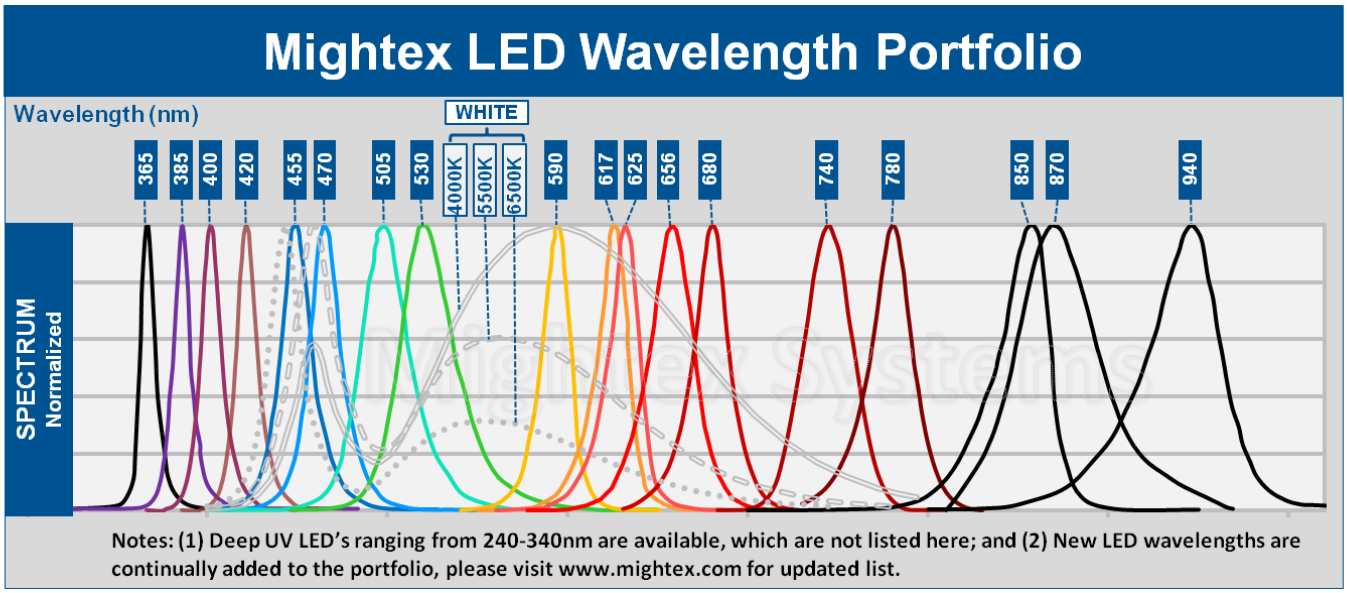


*Figure-2: Typical spectra of Mightex's LED sources. Please contact Mightex for UV LED spectra between 240-365nm.*

