# HIGH POWER LED COLLIMATOR SOURCES

An LED collimator consists of a collimating lens and an LED emitter. The LED emitter is placed at the focal plane of the collimating lens. The collimating lens thus images the LED emitter into infinity. Mightex LED collimators employ a high-NA aspherical collimating lens for precision collimation and high light throughput. LED collimators can be used as the light source in an illumination system. For example LED collimators can replace the standard lamp assembly in a microscope to provide stable, intense, and fast-modulated illumination. Typically the rest of the illumination optics will image the LED emitter onto the pupil of the imaging optics whereas the lens aperture on the collimator where intensity is uniform will be projected onto the object. In other illumination applications similar arrangement should be made to produce uniform and efficient illumination.

## FEATURES

- Interchangeable aspherical collimating lens
- High numerical aperture (NA)
- High power (up to 50W)
- Wide range of available wavelengths
- Adjustable focus
- Optional focusing module
- Optional lightguide adapter
- Multiple mounting features for lab and OEM applications
- Integrated heat sink
- Cooling fan for >7W models

## APPLICATIONS

- Microscope illuminator
- General purpose light source
- Fiber coupling (with optional focusing module)

The LED emitters are mounted directly onto the metal base of the collimator which also features an integrated heat sink. This configuration minimizes thermal resistance between the LED emitter and the heat sink resulting in better heat dissipation. The collimating lens can be adjusted if needed for precise collimation. A locking ring fixes the lens position after adjustment. The collimators have been pre-adjusted in the factory.

Multi-chip LED emitters have been added to the product portfolio. Some of these 7W to 15W LEDs have total optical power exceeding 1W, quadrupling the power of a single-chip LED. Models with higher powers (7W and higher) feature a cooling fan, and have a different formfactor compared to other models. Please examine the installation drawings carefully. Power supply for the cooling fan is included in the price of the LED collimator sources.
The LED collimators include a 1.5-meter cable with two bare-wire terminals at the end.

The light sources can be driven by Mightex LED controllers or other LED controllers and current sources. An optional focusing module can be mounted on the front of the LED collimator to focus light into a tight spot which is an image of the LED emitter. One of the applications with the focusing module is coupling LED light into a fiber or a light guide.

Additional interchangeable collimating lenses are available to produce different beam sizes with the same light source.

## PERFORMANCE SPECIFICATIONS

### Deep UV LCS

| Part Number | Nominal Wavelength (nm) | Beam Diameter (mm) | Half Diverging Angle (deg.) | $I_{op}$ (mA) | $V_{op}$ (V) | Typical Output[1] Power (mW) |
|---|---|---|---|---|---|---|
| LCS-0265-02-23 | 265 | 23 | 1 | 350 | 6.3 | 20[a] |
| LCS-0275-04-23 | 275 | 23 | 1 | 600 | 6 | 35 |
| LCS-0280-03-23 | 280 | 23 | 1 | 500 | 5.8 | 30 |
| LCS-0285-03-23 | 285 | 23 | 1 | 500 | 5.8 | 35 |

## Deep UV LCS | *continued*

| Part Number | Nominal Wavelength (nm) | Beam Diameter (mm) | Half Diverging Angle (deg.) | $I_{op}$ (mA) | $V_{op}$ (V) | Typical Output[1] Power (mW) |
|---|---|---|---|---|---|---|
| LCS-0295-03-23 | 295 | 23 | 1 | 600 | 5.8 | 25 |
| LCS-0300-03-23 | 300 | 23 | 1 | 500 | 6 | 25 |
| LCS-0310-03-23 | 310 | 23 | 1 | 350 | 5.8 | 30 |
| LCS-0325-03-23 | 325 | 23 | 1 | 500 | 5.4 | 15 |
| LCS-0340-02-22 | 340 | 22 | 1.7 | 500 | 4.3 | 23 |

[1] Due to variations in the manufacturing process and operating parameters such as temperature and current, the actual output of any given LED may vary. Specifications are intended to be used as a guideline.
[a] For older units prior to August 2019, typical output power is 5mW.

## Type A LCS | *passively cooled*

| Part Number | Nominal Wavelength (nm) | Half Diverging Angle (deg.) | | | | $I_{op}$ (mA) | $V_{op}$ (V) | Typical Output Power[2] (mW) |
|---|---|---|---|---|---|---|---|---|
| | | φ11mm[1] | φ22mm[1] | φ38mm[1] | φ48mm[1] | | | |
| LCS-0340-02-xx | 340 | 3.4 | 1.7 | 1 | 0.75 | 500 | 4.3 | 23 |
| LCS-0365-04-xx | 365 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 3.65 | 500 |
| LCS-0380-03-xx | 380 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.2 | 120 |
| LCS-0385-04-xx | 385 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 3.65 | 500 |
| LCS-0390-03-xx | 390 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.1 | 250 |
| LCS-0395-03-xx | 395 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.1 | 270 |
| LCS-0400-01-xx | 400 | 5 | 2.5 | 1.5 | 1.1 | 350 | 3.5 | 100 |
| LCS-0400-03-xx | 400 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.1 | 265 |
| LCS-0405-03-xx | 405 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3 | 325 |
| LCS-0410-03-xx | 410 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3 | 315 |
| LCS-0415-03-xx | 415 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3 | 310 |
| LCS-0430-02-xx | 430 | 3.4 | 1.7 | 1 | 0.75 | 500 | 3.8 | 190 |
| LCS-0455-03-xx | 455 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 280 |
| LCS-0470-03-xx | 470 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 200 |
| LCS-0471-02-xx | 471 | 3.4 | 1.7 | 1 | 0.75 | 350 | 3 | 140 |
| LCS-0490-01-xx | 490 | 3.4 | 1.7 | 1 | 0.75 | 350 | 3.5 | 140 |
| LCS-0505-03-xx | 505 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 135 |
| LCS-0530-03-xx | 530 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 100 |
| LCS-0560-03-xx | 560 broadband | 4.4 | 2.2 | 1.3 | 1 | 1000 | 2.9 | 240 |
| LCS-0585-03-xx | 585 broadband | 4.4 | 2.2 | 1.3 | 1 | 700 | 2.9 | 82 |
| LCS-0590-03-xx | 590 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 65 |
| LCS-0617-03-xx | 617 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 150 |
| LCS-0625-03-xx | 625 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 280 |
| LCS-0656-03-xx | 656 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.1 | 280 |

