

LEX2



LEX2 features a high-powered LED chip and original feedback mechanism for maintaining stable light intensity. It is our best LED system in terms of brightness and stability, resulting in very good signal to noise ratios.

LEX2 can be used for many biological applications. It can be used as a substitution for mercury/xenon light sources, as an excitation light source for detecting fluorescent signals, or as a light stimulator for cells that express light-activated proteins in electrophysiological experiments.

High Power

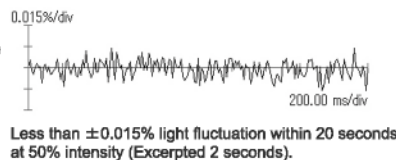
LEX2 consists of a high-powered LED chip, which produces a light intensity over 150mW/cm². The intensity can be simply adjusted with coarse/fine dials on the front panel in the range between 0 and 150% (100% to 150% intensity can be used for short-pulse illumination lasting less than 1 second).

Model	LEX2-B	LEX2-G	LEX2-R
Center Wavelength	465 nm	530 nm	625 nm
LED intensity at 100% setting	300 mW/cm ²	150 mW/cm ²	170 mW/cm ²
LED intensity at 150% setting	400 mW/cm ²	180 mW/cm ²	220 mW/cm ²

Small Fluctuation

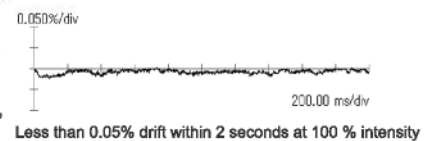
The intensity is more stable than halogen lamps and does not produce any flicker or large arc fluctuations, in comparison to Xenon and Mercury light sources.

LEDs are an ideal illumination source for high speed imaging.



High Stability through Feedback Mechanism

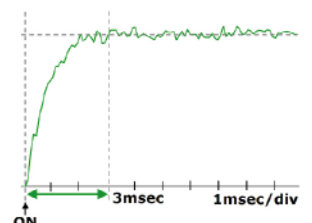
Light intensity of LEDs tends to decrease when turned on for long periods of time, due to the heat of LED chips. To keep light intensity constant, LEX2 adopts an original feedback technology.



This feedback mechanism results in less than 0.05% drift within 2 seconds at 100% intensity, less than 0.1% drift within 30 seconds at 50 % intensity, and less than 0.3% drift within 30 seconds at 100%

Rapid Rise Time

The right figure shows the rise time of LED light intensity, detected using the MiCAM ULTIMA-L high speed camera at the 0.1msec/frame and 100x100 pixels. Within the first 3 milliseconds, the intensity reaches 100 % of its maximum brightness and the LED continues to illuminate at a stable intensity.



Specifications

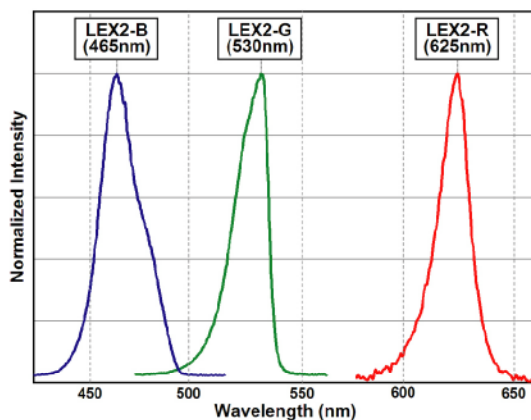
Item	Specifications		
Product Name	LEX2-B	LEX2-G	LEX2-R
Center Wavelength	465 nm	530 nm	625 nm
LED intensity at 100% setting (*1)	300 mW/cm ²	150 mW/cm ²	170 mW/cm ²
LED intensity at 150% setting (*1)	400 mW/cm ²	180 mW/cm ²	220 mW/cm ²
Time for reaching 100% intensity	> 0.3 msec		
Light Fluctuation (*2)	<±0.015%		
Change in light intensity	<±0.05% (in 2 seconds: *3), <±0.1% (in 30 seconds: *2)		
Intensity stabilization system	PD feedback circuit		
Shutter Control	Manual control: manual switch on the front panel External control: triggered by over 1.5V input		
Intensity Control	Manual control: 0-100%, 100%-150% (only for short-pulse illumination) External control: 0-100% by voltage input (100% intensity by 3.3V input)		
Monitoring Output	Output of voltage signal (3.3V output at 100% intensity)		
Protection Function	Overcurrent protection, overheat cutoff		
Environmental Conditions	Indoor use, temperature 0°C to 35°C, Humidity 0 to 70%		
Cooling Methods	By electric fan		
Light Guide	Option (Moritex's light guide recommended)		
Dimensions and Weight	150mm(W) x 250mm(D) x 83mm(H) / 2kg		
Input Voltage and Power	100-220V, 30W		

(*1) Measured value at output end of straight light guide (glass type, bundle diameter of 10mm, length of 2200mm).

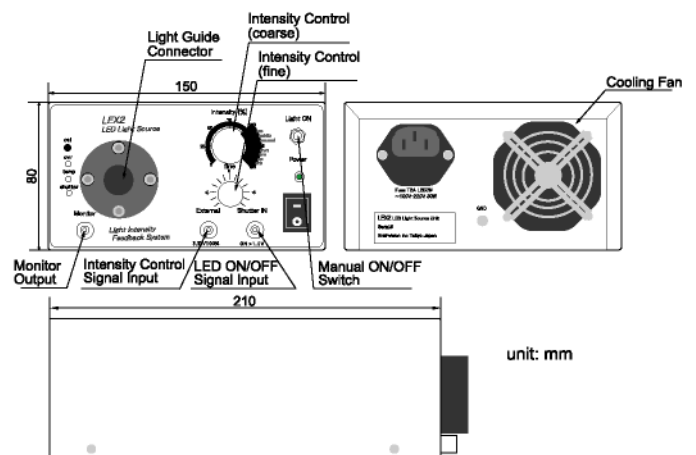
(*2) <50% intensity. Measured with fast CCD imaging system, MICAM02-HR (30 seconds at 100 frames/second, 4 times averaging).

(*3) <100% intensity. Measured with fast CCD imaging system, MICAM02-HR (30 seconds at 100 frames/second, 4 times averaging).

LED Wavelengths



Dimensions



Applications

- Excitation light source for MiCAM high speed fluorescence imaging systems using indicators including voltage-sensitive dyes, calcium indicators, and genetically encoded optical probes such as voltage-sensitive proteins.
- Light source for stimulation to light-activated protein such as channelrhodopsin 2 (ChR2) and halorhodopsin (NpHR).
- Other imaging applications requiring stable and bright light.

* Specifications & appearance are subject to change without prior notice due to continuous improvements.

* All products are made in Japan.

Developed and Manufactured by:

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