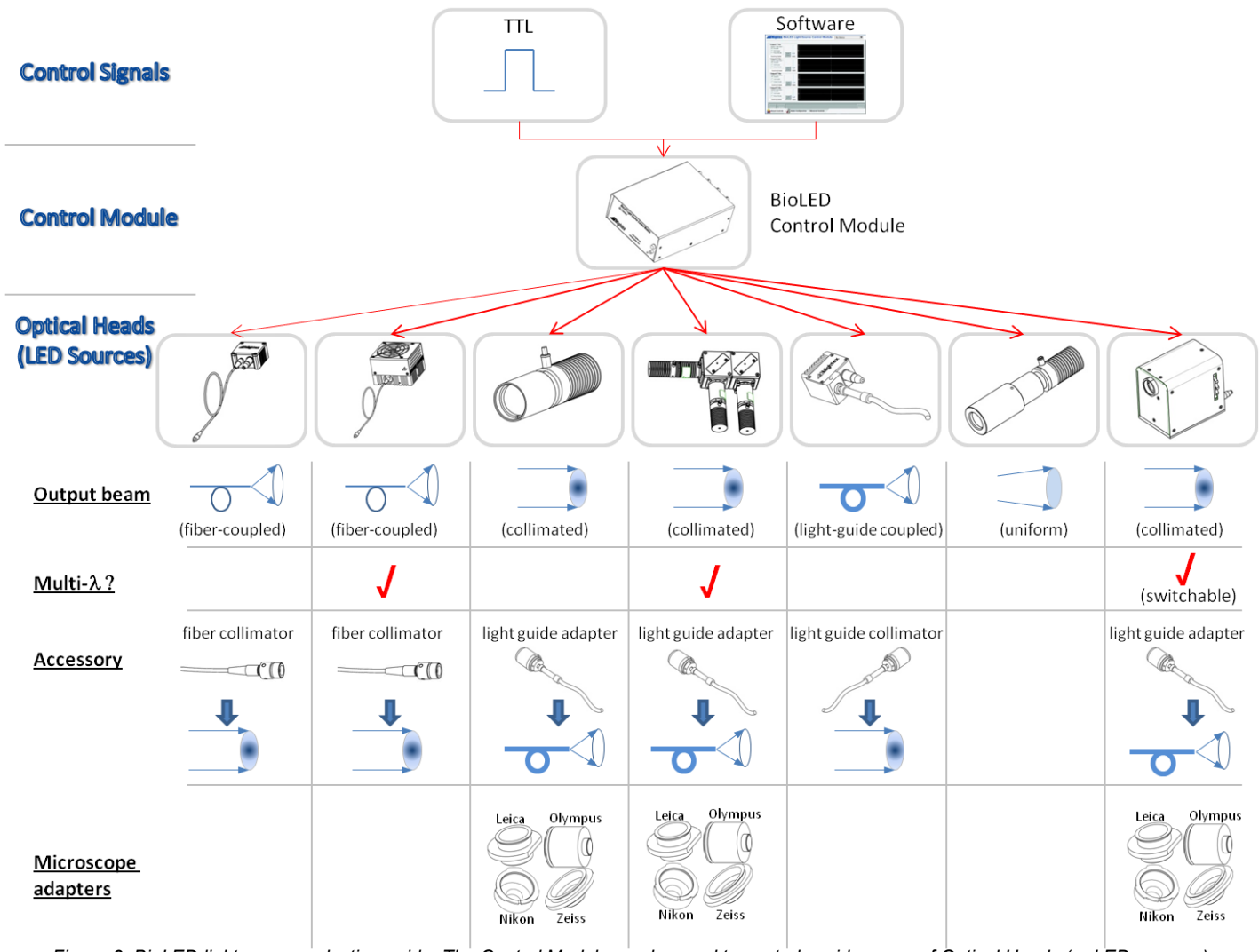


*Figure-3: BioLED light source selection guide. The Control Module can be used to control a wide range of Optical Heads (or LED sources).*

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Tel: 1-416-840-4991 or 1-925-218-1885, Fax: 1-416-840-6541, Email: sales@mightex.com
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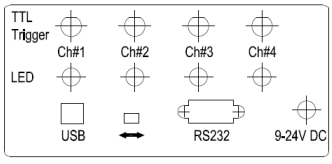
# PERFORMANCE SPECIFICATIONS

## (1) Electrical Specifications for Control Modules.

| Parameter | BLS-SA02-US | BLS-SA04-US | BLS-PL02-US | BLS-PL04-US | Unit |
|---|---|---|---|---|---|
| Synchronization with Polygon400 | NO | | YES | | |
| Number of channels | 2 | 4 | 2 | 4 | |
| Power supply, $V_{dc}$ | 9 ~ 24 | | | | V |
| Output intensity resolution | 0.1% | | | | - |
| Time resolution | 20 | | | | µs |
| Maximum number of pulses in one period | 21 | | | | - |
| Maximum repeat count of pulse sequence | $10^8$ | | | | - |
| External trigger level | TTL* | | | | - |
| Trigger connector type | BNC | | | | - |
| Max. Trigger delay | 25 | | | | µs |
| Optical Head connector type | 2-pin Aero connector | | | | - |
| Host interface | USB or RS232, selectable | | | | - |
| Non-volatile memory | Yes** | | | | - |
| Dimensions | 213 (L) x 156 (W) x 73 (H) | | | | mm |
| Weight | 800 | | | | g |




Rear Panel

*. An opto-coupler is used for each trigger input, which can accept voltage from 3.6~12 V as "H". Please note that the trigger source should be capable of providing at least 5mA current when it's "H".
**. Built-in non-volatile memory allows all the operation parameters to be stored on the BioLED Control Module, thus the device can work without a host connected.

