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THORLABS

XCITE120LED - March 20, 2019

Item # XCITE120LED was removed from our e-commerce site on March 20, 2019. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

X-CITE® LIGHT SOURCE

- **Bright, Broadband Illumination in UV, Visible, and IR**
- **Continuously Control Intensity by Hand or Remotely**
- **Output by Collimating Nikon Bayonet Mount**

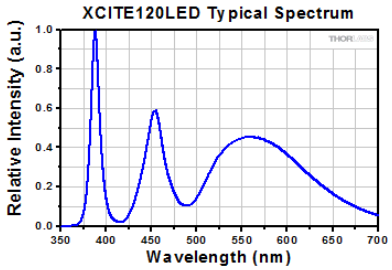
XCITE120LED
LED Lamp

Hide Overview

OVERVIEW

Features

- Wavelength Range: 370 - 700 nm (See Graph to the Right)
- >25 000 Hour LED Lifetime
- BNC Input for TTL Signals
- USB Connector for Computer Control



Click to Enlarge
This spectrum is provided by the manufacturer. An optical power measurement over a portion of the spectrum is available in the *Graphs* tab above

To complement our epi-illuminator modules for DIY Cerna® systems, Thorlabs offers the X-Cite® 120LED lamp, manufactured by Excelitas. This lamp outputs collimated light through an LED head and features a male Nikon bayonet mount.

The X-Cite 120LED lamp offers broadband output in the 370 - 700 nm range, as shown in the graph to the right. Its light is emitted by an LED source that is rated for a lifetime of >25 000 hours. Rotating the knob on the hand-operated controller varies the output intensity from 1% to 100% with stops at 1% increments. Pressing the knob turns the LED on and off.

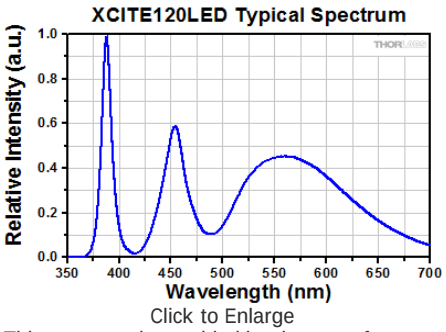
The LED head outputs collimated light and features a male Nikon bayonet mount. It is permanently connected to the enclosure by an 4.5' (1.4 m) long umbilical cable.

For remote control of the intensity, the electronics enclosure has a female BNC trigger input that accepts TTL signals and a female USB type B connector. This USB connector enables computer control through the manufacturer's control panel (see *XCITE120LED Software* tab above) and third-party programs such as µManager and MetaMorph. An SDK is also available from the manufacturer.

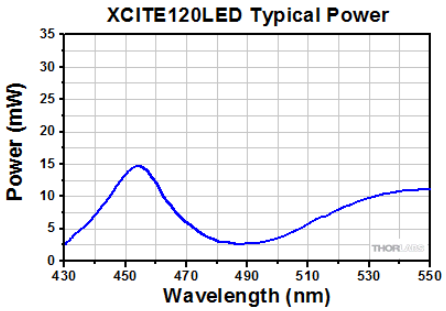
The unit ships with a region-specific IEC power cord and has a universal power input (100 - 240 VAC, 50 - 60 Hz).

Hide Graphs

GRAPHS



Click to Enlarge
This spectrum is provided by the manufacturer.



Click to Enlarge
This spectrum is provided by the manufacturer.

Hide XCITE120LED Software

XCITE120LED SOFTWARE

Software for the X-Cite® 120LED Lamp

The manufacturer's software is available by clicking on the link below.

Software

Control Panel and Windows® Drivers for X-Cite 120LED Lamp

Software

Hide Use with Cerna

USE WITH CERNA

Using X-Cite Lamps in Cerna® Microscope Systems

Components for Cerna® Compatibility
Epi-Illumination
CSE2100 or CSE2200 Epi-Illuminator Module with Removable Turret for Six Filter Sets SM2A18 Nikon Bayonet Mount Adapter SM2A56 Dovetail Adapter

The XCITE120LED, being a white-light lamp, is suitable for both fluorescence and reflected light microscopy. This lamp is compatible with our CSE2100 and CSE2200 epi-illuminator modules using a combination of the SM2A18 Nikon bayonet mount adapter and the SM2A56 dovetail adapter. After the two adapters are threaded into each other via their SM2 threading, the female bayonet mount of the SM2A18 can be attached to the male bayonet mount of the XCITE120DC. Then, the entire assembly can be secured to the D3T dovetail end of the epi-illuminator module via the side setscrew using a 5/64" (2mm) hex key. For custom attachments, consider our full line of Nikon bayonet mount adapters.