## Type A LCS | *continued*

| Part Number | Nominal Wavelength (nm) | Half Diverging Angle (deg.) | | | | $I_{op}$ (mA) | $V_{op}$ (V) | Typical Output Power[2] (mW) |
|---|---|---|---|---|---|---|---|---|
| | | φ11mm[1] | φ22mm[1] | φ38mm[1] | φ48mm[1] | | | |
| LCS-0657-01-xx | 657 | 5 | 2.5 | 1.5 | 1.1 | 350 | 2.4 | 100 |
| LCS-0680-02-xx | 680 | 3.4 | 1.7 | 1 | 0.75 | 600 | 2.7 | 75 |
| LCS-0700-01-xx | 700 | 3.4 | 1.7 | 1 | 0.75 | 500 | 2.1 | 51 |
| LCS-0720-01-xx | 720 | 3.4 | 1.7 | 1 | 0.75 | 600 | 2.2 | 73 |
| LCS-0740-03-xx | 740 | 5 | 2.5 | 1.5 | 1.1 | 1000 | 2.5 | 200 |
| LCS-0780-02-xx | 780 | 3.4 | 1.7 | 1 | 0.75 | 800 | 2.5 | 110 |
| LCS-0810-02-xx | 810 | 3.4 | 1.7 | 1 | 0.75 | 800 | 2.2 | 120 |
| LCS-0850-02-xx | 850 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 2.1 | 240 |
| LCS-0850-03-xx | 850 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3 | 430 |
| LCS-0870-01-xx | 870 | 3.4 | 1.7 | 1 | 0.75 | 700 | 1.9 | 110 |
| LCS-0910-02-xx | 910 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 1.9 | 120 |
| LCS-0940-02-xx | 940 | 3.4 | 1.7 | 1 | 0.75 | 1000 | 1.8 | 200 |
| LCS-0980-01-xx | 980 | 3.4 | 1.7 | 1 | 0.75 | 500 | 1.4 | 30 |
| LCS-3000-03-xx | warm white 3,000K | 3.4 | 1.7 | 1 | 0.75 | 1000 | 2.8 | 150 |
| LCS-4000-03-xx | warm white 4,000K | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 180 |
| LCS-5500-03-xx | cool white 5,500K | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.9 | 170 |
| LCS-6500-03-xx | glacier white 6,500K | 3.4 | 1.7 | 1 | 0.75 | 1000 | 3.6 | 180 |

[1] Clear aperture diameter. Use these two-digit numbers to replace xx in the part number.
[2] Due to variations in the manufacturing process and operating parameters such as temperature and current, the actual output of any given LED may vary. Specifications are intended to be used as a guideline.

## Type B LCS | *fan cooling*

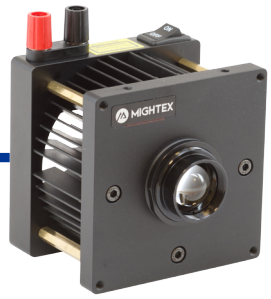
| Part Number | Nominal Wavelength (nm) | Half Diverging Angle (deg.) | | | | $I_{op}$ (mA) | $V_{op}$ (V) | Typical Output Power[2] (mW) |
|---|---|---|---|---|---|---|---|---|
| | | φ11mm[1] | φ22mm[1] | φ38mm[1] | φ48mm[1] | | | |
| LCS-0365-13-xx | 365 | 6.8 | 3.4 | 2 | 1.5 | 3500 | 3.85 | 1200 |
| LCS-0380-13-xx | 380 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12.8 | 360 |
| LCS-0385-07-xx | 385 | 6.8 | 3.4 | 2 | 1.5 | 500 | 15 | 500 |
| LCS-0385-11-xx | 385 | 6.8 | 3.4 | 2 | 1.5 | 700 | 15.5 | 625 |
| LCS-0385-13-xx | 385 | 6.8 | 3.4 | 2 | 1.5 | 3500 | 3.75 | 1500 |
| LCS-0390-12-xx | 390 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12.4 | 750 |
| LCS-0395-12-xx | 395 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12.4 | 810 |
| LCS-0400-12-xx | 400 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12.4 | 795 |
| LCS-0400-17-xx | 400 | 10 | 5 | 3 | 2.2 | 1000 | 16.5 | 810 |
| LCS-0405-12-xx | 405 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12 | 975 |