## (2) Optical Specifications for BLS-series Optical Heads (i.e. LED Modules)

### 2.1. Fiber-Coupled LED Modules

Part Numbers and Ordering Information

BLS - FCS - xxxx - 000

Wavelength Code — Configuration Code

Fiber Patch Cord Ordered Separately

| Wavelength Code (xxxx) | Description | Peak Wavelength (nm) | Radiant Flux[1] (mW) | |
|---|---|---|---|---|
| | | | CW Mode | IntelliPulsing Mode |
| 0000 | Cool White | 5,500K | 3.2 | 6.5 |
| 0001 | Warm White | 3,400K | 3.2 | 6.5 |
| 0240 | Deep UV | 240 | 10µW | 20µW |
| 0255 | Deep UV | 255 | 45µW | 90µW |
| 0260 | Deep UV | 260 | 45µW | 90µW |
| 0275 | Deep UV | 275 | 90µW | 180µW |
| 0280 | Deep UV | 280 | 90µW | 180µW |
| 0285 | Deep UV | 285 | 90µW | 180µW |
| 0295 | Deep UV | 295 | 75µW | 150µW |
| 0310 | Deep UV | 310 | 90µW | 180µW |
| 0325 | Deep UV | 325 | 60µW | 120µW |
| 0340 | Deep UV | 340 | 60µW | 120µW |
| 0365 | UV365nm | 365 | 5.8 | 12 |
| 0385 | UV385nm | 385 | 5.8 | 12 |
| 0400 | UV400nm | 400 | 0.8 | 1.6 |
| 0400 | UV400nm, 4W | 400 | 3.5 | 13 |
| 0420 | 420nm | 420 | 2.6 | 5.2 |
| 0455 | Royal Blue | 455 | 7.0 | 15 |
| 0470 | Blue | 470 | 8.0 | 16 |
| 0505 | Cyan | 505 | 3.5 | 7.0 |
| 0530 | Green | 530 | 2.0 | 4.0 |
| 0590 | Amber | 590 | 1.2 | 2.5 |
| 0617 | Red-Orange | 617 | 6.5 | 13 |
| 0625 | Red | 625 | 6.5 | 13 |
| 0656 | Deep red | 656 | 6.5 | 13 |
| 0657 | Deep red | 657 | 1.0 | 2.0 |
| 0680 | Deep red | 680 | 1.4 | 2.8 |
| 0740 | NIR 3W | 740 | 3.6 | 7.2 |
| 0780 | NIR | 780 | 2.2 | 4.5 |
| 0850 | NIR | 850 | 4.0 | 8.0 |
| 0870 | NIR | 870 | 1.4 | 2.8 |
| 0940 | NIR | 940 | 4.0 | 8.0 |

Note: * - measured with a 400µm core 0.22 numerical aperture (NA) fiber. Output optical power scales approximately linearly with fiber core area and $NA^2$. With a 400micron-core 0.39NA fiber, the output power will be 3.14x as what has been stated in the table above. For example, for the 470nm wavelength, the output power will become 25mW in CW mode and 50mW in "IntelliPulsing" mode, instead of 8mW and 16mW (respectively) as shown in the table above.

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## 2.2. Multi-Wavelength Fiber-Coupled LED Modules

Part Numbers and Ordering Information

BLS - WFC - Hx - xxxx - xxxx - …… - xxxx

- Hx: # of Wavelengths
- xxxx: Wavelength Code #1
- xxxx: Wavelength Code #2
- ……: (repeat if applicable)
- xxxx: Wavelength Code #N