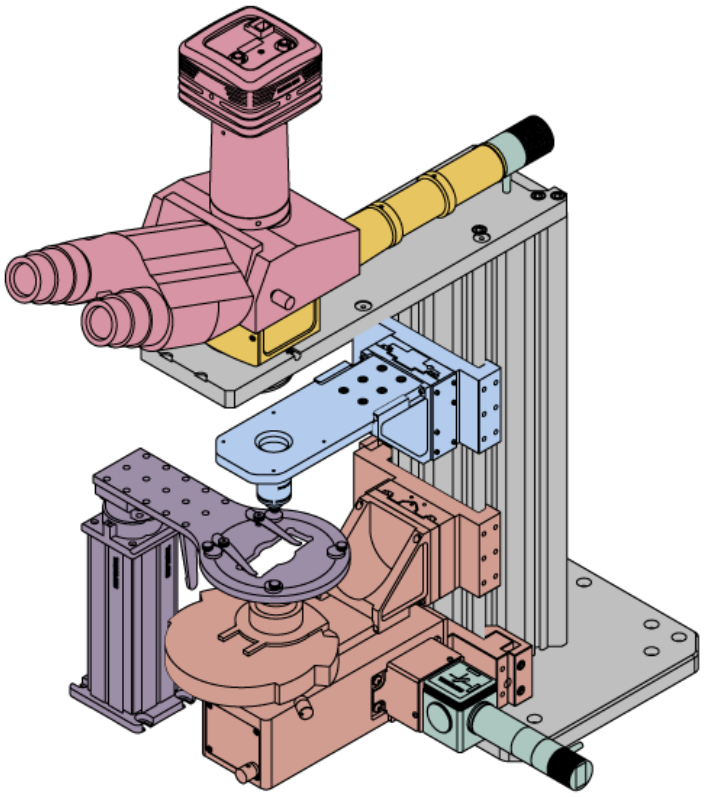
Hide Microscope Guide

Elements of a Microscope

This overview was developed to provide a general understanding of a Cerna® microscope. Click on the different portions of the microscope graphic to the right or use the links below to learn how a Cerna microscope visualizes a sample.

- Terminology
- Microscope Body
- Illumination
- Sample Viewing/Recording
- Sample/Experiment Mounting

Click on the different parts of the microscope to explore their functions.



Terminology

Arm: Holds components in the optical path of the microscope.

Bayonet Mount: A form of mechanical attachment with tabs on the male end that fit into L-shaped slots on the female end.

Bellows: A tube with accordion-shaped rubber sides for a flexible, light-tight extension between the microscope body and the objective.

Breadboard: A flat structure with regularly spaced tapped holes for DIY construction.

Dovetail: A form of mechanical attachment for many microscopy components. A linear dovetail allows flexible positioning along one dimension before being locked down, while a circular dovetail secures the component in one position. See the *Microscope Dovetails* tab or here for details.

Epi-Illumination: Illumination on the same side of the sample as the viewing apparatus. Epi-fluorescence, reflected light, and confocal microscopy are some examples of imaging modalities that utilize epi-illumination.

Filter Cube: A cube that holds filters and other optical elements at the correct orientations for microscopy. For example, filter cubes are essential for fluorescence microscopy and reflected light microscopy.

Köhler Illumination: A method of illumination that utilizes various optical elements to defocus and flatten the intensity of light across the field of view in the sample plane. A condenser and light collimator are necessary for this technique.

Nosepiece: A type of arm used to hold the microscope objective in the optical path of the microscope.

Optical Path: The path light follows through the microscope.

Rail Height: The height of the support rail of the microscope body.

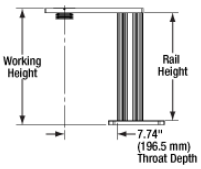
Throat Depth: The distance from the vertical portion of the optical path to the edge of the support rail of the microscope body. The size of the throat depth, along with the working height, determine the working space available for microscopy.

Trans-Illumination: Illumination on the opposite side of the sample as the viewing apparatus. Brightfield, differential interference contrast (DIC), Dodt gradient contrast, and darkfield microscopy are some examples of imaging modalities that utilize trans-illumination.