## Type B LCS | *continued*

| Part Number | Nominal Wavelength (nm) | Half Diverging Angle (deg.) | | | | $I_{op}$ (mA) | $V_{op}$ (V) | Typical Output Power[2] (mW) |
|---|---|---|---|---|---|---|---|---|
| | | φ11mm[1] | φ22mm[1] | φ38mm[1] | φ48mm[1] | | | |
| LCS-0410-12-xx | 410 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12 | 945 |
| LCS-0415-12-xx | 415 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12 | 930 |
| LCS-0420-12-xx | 420 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12 | 930 |
| LCS-0425-12-xx | 425 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12 | 870 |
| LCS-0470-14-xx | 470 | 3.4 | 1.7 | 1 | 0.75 | 3000 | 4.6 | 500 |
| LCS-0470-15-xx | 470 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 15 | 600 |
| LCS-0505-12-xx | 505 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12.2 | 250 |
| LCS-0530-15-xx | 530 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 15 | 300 |
| LCS-0540-14-xx | 540 broadband | 4.4 | 2.2 | 1.3 | 1 | 3000 | 4.6 | 500 |
| LCS-0590-05-xx | 590 | 10 | 5 | 3 | 2.2 | 500 | 9.5 | 190 |
| LCS-0617-10-xx | 617 | 6.8 | 3.4 | 2 | 1.5 | 1000 | 10.8 | 250 |
| LCS-0625-07-xx | 625 | 6.8 | 3.4 | 2 | 1.5 | 700 | 9.6 | 600 |
| LCS-0656-07-xx | 656 | 8.8 | 4.4 | 2.6 | 2 | 700 | 9.6 | 800 |
| LCS-0740-10-xx | 740 | 10 | 5 | 3 | 2.2 | 1000 | 9.5 | 600 |
| LCS-3000-12-xx | warm white 3,000K | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12 | 430 |
| LCS-5500-12-xx | cool white 5,500K | 6.8 | 3.4 | 2 | 1.5 | 1000 | 12 | 540 |
| LCS-6500-15-xx | glacier white 6,500K | 6.8 | 3.4 | 2 | 1.5 | 1000 | 15 | 540 |

[1] Clear aperture diameter. Use these two-digit numbers to replace xx in the part number.
[2] Due to variations in the manufacturing process and operating parameters such as temperature and current, the actual output of any given LED may vary. Specifications are intended to be used as a guideline.
* When ordering an LED controller for a Type-B LED, please make sure to upgrade the AC/DC power adapter from the standard 12V to 24V.

## Type J LCS | *high-power, passively cooled*




| Part Number | Nominal Wavelength (nm) | Half Diverging Angle (deg.) | | | | $I_{op}$ (mA) | $V_{op}$ (V) | Typical Output Power[2,3] (mW) |
|---|---|---|---|---|---|---|---|---|
| | | φ11mm[1] | φ22mm[1] | φ38mm[1] | φ48mm[1] | | | |
| LCS-0470-14-22-J | 470 | NA | 1.7 | NA | NA | 3000 | 4.6 | 500 |
| LCS-0530-13-22-J | 530 | NA | 1.4 | NA | NA | 2400 | 5.1 | 290 |
| LCS-0540-14-22-J | 540 | NA | 2.2 | NA | NA | 3000 | 4.6 | 500 |
| LCS-0625-07-22-J | 625 | NA | 1.4 | NA | NA | 2400 | 2.9 | 260 |

[1] Clear aperture diameter. Use these two-digit numbers to replace xx in the part number.
[2] Maximum CW output achievable with a BLS-3000-2 BioLED control module.
[3] Due to variations in the manufacturing process and operating parameters such as temperature and current, the actual output of any given LED may vary. Specifications are intended to be used as a guideline.

## Type H LCS | *super high-power, fan cooling*

| Part Number | Nominal Wavelength (nm) | Half Diverging Angle (deg.) | | | | $I_{op}$ (A) | $V_{op}$ (V) | Typical Output Power[2,3] (mW) |
|---|---|---|---|---|---|---|---|---|
| | | φ11mm[1] | φ22mm[1] | φ38mm[1] | φ48mm[1] | | | |
| LCS-0365-48-xx | 365 | 10 | 5 | 3 | 2.2 | 12 | 3.9 | 2000 |
| LCS-0405-50-xx | 405 | 10 | 5 | 3 | 2.2 | 13 | 3.8 | 2500 |
| LCS-0470-50-xx | 470 | 10 | 5 | 3 | 2.2 | 13 | 3.8 | 3300 |
| LCS-0525-60-xx | 525 | 10 | 5 | 3 | 2.2 | 13 | 4.6 | 1300 |
| LCS-0560-68-xx | 560 | 10 | 5 | 3 | 2.2 | 18 | 3.8 | 3500 |
| LCS-0625-38-xx | 625 | 10 | 5 | 3 | 2.2 | 13 | 2.9 | 1100 |
| LCS-0730-77-xx | 730 | 10 | 5 | 3 | 2.2 | 18 | 5.9 | 3500 |
| LCS-6500-33-xx | glacier white, 6,500K | 10 | 5 | 3 | 2.2 | 9 | 3.7 | 2000 |
| LCS-6500-65-xx | glacier white, 6,500K | 10 | 5 | 3 | 2.2 | 18 | 3.7 | 3500 |