| Wavelength Code (xxxx) | Wavelength (nm) | Output Power[1] (mW) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 2-wavelength | | 3-wavelength | | 4-wavelength | | (5~8)-wavelength | |
| | | CW | IntelliPulsing | CW | IntelliPulsing | CW | IntelliPulsing | CW | IntelliPulsing |
| 0365 | 365 | 4.8 | 10.0 | 4.6 | 9.2 | 4.3 | 8.5 | 3.9 | 8.0 |
| 0385 | 385 | 4.8 | 10.0 | 4.6 | 9.2 | 4.3 | 8.5 | 3.9 | 8.0 |
| 0400 | 400 | 4.4 | 9.0 | 4.2 | 8.5 | 4.0 | 8.0 | 3.6 | 7.2 |
| 0420 | 420 | 1.6 | 3.5 | 1.5 | 3.0 | 1.4 | 2.8 | 1.3 | 2.6 |
| 0455 | 455 | 5.6 | 11.5 | 5.3 | 11.0 | 5.1 | 10.5 | 4.5 | 9.0 |
| 0470 | 470 | 6.0 | 12.0 | 5.7 | 11.5 | 5.4 | 11.0 | 4.9 | 10.0 |
| 0505 | 505 | 2.8 | 5.6 | 2.6 | 5.2 | 2.5 | 5.0 | 2.3 | 4.6 |
| 0530 | 530 | 2.4 | 4.8 | 2.3 | 4.6 | 2.2 | 4.4 | 1.9 | 4.0 |
| 0590 | 590 | 1.3 | 2.6 | 1.2 | 2.4 | 1.2 | 2.4 | 1.1 | 2.2 |
| 0617 | 617 | 5.2 | 10 | 4.9 | 10 | 4.7 | 9.4 | 4.2 | 8.4 |
| 0625 | 625 | 6.1 | 12.2 | 5.9 | 11.8 | 5.5 | 11.0 | 5.0 | 10.0 |
| 0656 | 656 | 5.2 | 10 | 4.9 | 10 | 4.7 | 9.4 | 4.2 | 8.4 |
| 0740 | 740 | 2.4 | 4.8 | 2.3 | 4.6 | 2.2 | 4.4 | 1.9 | 3,8 |
| 0850 | 850 | 3.2 | 6.4 | 3.0 | 6 | 2.9 | 5.0 | 2.6 | 5.2 |
| 0870 | 870 | 2.4 | 4.8 | 2.3 | 4.6 | 2.2 | 4.4 | 1.9 | 4.0 |
| 0940 | 940 | 3.2 | 6.4 | 3.0 | 6.0 | 2.9 | 6.0 | 2.6 | 5.2 |

Note: * - measured with a 400µm core 0.22 numerical aperture (NA) fiber. Output optical power scales approximately linearly with fiber core area and $NA^2$. With a 400micron-core 0.39NA fiber, the output power will be 3.14x as what has been stated in the table above.

## 2.3. Precision LED Spotlights

Part Numbers and Ordering Information

BLS - PLS - xxxx - xxx - xx

- xxxx: Wavelength Code
- xxx: Beam Diameter (mm)
- xx: Electrical Power (W)

| Part Number | Type | Wavelength Code (xxxx) | Wavelength (nm) | Output Power (mW) | |
|---|---|---|---|---|---|
| | | | | CW | IntelliPulsing |
| BLS-PLS-0365-030-02 | A | 0365 | 365 | 50 | 100 |
| BLS-PLS-0365-030-07 | B | 0365 (7W) | 365 | 250 | 500 |
| BLS-PLS-0385-030-02 | A | 0385 | 385 | 50 | 100 |
| BLS-PLS-0385-030-07 | B | 0385(7W) | 385 | 300 | 600 |
| BLS-PLS-0400-030-01 | A | 0400 | 400 | 50 | 100 |
| BLS-PLS-0400-030-05 | A | 0400 | 400 | 120 | 240 |
| BLS-PLS-0400-030-17 | B | 0400 | 400 | 400 | 800 |
| BLS-PLS-0420-030-01 | A | 0420 | 420 | 35 | 70 |
| BLS-PLS-0455-030-04 | A | 0455 | 455 | 150 | 300 |
| BLS-PLS-0470-030-04 | A | 0470 (4W) | 470 | 110 | 230 |
| BLS-PLS-0470-030-15 | B | 0470 (15W) | 470 | 450 | 900 |
| BLS-PLS-0505-030-04 | A | 0505 | 505 | 65 | 140 |
| BLS-PLS-0530-030-04 | A | 0530 (4W) | 530 | 50 | 100 |
| BLS-PLS-0530-030-15 | B | 0530 (15W) | 530 | 200 | 400 |
| BLS-PLS-0590-030-04 | A | 0590 | 590 | 35 | 70 |
| BLS-PLS-0590-030-10 | B | 0590 | 590 | 140 | 280 |
| BLS-PLS-0617-030-04 | A | 0617 | 617 | 150 | 300 |
| BLS-PLS-0617-030-10 | B | 0617 (10W) | 617 | 450 | 900 |
| BLS-PLS-0625-030-04 | A | 0625 | 625 | 150 | 300 |
| BLS-PLS-0656-030-04 | A | 0656 | 656 | 180 | 360 |
| BLS-PLS-0657-030-01 | A | 0657 | 657 | 50 | 100 |
| BLS-PLS-0740-030-03 | A | 0740 | 740 | 100 | 200 |
| BLS-PLS-0740-030-10 | B | 0740 | 740 | 300 | 600 |
| BLS-PLS-0850-030-02 | A | 0850 | 850 | 85 | 180 |
| BLS-PLS-0940-030-01 | A | 0940 | 940 | 50 | 100 |
| BLS-PLS-6500-030-04 | A | 6500 | glacier white 6,500K | 100 | 200 |
| BLS-PLS-6500-030-15 | B | 6500 (15W) | glacier white 6,500K | 400 | 800 |
| BLS-PLS-5500-030-04 | A | 5500 | cool white 5,500K | 85 | 180 |
| BLS-PLS-4000-030-04 | A | 4000 | warm white 4,000K | 85 | 180 |