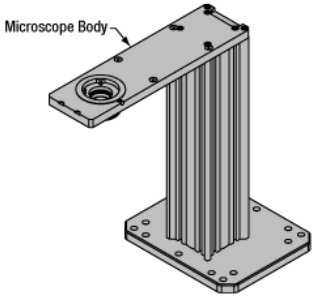
Working Height: The height of the support rail of the microscope body plus the height of the base. The size of the working height, along with the throat depth, determine the working space available for microscopy.

Microscope Body

The microscope body provides the foundation of any Cerna microscope. The support rail utilizes 95 mm rails machined to a high angular tolerance to ensure an aligned optical path and perpendicularity with the optical table. The support rail height chosen (350 - 600 mm) determines the vertical range available for experiments and microscopy components. The 7.74" throat depth, or distance from the optical path to the support rail, provides a large working space for experiments. Components attach to the body by way of either a linear dovetail on the support rail, or a circular dovetail on the epi-illumination arm (on certain models). Please see the *Microscope Dovetails* tab or here for further details.



Click to Enlarge
Body Details



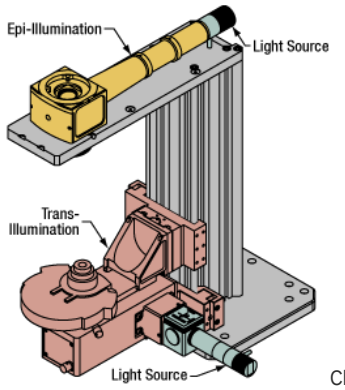
Click to Enlarge
Cerna Microscope Body

	
Microscope Bodies	Microscope Translator

Illumination

Using the Cerna microscope body, a sample can be illuminated in two directions: from above (epi-illumination, see yellow components to the right) or from below (trans-illumination, see orange components to the right).

Epi-illumination illuminates on the same side of the sample as the viewing apparatus; therefore, the light from the illumination source (green) and the light from the sample plane share a portion of the optical path. It is used in fluorescence, confocal, and reflected light microscopy. Epi-illumination modules, which direct and condition light along the optical path, are attached to the epi-illumination arm of the microscope body via a circular D1N dovetail (see the *Microscope Dovetails* tab or here for details). Multiple epi-illumination modules are available, as well as breadboard tops, which have regularly spaced tapped holes for custom designs.



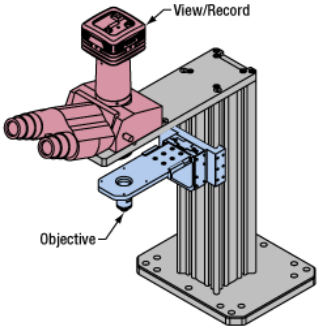
Click to Enlarge
Illumination with a Cerna microscope can come from above (yellow) or below (orange). Illumination sources (green) attach to either.

Trans-illumination illuminates from the opposite side of the sample as the viewing apparatus. Example imaging modalities include brightfield, differential interference contrast (DIC), Dodt gradient contrast, oblique, and darkfield microscopy. Trans-illumination modules, which condition light (on certain models) and direct it along the optical path, are attached to the support rail of the microscope body via a linear dovetail (see *Microscope Dovetails* tab or here). Please note that certain imaging modalities will require additional optics to alter the properties of the beam; these optics may be easily incorporated in the optical path via lens tubes and cage systems. In addition, Thorlabs offers condensers, which reshape input collimated light to help create optimal Köhler illumination. These attach to a mounting arm, which holds the condenser at the throat depth, or the distance from the optical path to the support rail. The arm attaches to a focusing module, used for aligning the condenser with respect to the sample and trans-illumination module.

							
Epi-Illumination Modules	Breadboards & Body Attachments	Brightfield	DIC	Dodt	Condensers	Condenser Mounting	Light Sources

Sample Viewing/Recording

Once illuminated, examining a sample with a microscope requires both focusing on the sample plane (see blue components to the right) and visualizing the resulting image (see pink components).



Click to Enlarge
Light from the sample plane is collected through an objective (blue) and viewed using trinocs or other optical ports (pink).

A microscope objective collects and magnifies light from the sample plane for imaging. On the Cerna microscope, the objective is threaded onto a nosepiece, which holds the objective at the throat depth, or the distance from the optical path to the support rail of the microscope body. This nosepiece is secured to a motorized focusing module, used for focusing the objective as well as for moving it out of the way for sample handling. To ensure a light-tight path from the objective, the microscope body comes with a bellows (not pictured).