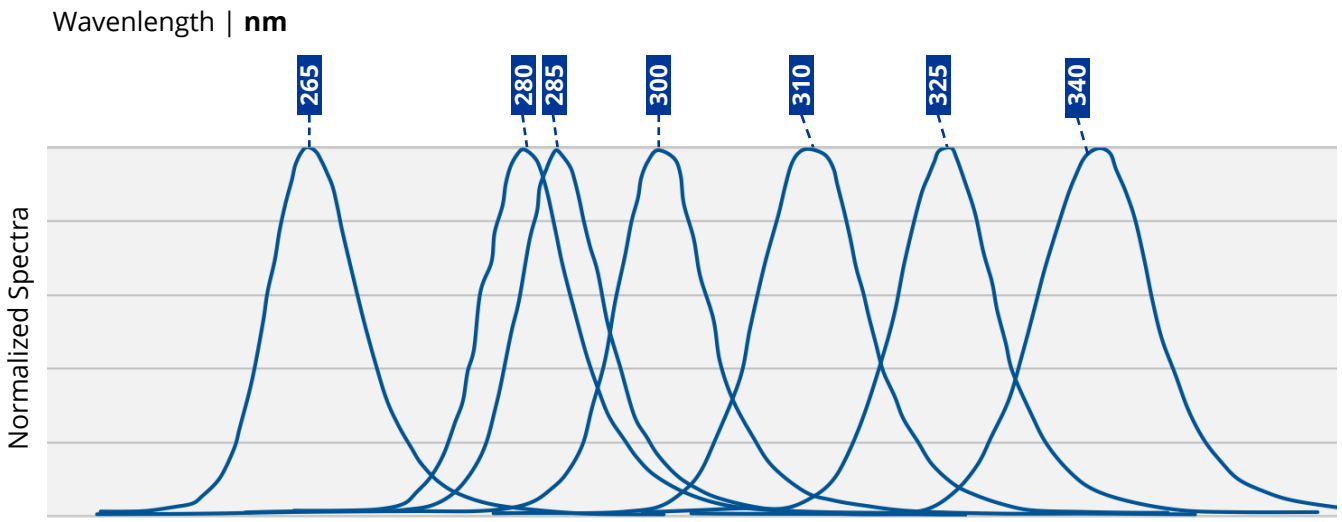
[1] Clear aperture diameter. Use these two-digit numbers to replace xx in the part number.
[2] Maximum CW output achievable with a matching BLS-13000-1 or a BLS-18000-1 BioLED control module.
[3] Due to variations in the manufacturing process and operating parameters such as temperature and current, the actual output of any given LED may vary. Specifications are intended to be used as a guideline.

## LED SPECTRA

### MIGHTEX LED WAVELENGTH PORTFOLIO

New LED wavelengths are continually added to the portfolio. Please visit **www.mightexsystems.com** for updated list.

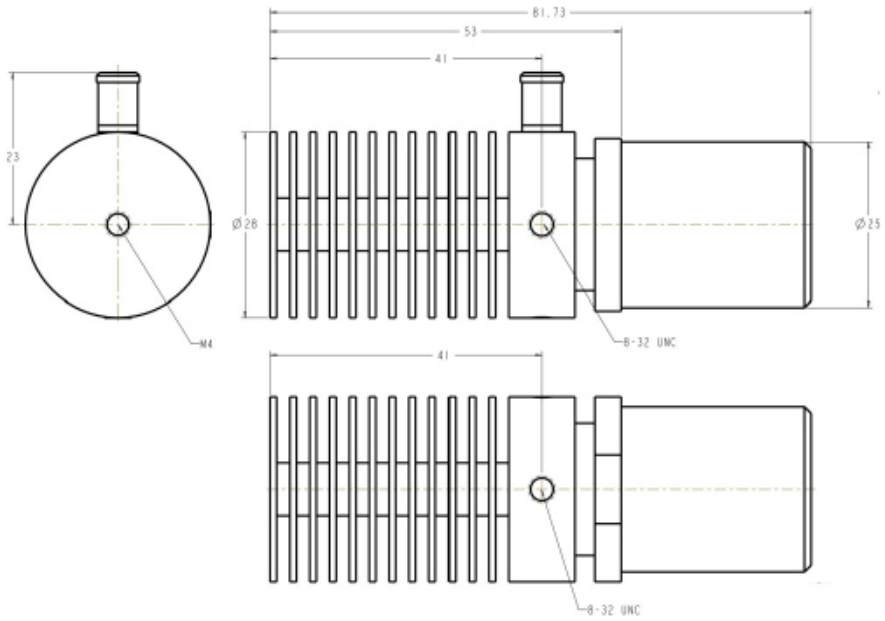
### MIGHTEX DUV LED WAVELENGTH PORTFOLIO