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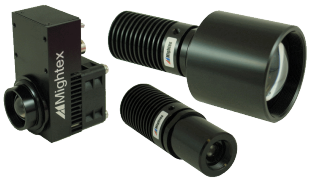
## 2.4. High-Power Collimated LED Modules

Part Numbers and Ordering Information

BLS - LCS - xxxx - xx - xx

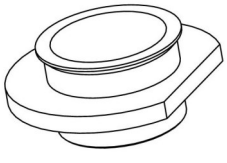
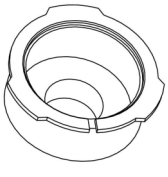
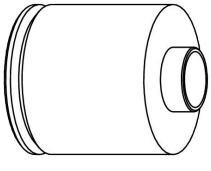
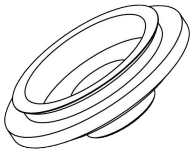
- xxxx: Wavelength Code
- xx: Electrical Power (W)
- xx: Beam Diameter (mm)




| Part Number | Type | Wavelength Code (xxxx) | Wavelength (nm) | Half Diverging Angle (deg.) | | | | Output Power (mW) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | φ11mm[1] | φ22mm[1] | φ38mm[1] | φ48mm[1] | CW | IntelliPulsing |
| BLS-LCS-0365-02-xx | A | 0365 | 365 | 3.4 | 1.7 | 1.0 | 0.75 | 80 | 160 |
| BLS-LCS-0365-07-xx | B | 0365 | 365 | 6.8 | 3.4 | 2.0 | 1.5 | 400 | 800 |
| BLS-LCS-0365-11-xx | B | 0365 | 365 | 6.8 | 3.4 | 2.0 | 1.5 | 500 | 1,000 |
| BLS-LCS-0385-02-xx | A | 0385 | 385 | 3.4 | 1.7 | 1.0 | 0.75 | 100 | 200 |
| BLS-LCS-0385-07-xx | B | 0385 | 385 | 6.8 | 3.4 | 2.0 | 1.5 | 500 | 1,000 |
| BLS-LCS-0385-11-xx | B | 0385 | 385 | 6.8 | 3.4 | 2.0 | 1.5 | 620 | 1,250 |
| BLS-LCS-0400-01-xx | A | 0400 | 400 | 5.0 | 2.5 | 1.5 | 1.1 | 100 | 200 |
| BLS-LCS-0400-05-xx | A | 0400 | 400 | 7.5 | 6.3 | 2.3 | 1.7 | 240 | 480 |
| BLS-LCS-0400-17-xx | B | 0400 | 400 | 15 | 12.6 | 4.6 | 3.4 | 810 | 1,620 |
| BLS-LCS-0455-03-xx | A | 0455 | 455 | 3.4 | 1.7 | 1.0 | 0.75 | 280 | 600 |
| BLS-LCS-0455-05-xx | A | 0455 | 455 | 10 | 5.0 | 3.0 | 2.2 | 350 | 700 |
| BLS-LCS-0470-03-xx | A | 0470 | 470 | 3.4 | 1.7 | 1.0 | 0.75 | 200 | 400 |