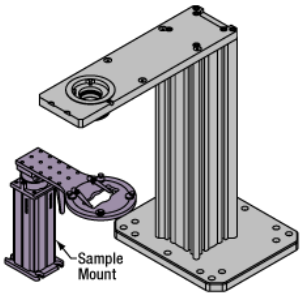
Various modules are available for sample viewing and data collection. Trinoculars have three points of vision to view the sample directly as well as with a camera. Double camera ports redirect or split the optical path among two viewing channels. Camera tubes increase or decrease the image magnification. For data collection, Thorlabs offers both cameras and photomultiplier tubes (PMTs), the latter being necessary to detect fluorescence signals for confocal microscopy. Breadboard tops provide functionality for custom-designed data collection setups. Modules are attached to the microscope body via a circular dovetail (see the *Microscope Dovetails* tab or here for details).

	
Objectives & Accessories	Objective Mounting

			
Sample Viewing	Cameras	PMTs	Breadboards & Body Attachments

Sample/Experiment Mounting

Various sample and equipment mounting options are available to take advantage of the large working space of this microscope system. Large samples and ancillary equipment can be mounted via mounting platforms, which fit around the microscope body and utilize a breadboard design with regularly spaced tapped through holes. Small samples can be mounted on rigid stands (for example, see the purple component to the right), which have holders for different methods of sample preparation and data collection, such as slides, well plates, and petri dishes. For more traditional sample mounting, slides can also be mounted directly onto the microscope body via a manual XY stage. The rigid stands can translate by way of motorized stages (sold separately), while the mounting platforms contain built-in mechanics for motorized or manual translation. Rigid stands can also be mounted on top of the mounting platforms for independent and synchronized movement of multiple instruments, if you are interested in performing experiments simultaneously during microscopy.



Click to Enlarge
The rigid stand (purple) pictured is one of various sample mounting options available.

Close

				
Translating Platforms	Rigid Stands	Translation Stages for Rigid Stands	Motorized XY Stages	Manual XY Stage

For sample viewing, Thorlabs offers trinoculars, double camera ports, and camera tubes. Light from the sample plane can be collected via cameras, photomultiplier tubes (PMTs), or custom setups using breadboard tops. Click here for additional information about viewing samples with a Cerna microscope.

Product Families & Web Presentations

			
Sample Viewing	Breadboards & Body Attachments	Cameras	PMTs

Close

Microscope objectives are held in the optical path of the microscope via a nosepiece. Click here for additional information about viewing a sample with a Cerna microscope.

Product Families & Web Presentations


Objectives


Objective Thread Adapters

Parfocal Length Extender


Piezo Objective Scanner


Objective Mounting

Close

Large and small experiment mounting options are available to take advantage of the large working space of this microscope. Click here for additional information about mounting a sample for microscopy.

Product Families & Web Presentations


Translating Platforms


Rigid Stands


Translation Stages for Rigid Stands


Motorized XY Stages


Manual XY Stage

Close

Thorlabs offers various light sources for epi- and trans-illumination. Please see the full web presentation of each to determine its functionality within the Cerna microscopy platform.

Product Families & Web Presentations


Trans-Illumination Kits


Solis™ High-Power LEDs


Mounted LEDs


X-Cite® Lamps


Other Light Sources

Close

Epi-illumination illuminates the sample on the same side as the viewing apparatus. Example imaging modalities include fluorescence, confocal, and reflected light microscopy. Click here for additional information on epi-illumination with Cerna.

Product Families & Web Presentations

Epi-Illumination

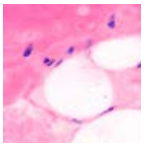
Body Attachments

Light Sources

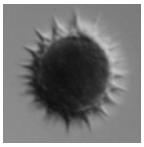
Close

Trans-illumination illuminates from the opposite side of the sample as the viewing apparatus. Example imaging modalities include brightfield, differential interference contrast (DIC), Dodt gradient contrast, oblique, and darkfield microscopy. Click here for additional information on trans-illumination with Cerna.

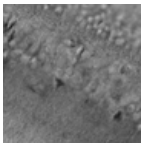
Product Families & Web Presentations



Brightfield



DIC



Dodt

Condensers

Condenser Mounting

Illumination Kits

Other Light Sources

Close

The microscope body provides the foundation of any Cerna microscope. The 7.74" throat depth provides a large working space for experiments. Click here for additional information about the Cerna microscope body.

Product Families & Web Presentations

Microscope Bodies

Microscope Translator

[Hide Lamp Selection Guide](#)

LAMP SELECTION GUIDE

Below is a selection guide for all of our white-light, broadband illumination sources (or lamps). In addition to these sources, Thorlabs also offers an unmounted white-light LED, five white-light mounted LEDs, two white-light fiber-coupled LEDs, and three high-powered, white-light Solis™ LEDs.