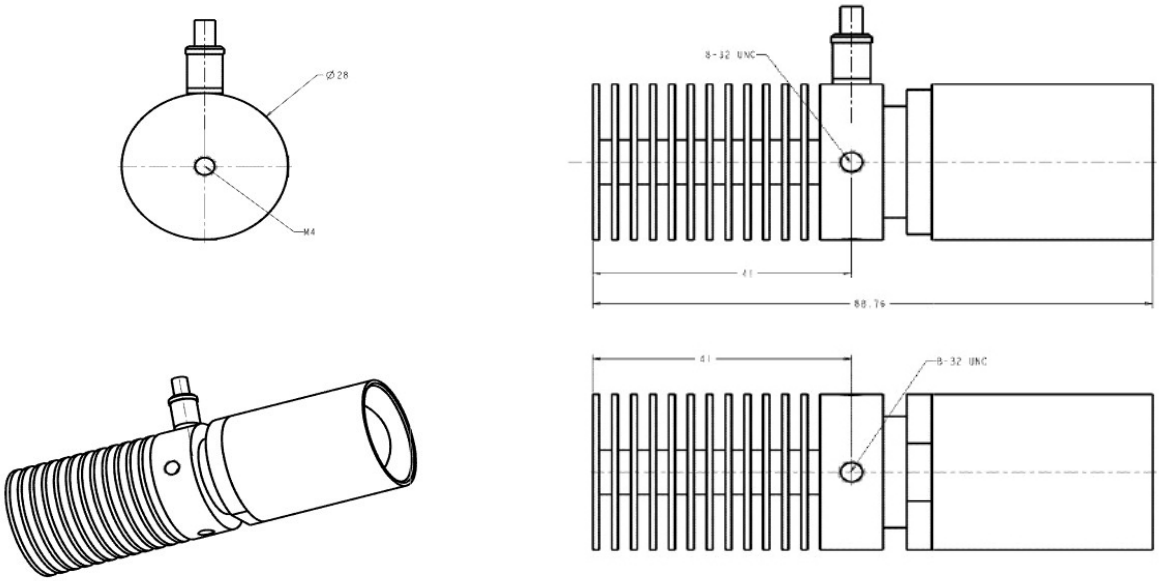

New LED wavelengths are continually added to the portfolio. Please visit **www.mightexsystems.com** for updated list.

# INSTALLATION DRAWINGS

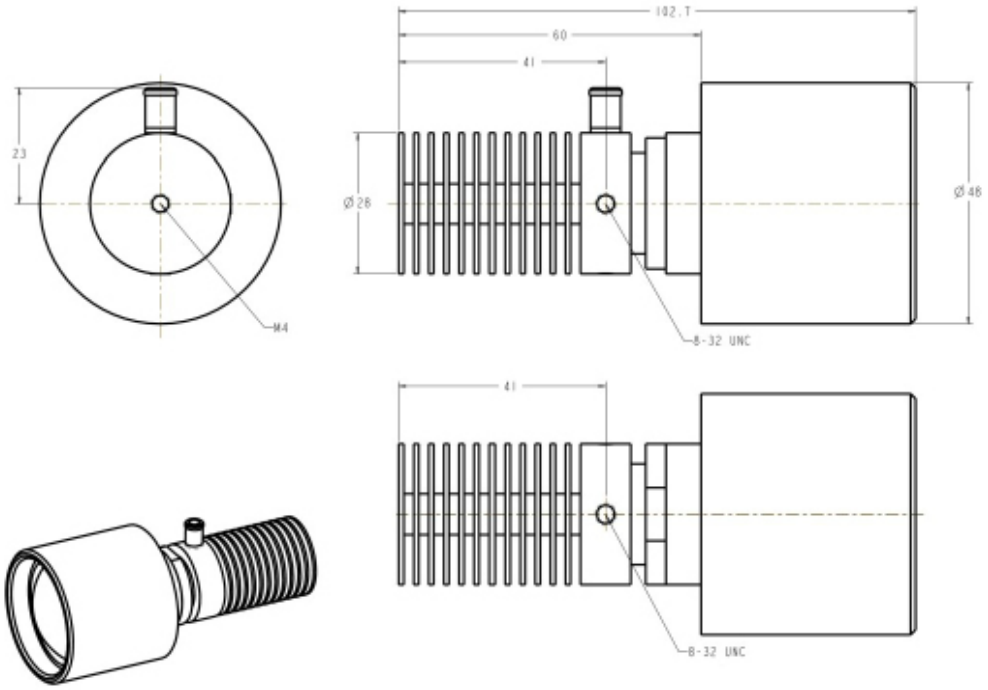
## Installation Drawing for 11-mm LED Collimator, Type-A