| BLS-LCS-0470-15-xx | B | 0470 | 470 | 6.8 | 3.4 | 2.0 | 1.5 | 600 | 1,200 |
| BLS-LCS-0505-03-xx | A | 0505 | 505 | 3.4 | 1.7 | 1.0 | 0.75 | 135 | 280 |
| BLS-LCS-0530-03-xx | A | 0530 | 530 | 3.4 | 1.7 | 1.0 | 0.75 | 100 | 200 |
| BLS-LCS-0530-15-xx | B | 0530 | 530 | 10 | 5.0 | 3.0 | 2.2 | 300 | 600 |
| BLS-LCS-0590-03-xx | A | 0590 | 590 | 3.4 | 1.7 | 1.0 | 0.75 | 65 | 130 |
| BLS-LCS-0590-10-xx | B | 0590 | 590 | 10 | 5 | 3 | 2.2 | 200 | 400 |
| BLS-LCS-0617-03-xx | A | 0617 | 617 | 3.4 | 1.7 | 1.0 | 0.75 | 280 | 560 |
| BLS-LCS-0617-10-xx | B | 0617 | 617 | 6.8 | 3.4 | 2.0 | 1.5 | 600 | 1,200 |
| BLS-LCS-0625-03-xx | A | 0625 | 625 | 3.4 | 1.7 | 1.0 | 0.75 | 280 | 550 |
| BLS-LCS-0656-03-xx | A | 0656 | 656 | 3.4 | 1.7 | 1.0 | 0.75 | 280 | 550 |
| BLS-LCS-0657-01-xx | A | 0657 | 657 | 5 | 2.5 | 1.5 | 1.1 | 100 | 200 |
| BLS-LCS-0740-03-xx | A | 0740 | 740 | 7.5 | 6.3 | 2.3 | 1.7 | 200 | 400 |
| BLS-LCS-0740-10-xx | B | 0740 | 740 | 15 | 12.6 | 4.6 | 3.4 | 600 | 1,200 |
| BLS-LCS-0780-02-xx | A | 0780 | 780 | 3.4 | 1.7 | 1.0 | 0.75 | 110 | 220 |
| BLS-LCS-0850-02-xx | A | 0850 | 850 | 3.4 | 1.7 | 1.0 | 0.75 | 240 | 480 |
| BLS-LCS-0850-03-xx | A | 0850 | 850 | 3.4 | 1.7 | 1.0 | 0.75 | 430 | 880 |
| BLS-LCS-0940-02-xx | A | 0940 | 940 | 3.4 | 1.7 | 1.0 | 0.75 | 200 | 400 |
| BLS-LCS-6500-03-xx | A | 6500 | glacier white 6,500K | 3.4 | 1.7 | 1.0 | 0.75 | 180 | 360 |
| BLS-LCS-6500-15-xx | B | 6500 | glacier white 6,500K | 6.8 | 3.4 | 2.0 | 1.5 | 540 | 1,100 |
| BLS-LCS-5500-03-xx | A | 5500 | cool white 5,500K | 3.4 | 1.7 | 1.0 | 0.75 | 170 | 350 |
| BLS-LCS-4000-03-xx | A | 4000 | warm white 4,000K | 3.4 | 1.7 | 1.0 | 0.75 | 180 | 360 |