Lamp Selection Guide										
Item #	**(Click to Enlarge; Not to Scale)**	**Emitter Type**	**Wavelength**	**Spectrum Plot**	**Output Coupling**	**Output Power**	**Bulb Electrical Power**	**Color Temperature**	**Lifetime**	**Replacement Bulb**
HPLS343		Plasma	350 nm - 800 nm		Liquid Light Guide	4 W[a] (Typ.)	-	6000 K[b]	10 000 h[c]	HPLSB
HPLS345		Plasma	350 nm - 800 nm		Liquid Light Guide	7 W[a] (Typ.)	-	6000 K[b]	10 000 h[c]	HPLSB
SLS201L(/M)		Tungsten-Halogen	360 nm - 2600 nm		Fiber Coupled (SMA), Liquid Light Guide, or Free Space	10 mW[d] 500 mW[e]	9 W	2796 K	10 000 h (Avg.)	SLS251

SLS202L(/M)		Tungsten	450 nm - 5500 nm		Fiber Coupled (SMA), Liquid Light Guide, or Free Space	2 mW[f] 400 mW[e]	7.2 W	1900 K	10 000 h (Avg.)	SLS252
SLS203L(/M)		Silicon Nitride Globar	500 nm - 9000 nm		Free Space	>1.5 W[e]	24 W	1500 K	10 000 h (Avg.)	SLS253
SLS204		Deuterium	200 nm - 700 nm		Fiber Coupled (SMA) or Free Space	0.1 mW[g,h] 2 mW[e] (Typ.)	30 W	N/A	2000 h[c]	SLS254B
SLS301		Tungsten-Halogen	360 nm - 3800 nm		Free Space[i]	>1.6 W[h]	150 W	3400 K	1000 h[j] (Avg.)	SLS301B
SLS303		Silicon Nitride Globar	550 nm - 15 µm		Free Space	>4.5 W[h]	70 W	1200 K	5000 h[j] (Avg.)	SLS303B
SLS401		Xenon Arc	240 nm - 2400 nm		Free Space[i]	>1.3 W[h]	150 W	5800 K	2000 h[c]	SLS401B
SLS402		Mercury-Xenon Arc	240 nm - 2400 nm		Free Space[i]	>1.3 W[h]	150 W	6000 K	2000 h[c]	SLS402B
OSL2		Tungsten-Halogen	400 nm - 1300 nm		Fiber-Coupled Fiber Bundle	1.4 W[k]	150 W	3200 K	1000 to 10 000 h to 50% Brightness	OSL2B, OSL2B2, or OSL2BIR
QTH10(/M)		Quartz Tungsten-Halogen	400 nm - 2200 nm	-	Free Space	50 mW[l] (Typ.)	10 W	2800 K[m] (Typ.)	2000 h	QTH10B
XCITE120LED		LED	370 nm - 700 nm		Free Space	Not Available	Not Available	Not Available	>25 000 h	Not Available

a. Measured at the output of the liquid light guide, when both the bulb and the LLG are at start-of-life.
b. Prior to LLG
c. Average lifetime of bulb, defined as the total operation time before the maximum optical output power of the bulb reaches 50% of its original output.
d. Fiber-coupled optical power, measured with included M28L01 fiber patch cable at beginning of bulb lifetime.
e. Free-space optical power, measured at the output port of the light source with the fiber coupler removed.
f. Measured with Thorlabs' MZ41L1 ZrF_4 MIR patch cable at the beginning of bulb lifetime.
g. Measured with Thorlabs' M114L01 Solarization-Resistant Patch Cable at the beginning of bulb lifetime.
h. At Beginning of Bulb Lifetime
i. Liquid light guide (LLG) adapters are available separately to couple the free-space output.
j. Average lifetime of bulb, defined as the time elapsed when the controller cannot stabilize the output power of the bulb.
k. Power of Fiber Tip at Maximum Bulb Intensity
l. Measured by focusing the output beam after the ACL5040U condenser lens onto an S302C thermal power sensor with an MPD508762-90-P01 protected silver off-axis parabolic mirror.
m. Color temperature will vary from unit to unit.

Hide

Part Number	Description	Price	Availability
XCITE120LED	**X-Cite 120LED Lamp**	**$6,986.49**	**Lead Time**


X-Cite
120LED
X-Cite
120LED