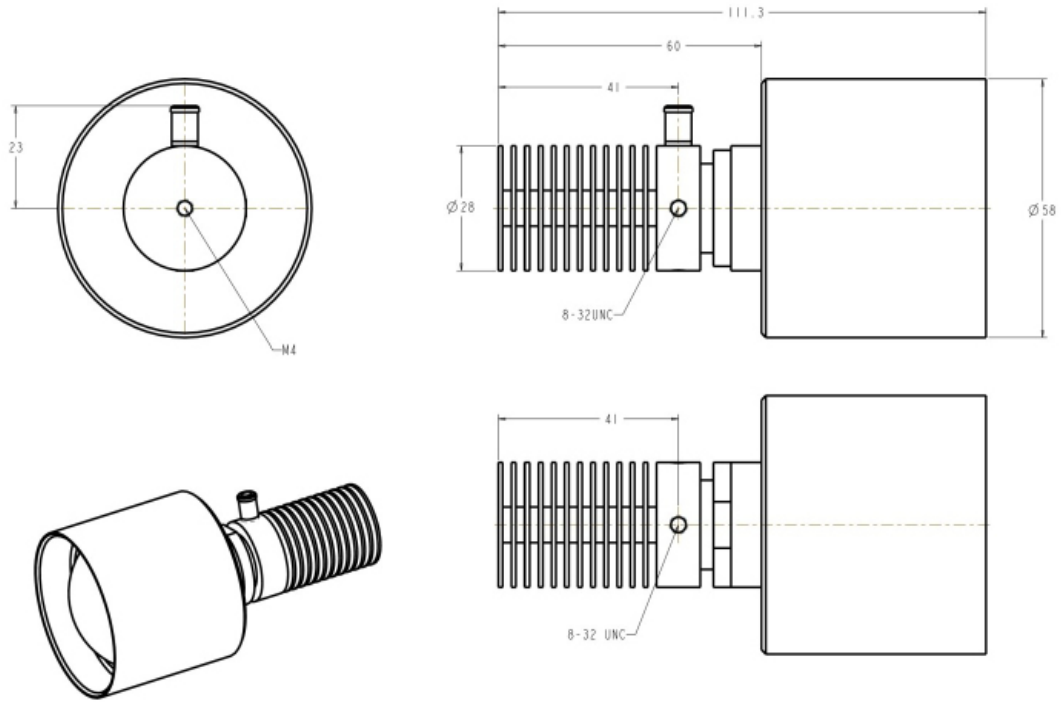

## Installation Drawing for 22-mm LED Collimator, Type-A



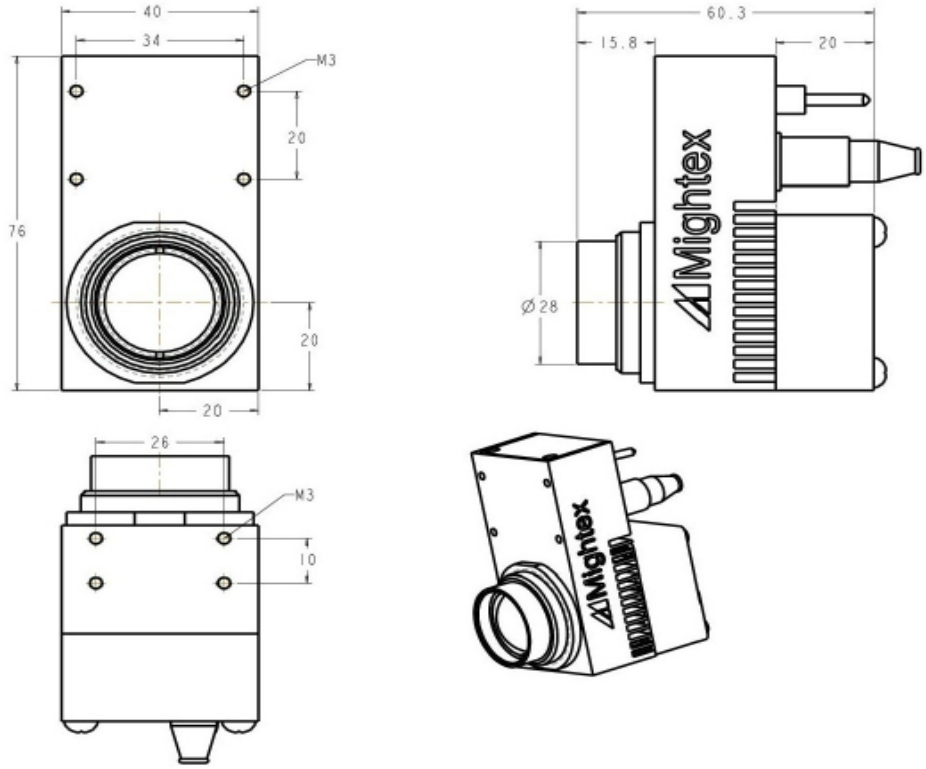
## Installation Drawing for 38-mm LED Collimator, Type-A