1. Clear aperture diameter. Use these two-digit numbers to replace xx in the part number.

### Microscope Adapters for Collimated LED Modules

| **Part Number** | ACC-BC25-LC1 | ACC-BC25-NK1 | ACC-BC25-OL1 | ACC-BC25-ZS1 |
|---|---|---|---|---|
| **Description** | For Leica DMI microscope | For Nikon Eclipse microscope | For Olympus IX & BX micro-scope | For Zeiss Axioskop microscope |
| **Drawing** |  |  |  |  |

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## 2.5. Light-Guide Coupled LED Modules

Part Numbers and Ordering Information

BLS - GCS - $\underbrace{\text{xxxx}}_{\text{Wavelength Code}}$ - $\underbrace{\text{xx}}_{\text{Electrical Power (W)}}$ - $\underbrace{\text{xxxxx}}_{\text{Light Guide Adapter Code}}$

Type-A Type-B

Note: Light guide not included

| Part Number[1] | Wavelength Code | Type | Description | Peak Wavelength (nm) | Radiant Flux[2] (mW) | |
|---|---|---|---|---|---|---|
| | | | | | CW | IntelliPulsing |
| BLS-GCS-0365-02-xxxxx | 0365 (2W) | A | UV 365nm, 2W | 365 | 90 | 180 |
| BLS-GCS-0365-07-xxxxx | 0365 (7W) | B | UV 365nm, 7W | 365 | 300 | 600 |
| BLS-GCS-0365-11-xxxxx | 0365 (11W) | B | UV 365nm, 11W | 365 | 375 | 750 |
| BLS-GCS-0385-02-xxxxx | 0385 (2W) | A | UV 385nm, 2W | 385 | 100 | 200 |
| BLS-GCS-0385-07-xxxxx | 0385 (7W) | B | UV 385nm, 7W | 385 | 330 | 700 |
| BLS-GCS-0385-11-xxxxx | 0385 (11W) | B | UV 385nm, 11W | 385 | 410 | 820 |
| BLS-GCS-0455-04-xxxxx | 0455 | A | Royal Blue, 4W | 455 | 165 | 350 |
| BLS-GCS-0470-04-xxxxx | 0470 (4W) | A | Blue, 4W | 470 | 130 | 270 |
| BLS-GCS-0470-15-xxxxx | 0470 (15W) | B | Blue, 15W | 470 | 400 | 800 |
| BLS-GCS-0505-04-xxxxx | 0505 | A | Cyan, 4W | 505 | 30 | 60 |
| BLS-GCS-0530-04-xxxxx | 0530 (4W) | A | Green, 4W | 530 | 60 | 120 |
| BLS-GCS-0530-15-xxxxx | 0530 (15W) | B | Green, 15W | 530 | 180 | 360 |
| BLS-GCS-0590-03-xxxxx | 0590 | A | Amber, 3W | 590 | 35 | 70 |
| BLS-GCS-0617-03-xxxxx | 0617 (3W) | A | Red-Orange, 3W | 617 | 200 | 400 |
| BLS-GCS-0617-10-xxxxx | 0617 (10W) | B | Red-Orange, 10W | 617 | 600 | 1,200 |
| BLS-GCS-0625-03-xxxxx | 0625 | A | Red, 3W | 625 | 200 | 400 |
| BLS-GCS-0850-02-xxxxx | 0850 | A | NIR, 2W | 850 | 125 | 250 |
| BLS-GCS-0940-02-xxxxx | 0940 | A | NIR, 2W | 940 | 125 | 250 |
| BLS-GCS-4000-04-xxxxx | 4000 | A | Warm White, 4W | 4,000K | 95 | 200 |
| BLS-GCS-5500-04-xxxxx | 5500 | A | Cool White, 4W | 5,500K | 95 | 200 |
| BLS-GCS-6500-04-xxxxx | 6500 (4W) | A | Glacier White, 4W | 6,500K | 95 | 200 |
| BLS-GCS-6500-15-xxxxx | 6500 (15W) | B | Glacier White, 15W | 6,500K | 300 | 600 |

Note: 1. "xxxxx" is the Light Guide Adapter code, see Table-2 below; 2. Measured at exiting end of a 3mm-core 0.59 numerical aperture (NA) liquid light guide; and 3. LED modules with electrical power of 7W or higher have a built-in cooling fan (i.e. Type-B), and lower-power modules are Type-A.

### Light Guide Adapters

| Adapter Code | For Ferrule Diameter (mm) | For Ferrule Length (mm) |
|---|---|---|
| A0510 | 5 | ≥10 |
| A0610 | 6 | ≥10 |
| A0710 | 7 | ≥10 |
| A0810 | 8 | ≥10 |
| A0815 | 8 | ≥15 |

Mightex Systems, 2343 Brimley Road, Suite 868, Toronto, Ontario M1S 3L6, Canada
Tel: 1-416-840-4991 or 1-925-218-1885, Fax: 1-416-840-6541, Email: sales@mightex.com
www.mightex.com or www.mightexsystems.com