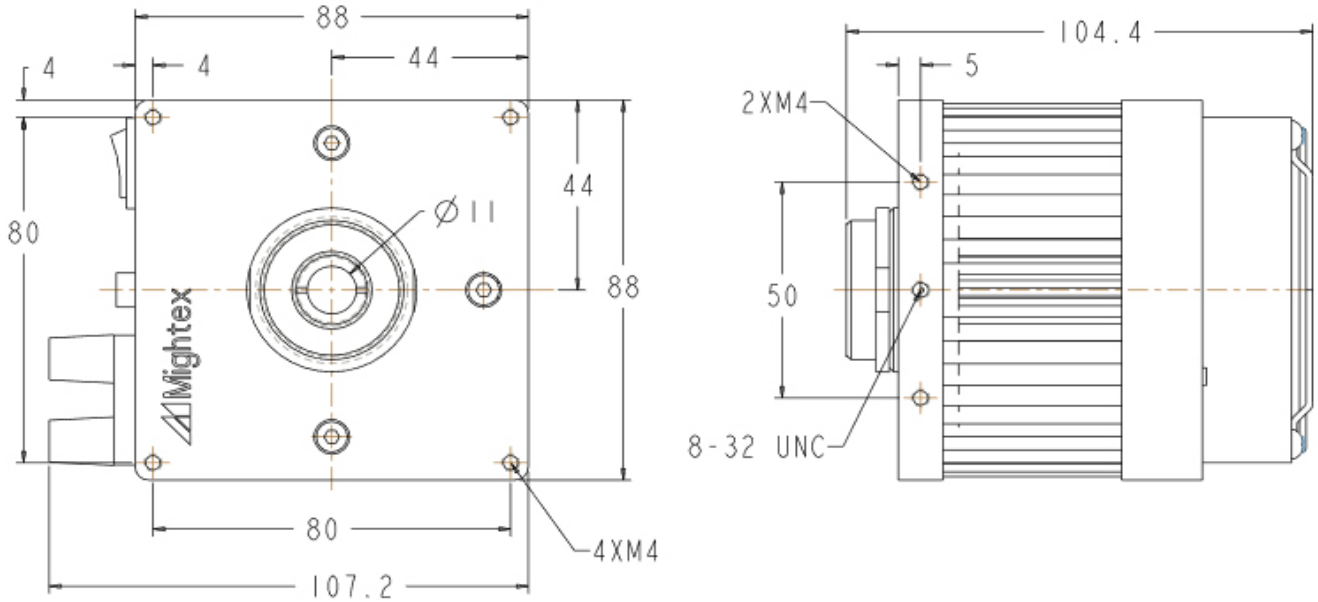

## Installation Drawing for 48-mm LED Collimator, Type-A



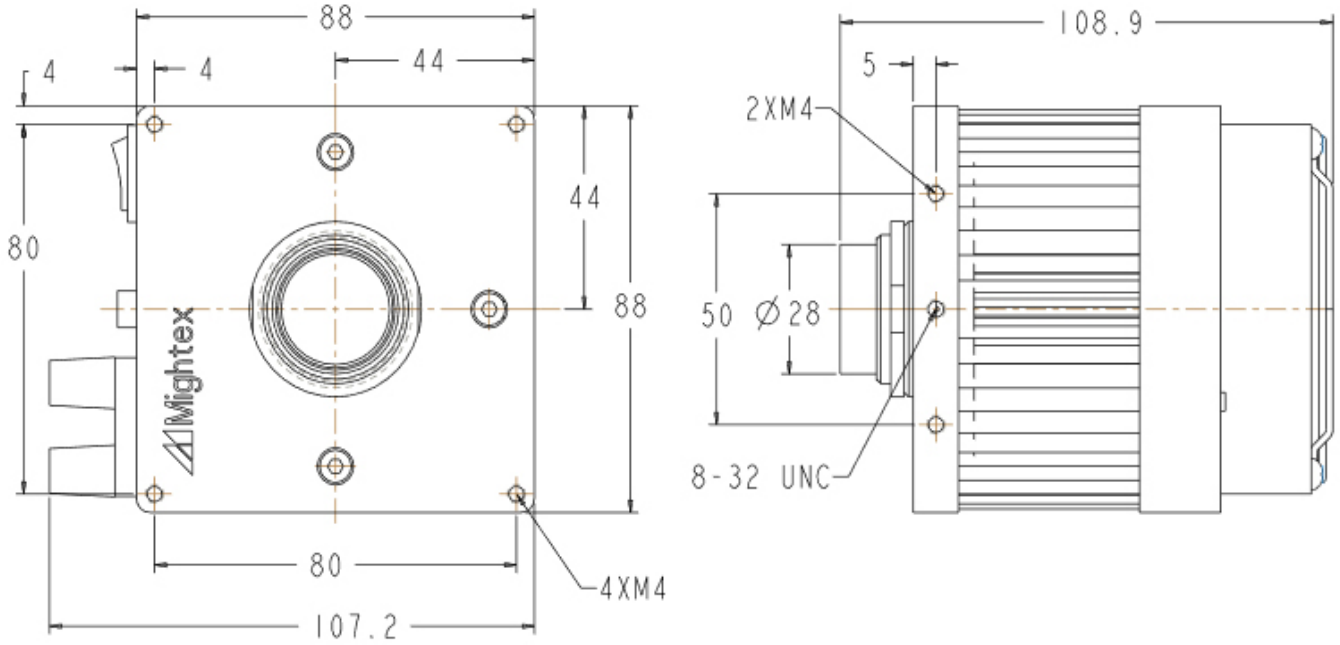
## Installation Drawing for 22-mm LED Collimator, Type-B