Version 1.0, December 2011

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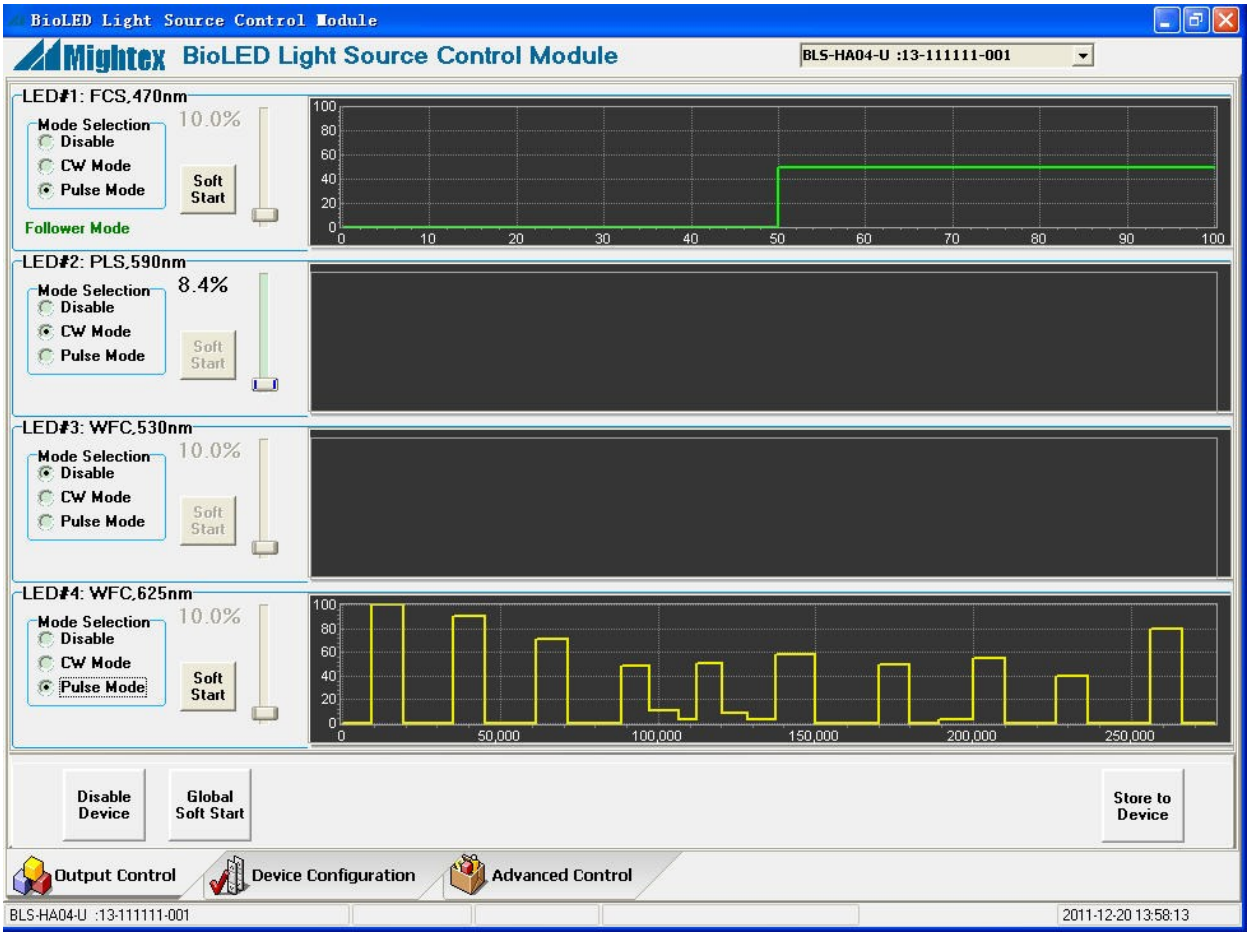
## SOFTWARE FEATURES

Each BioLED Control Module (e.g. BLS-SA04-US) is capable of driving up to four (4) LED modules (or "Optical Heads") , which a customer can choose from >100 different models/wavelengths according to Figure-3 when ordering the turn-key solution. If more than four (4) Optical Heads are needed, one can simply use multiple Control Modules, and the BioLED software is capable of controlling all Control Modules via the same GUI, as illustrated in the screenshot below.

An Optical Head can be operated in CW or pulse mode, and the software GUI allows one to easily program the pulse shape and sequence to meet individual customer's needs. In addition, all control parameters can be stored into the non-volatile memory in the Control Module, such that the Control Module can be used as a stand-alone device and the pre-programmed pulse sequence can be activated using an external trigger, without the need to have the Control Module connected to a host PC all the time. Furthermore, BioLED Light Source Solutions also support a 'follower' mode, in which the output optical pulse is synchronized with the duration of the input TTL trigger pulse.

Another unique and powerful feature of Mightex's BioLED Light Source Solutions is 'IntelliPulsing', which enables one to obtain significantly higher LED output power than in CW mode. This feature is very useful for those customers who require much higher optical power in pulse mode.




## How to order a BioLED light source solution?

Here is a step-by-step guide:

Step-1: Add BioLED Control Module (P/N: BLS-SA04-US) to shopping cart;
Step-2: Add desired BLS-series Optical Heads (e.g. BLS-FCS-0470 etc.) to shopping cart; and
Step-3: In the notes section, mark the channel positions on the BioLED Control Module for each Optical Head. For example: Channel#1: BLS-FCS-0470, Channel#2: BLS-PLS-0590-030, Channel#3: 530nm LED in BLS-WFC-H2-0530-0625, and Channel#4: 625nm LED in BLS-WFC-H2-0530-0625. Order completed.

With a world-class OEM design team, Mightex offers a broad range of customized solutions in order to meet individual customer's unique requirements. Please call 1-416-840 4991 or email sales@mightex.com for details.

Mightex Systems, 2343 Brimley Road, Suite 868, Toronto, Ontario M1S 3L6, Canada
Tel: 1-416-840-4991 or 1-925-218-1885, Fax: 1-416-840-6541, Email: sales@mightex.com
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