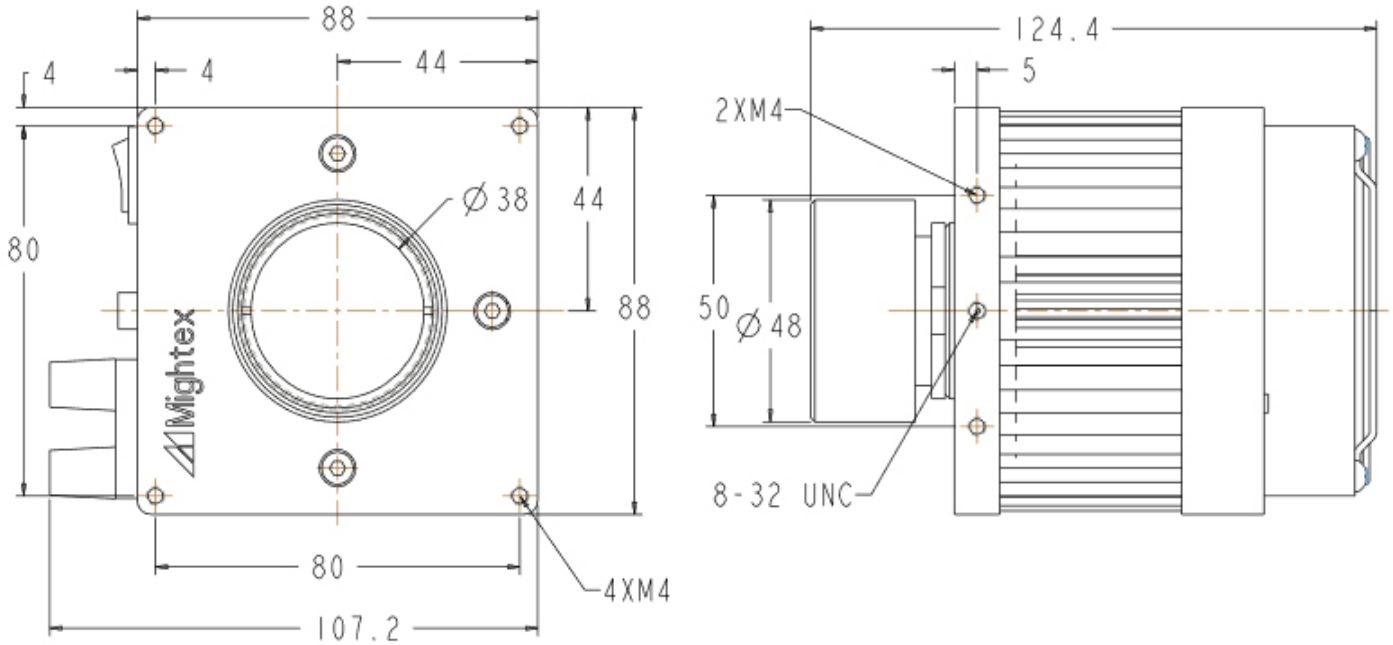

## Installation Drawing for 11-mm LED Collimator, Type-H



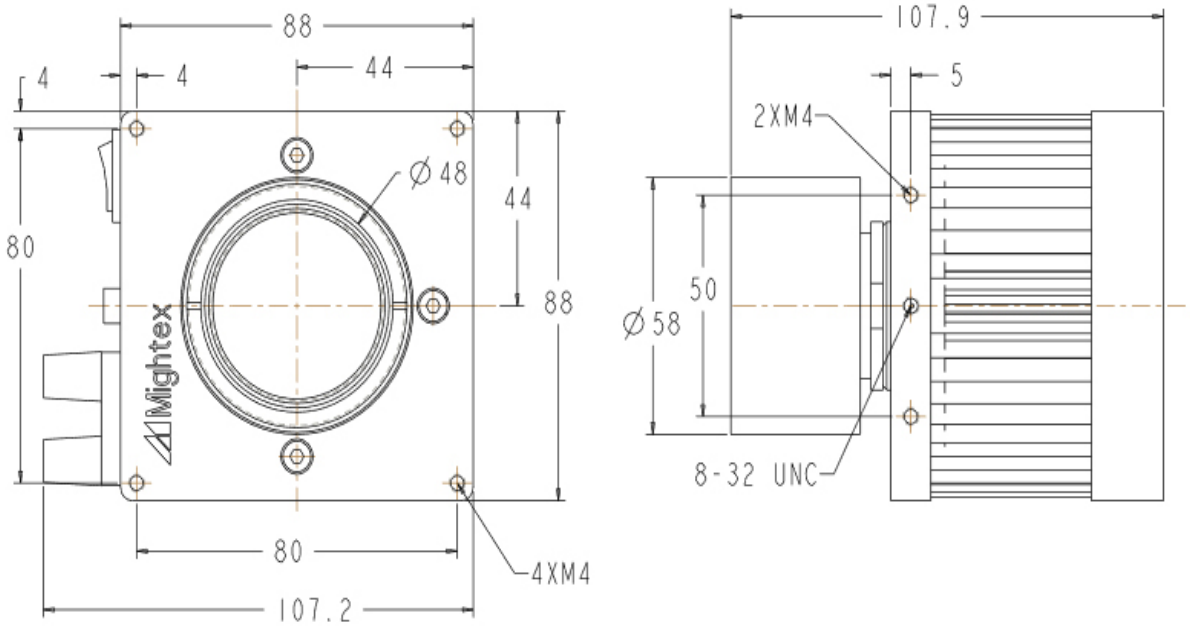
## Installation Drawing for 22-mm LED Collimator, Type-H




## Installation Drawing for 38-mm Type-H LED Collimator



## Installation Drawing for 48-mm Type-J LED Collimator




## PART NUMBER AND ORDERING INFORMATION

LCS - □□□□ - □□ - □□

Wavelength | Electrical Power | Clear Aperture

For example, LCS-0455-03-22 has a wavelength of 455nm, electrical power consumption of 3W, and a clear aperture diameter of 22mm.

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 **1-925-218 1885** or email **sales@mightex.com** for details.

# ORDER NOW

Our primary goal is to help you find the optimal solution for your application. We have a dedicated technical support and sales team committed to providing guidance on our LED illumination and other Mightex products.

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